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AWARENESS OF OCCUPATIONAL HAZARDS AMONG HEALTHCARE WORKERS IN TEACHING HOSPITALS IN NIGERIA

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Abstract

The study assesses the awareness of occupational hazards among healthcare workers in teaching hospitals in Nigeria. A descriptive research design of survey type was employed in this study. The population of this study consists of twenty-five thousand, five hundred and fifty (25,550) healthcare workers in teaching hospitals in Nigeria. The sample size for this study is three hundred and forty-eight (348), which was selected among healthcare workers at teaching hospitals in Northern Nigeria by using a multi-stage sampling technique. The instrument for data collection was the researcher's designed, structured questionnaire. An inferential statistic of one sample t-test and analysis of variance (ANOVA) was used to test the hypothesis at the 0.05 level of significance. The findings of the study revealed that there was significant awareness of occupational hazards among healthcare workers in teaching hospitals in Nigeria (t=118.047, df:339; P=.000) and there is no significant difference in awareness of occupational hazards among healthcare workers in teaching hospitals in Nigeria based on their cadre (F =.591, df = 6,333; P > 0.05). Based on the findings of this study it was concluded that healthcare workers at teaching hospitals in Nigeria are aware of occupational hazards and there was no difference in awareness of occupational hazards among healthcare workers of teaching hospitals in Nigeria based on their cadre. It was therefore recommended, among others, that the Federal Ministry of Health, in partnership with non-governmental organisations, should regularly conduct seminars and workshops for healthcare workers in teaching hospitals across Nigeria. This initiative aims to enhance awareness and adherence to occupational hazards and safety practices, ensuring sustained and effective safety measures.

Keywords: Awareness, occupational hazards, healthcare workers and teaching hospitals

Introduction

Occupational hazards are the degree of risk posed by activities and programmes engaged in at workplace. In this regard, occupational hazards refer to all activities in the workplace that can promote the risk of infection and injury. Occupational hazards in hospitals refer to the potential risks and dangers that healthcare workers, patients, and visitors may encounter within the hospital environment. Due to the nature of hospital work, which involves the care of patients with various medical conditions, there are specific hazards that are unique to this setting (Lugah, Ganesh, Darus, Retneswari, Rosnawati, & Sujatha, 2017). Occupational hazards in hospitals encompass chemical, physical, psychosocial, and environmental risks. Common risks include exposure to pathogens, needlestick injuries, handling hazardous drugs, musculoskeletal strains, radiation exposure, emotional stress, incidents of workplace violence, airborne contaminants, and noise exposure (Ncube, Meintjes, & Chola, 2018).

Awareness of occupational hazards plays an adequate role in preventing injuries and diseases among hospital employees. Programmes that create awareness can be used to educate workers on positive attitudes and solidify safe working behaviours (Lugah et al., 2017). Raising awareness of occupational hazards among healthcare workers is essential for promoting a safe and healthy work environment (Abdulbaqi et al., 2024). Awareness of potential hazards enables HCWs to take proactive measures to minimise risks and prevent accidents or injuries. Awareness helps HCWs recognise symptoms of exposure-related illnesses early on, facilitating timely medical intervention. Distributing informational pamphlets, posters, and digital resources highlighting common hazards and preventive measures serves as a constant reminder and reference for HCWs (Assawadithalerd & Romin, 2020).

Awareness of occupational hazards provides a well-informed workforce and fosters a culture that prioritises safety, leading to improved overall health outcomes and reduced absenteeism. Awareness about the risks of exposure to pathogens, such as viruses and bacteria, emphasises the importance of infection control practices, vaccination, and proper handling of biohazardous materials. Therefore, HCWs need to be informed about the potential dangers of handling hazardous drugs, disinfectants, and sterilants, promoting safe storage, use, and disposal practices. Awareness of the emotional and psychological challenges, such as stress, burnout, and workplace violence, encourages HCWs to seek support, practice self-care, and utilise available resources for mental well-being (Akorede, 2021; Akorede, Ajayi, Toyin & Uwadia, 2021; Assawadithalerd & Romin, 2020; Baksh, Ganpat, & Narine, 2016).

Healthcare workers (HCWs) attend to clients and patients through a variety of preventive and curative services (Akorede, 2024). However, while their attention is focused on providing care, they are vulnerable to hazards that could be detrimental to their health and well-being. Professionals working in a hospital are seen as people who are capable of keeping their health without help, and hospitals and other health facilities are also considered to be safer than other workplaces. As a result, only a few resources are allocated to the occupational health of the hospital workers. Therefore, the hospital environment presents healthcare employees with various occupational hazards, including exposure to infectious agents, needle sticks and sharp injuries, musculoskeletal disorders (MSD), exposure to carcinogenic agents, latex allergies, violence, and stress (Lugah, et al, 2017).

According to a report by the WHO (2020), healthcare facilities employ about 59.8 million healthcare workers worldwide, with two-thirds providing health services, while the remaining are management and supporting staff. Healthcare workers are exposed to several biological, chemical, physical, and psychosocial hazards from their day-to-day activities, which may in some instances be life-threatening (Dal-Poz, et al, 2017). 3 million percutaneous exposures occur annually among 35 million healthcare workers globally, with more than 90% of these occurring in countries with limited resources (Fingerhut et al., 2016). Health Care Workers (HCWs) are at risk of occupational health hazards (OHH) at the workplace like other workers in large facility operations and maintenance, including heavy metals and solvents, as well as those hazards that are unique to caring for ill patients. The likelihood of exposure to these hazardous agents by healthcare workers depends on the job category and the work environment (Abdulbaqi et al., 2024; Salvage et al., 2018).

Prajwail, Kundury and Sujay (2020) conducted a study on assessing the awareness of occupational safety and health hazards among nursing staff in a teaching hospital. The results of the study revealed that the participant response rate was 88% (150/170). Awareness of occupational safety and health hazards was shown as 43.4% for accidental falls at the workplace, 42.7% for complete awareness of latex allergies, 52.7% for dermatitis and respiratory problems, and 42% for complete awareness of accidental fires. 39.4%: burns; 36.7%: electric shocks; 59.4%: complete awareness of biological infections; 54%: respiratory disorders; 48.7%: skin allergies; and awareness of the usage of PPE to prevent: 67.4%: respiratory problems; 44%: accidental falls; 77.4%: importance of handwashing; 78%: significance of hepatitis B vaccination; 71.4%: usage of first aid kits in minor accidents; 60%: reporting incidents; and 58%: documentation system for incident reporting.

Another study was carried out by Awan, Afzal, Majeed, Waqas, and Gilani (2017) to assess the awareness, attitude, and practices among nurses concerning occupational hazards in a public hospital. The data was collected from Nawaz Sharif Social Security Hospital in Lahore, Pakistan. The data was collected from nurses by using questionnaires. The result showed that 67.5% of nurses had a high awareness of occupational hazards. Overall positive attitude towards occupational hazards was 56.91%, and overall positive attitude towards occupational safety practice level was 57.72%, which is insufficient. Abuduxike, Acar, Vaizoglu., Asut, and Cali (2021) carried out a study on the assessment of the knowledge, attitude, and practice towards standard precautions among health workers from a hospital in Northern Cyprus. The result of the study revealed that occupation was one of the predictors, as doctors were less likely to have satisfactory knowledge and practice compared to nurses. Out of 174 participants, 31.6% of them reported experiencing NSIs, and support staff were 71% less likely to experience NSIs compared to nurses and paramedics. The findings revealed a substandard adherence to standard precautions among participants, which highlighted the necessity of the provision of a periodic, tailored training programme based on the occupation and risk exposure.

The researchers observed that there are high rates of associated morbidity and mortality among health workers in teaching hospitals in Nigeria as a result of exposure to different hazards due to their activities. It was also observed that, according to the statistics of the entire teaching hospital in Nigeria, an estimated 50% of the health workers die from occupational illnesses, while about 30% of new cases of occupational diseases are diagnosed every year. This includes but is not limited to, sharp-related injuries, direct infections, stress, assault from patients and their relatives, allergies, back pain, and other musculoskeletal injuries (FMOH, 2023). This affects workers in various occupations as a result of their exposure to different types and varying degrees of hazards in the workplace.

It was also observed by the researchers that health workers in teaching hospitals in Nigeria encounter numerous occupational hazards. These include exposure to blood-borne pathogens from body fluids and needle-stick injuries, as well as potential exposure to diseases like tuberculosis (Akorede, Ajayi & Tawose, 2021). Additionally, they are at risk of accidents such as slips, trips, and confrontations with violent patients or their relatives. Ergonomic challenges like heavy lifting and psychosocial stresses associated with shift work and job-related stress further compound their risks. Notably, needle-stick or sharps injuries are prevalent among healthcare workers across several Nigerian states, leading to a significant number of hepatitis C, hepatitis B, and HIV infections (Ahmed & Newson-Smith, 2010). It is on these premises that the researchers intended to establish awareness of occupational hazards among healthcare workers in a teaching hospital in Nigeria.

Objectives of the Study

The objective of this study is to assess:

1. The awareness of occupational hazards among healthcare workers in teaching hospitals in Nigeria
2. The difference in awareness of occupational hazards among healthcare workers in teaching hospitals in Nigeria based on their cadre

Hypotheses

To achieve the purpose of the study the following hypotheses were formulated to guide the study:

1. There is no significant awareness of occupational hazards among healthcare workers in teaching hospitals in Nigeria
2. There is no significant difference in awareness of occupational hazards among healthcare workers in teaching hospitals in Nigeria based on their cadre.

Methodology

A descriptive survey research design method was adopted for this study. Descriptive research is a type of research that is used to describe the characteristics of a population. It collects data that is used to answer a wide range of what, when, and how questions on a particular population or group (Joge, 2021). The population of this study consists of twenty-five thousand, five hundred and fifty (25,550) healthcare workers of Teaching Hospitals in Nigeria (Federal Ministry of Health [FMOH], 2023). The sample size for this study is three hundred and forty-eight (348), which was selected among healthcare workers in teaching hospitals in Nigeria. The sampling techniques for this study consist of multi-stage sampling techniques. Therefore, the stages for sampling in this study were as follows:

Step I**:** Teaching hospitals in Nigeria are clustered in six (6) geopolitical zones in Nigeria, namely: North-Central, North-East, North-West, South-East, South-South, and South-West.

Step II: A simple random sampling technique was used to select one (1) teaching hospital each from six (6) geopolitical zones in Nigeria, making up a total of six (6) teaching hospitals for the study

Step III: A simple random sampling technique was also used to select five (5) Departments from each selected teaching hospital; these include: Medicine, Surgery, Anaesthesia, Nursing, Laboratory, Physiotherapy, and Pharmacy.

Stage IV: The proportionate sampling technique was used to select ten per cent (10%) of the respondents as the sample size from each of the five (5) most hazardous Departments in the randomly selected teaching hospitals.

Stage V: The respondents in each healthcare worker's department were selected using the availability sampling technique.

A researcher-designed structured questionnaire titled "Awareness of Occupational Hazards among Healthcare Workers Questionnaire" (AOHHWQ) was used to obtain qualitative data from the selected respondents. The questionnaire consists of two (2) sections (sections A and B); section A consists of 5-items on the socio-demographic characteristics of the respondents; section B consists of 10-items on awareness of occupational hazards among healthcare workers of teaching hospitals in Nigeria; A four-point modified Likert scale was scored as follows: strongly Agreed, 4 points. Agreed 3 points, disagreed 2 points, and strongly disagreed 1 point. The instrument was validated by three experts in the Health Education field. A reliability of 0.60 was obtained using the split-half method from 35 healthcare workers at Modibo Adama University Teaching Hospital Yola, Adamawa State, and data collected was subjected to a statistical test using Spearman Brown's Prophecy Formula. Seven hundred and eighty-seven (348) copies of the questionnaire were administered to the healthcare workers of a teaching hospital in Nigeria, with the help of four (4) research assistants, who were fully briefed on how to administer and collect the questionnaire from the respondents. Questionnaire forms were administered to healthcare workers in their respective departments and collected back through the research assistants. The exercise lasted for only three (3) weeks.

Result

An Inferential statistic of one sample t-test and Analysis of Variance (ANOVA), were used to test the postulated null hypotheses for the study. An alpha level of 0.05 was used as a criterion for either retaining or rejecting the null hypotheses.

Hypotheses One: There is no significant awareness of occupational hazards among healthcare workers in teaching hospitals in Nigeria.

Table 1: Summary of One Sample t-test on Awareness of Occupational Hazards among Healthcare Workers in Teaching Hospitals in Nigeria

Variable	N	Mean	SD	SE	df	t	P
Awareness of occupational hazards	340	32.94	5.15	0.28	339	118.047	.000
Test mean	340	2.50					

t=118.047, df:339; P<0.05

Table 1 revealed the summary of one sample t-test on awareness of occupational hazards among healthcare workers in a teaching hospital in Nigeria. The table shows the calculated mean of 32.94, which is greater than the decision mean of 2.50. This means that healthcare workers in teaching hospitals in Nigeria are aware of occupational hazards. The statistical computation of the sample t-test also indicated that there was significant awareness of occupational hazards among healthcare workers in a teaching hospital in Nigeria ($t = 118.047$, $df = 339$; $P<0.05$). Therefore, the hypothesis tested is rejected, because the p-value of .000 is less than the alpha-value of 0.05.

Hypothesis Two: There is no significant difference in awareness of occupational hazards among healthcare workers in teaching hospitals in Nigeria based on their cadre.

Table 2: Summary of One-Way ANOVA on difference in Awareness of Occupational Hazards among Healthcare Workers in Teaching Hospitals in Nigeria based on their cadre

	Sum of Squares	df	Mean Square	F	P
Between Group	13.279	6	2.214	.591	.740
Within Group	1249.476	333	3.753		
Total	**1262.755**	**339**			

The result in Table 2 indicated no difference in awareness of occupational hazards among healthcare workers in teaching hospitals in Nigeria based on their cadre. Therefore, the statistical computation of a one-way ANOVA shows that there is no significant difference in awareness of occupational hazards among healthcare workers in teaching hospitals in Nigeria based on their cadre ($F =.591$, $df = 6,333$; $P =.740$). The hypothesis stated that there was no significant difference in awareness of occupational hazards among healthcare workers in teaching hospitals in Nigeria based on their cadre and is therefore retained because the p-value of .740 is greater than the alpha-value of 0.05.

Discussion

The outcome of this study revealed that there was significant awareness of occupational hazards among healthcare workers in teaching hospitals in Nigeria ($t = 118.047$, $df = 339$; $P<0.05$). This finding is in line with the study conducted by Prajwail, Kundury, and Sujay (2020) on assessing the awareness of occupational safety and health hazards among nursing staff in a teaching hospital. The results of the study revealed that the participant response rate was 88% (150/170). Awareness of occupational safety and health hazards was shown as 43.4% for accidental falls at the workplace, 42.7% for complete awareness of latex allergies, 52.7% for dermatitis and respiratory problems, and 42% for complete awareness of accidental fires. 39.4%: burns; 36.7%: electric shocks; 59.4%: complete awareness of biological infections; 54%: respiratory disorders; 48.7%: skin allergies; and awareness of the usage of PPE to prevent: 67.4%: respiratory problems; 44%: accidental falls; 77.4%: importance of handwashing; 78%: significance of hepatitis B vaccination; 71.4%: usage of first aid kits in minor accidents; 60%: reporting incidents; and 58%: documentation system for incident reporting.

The result of this study revealed that there is no significant difference in awareness of occupational hazards among healthcare workers in teaching hospitals in Nigeria based on their cadre ($F =.591$, $df = 6,333$; $P > 0.05$). This finding is in line with the study carried out by Awan, Afzal, et al (2017) to assess the awareness, attitude, and practices among nurses concerning occupational hazards in a public hospital. The data was collected from Nawaz Sharif Social Security Hospital in Lahore, Pakistan. The data was collected from nurses by using questionnaires. The result showed that 67.5% of nurses had a high awareness of occupational hazards. Overall positive attitude towards occupational hazards was 56.91%, and overall positive attitude towards occupational safety practice level was 57.72%, which is insufficient. This finding is not in line with the study carried out by Abuduxike et al. (2021) on the assessment of the knowledge, attitude, and practice towards standard precautions among health workers from a hospital in Northern Cyprus. The result of the study revealed that occupation was one of the predictors, as doctors were less likely to have satisfactory knowledge and practice compared to nurses. Out of 174 participants, 31.6% of them reported experiencing NSIs, and support staff were 71% less likely to experience NSIs compared to nurses and paramedics. The findings revealed a substandard adherence to standard precautions among participants, which highlighted the necessity of the provision of a periodic, tailored training programme based on the occupation and risk exposure.

Conclusions

Based on the findings of this study, the following conclusions were drawn:

1. Healthcare workers at a teaching hospital in Nigeria are aware of occupational hazards because the hypotheses test was significant.
2. There was no difference in awareness of occupational hazards among healthcare workers in teaching hospitals in Nigeria based on their cadre because the difference was not insignificant.

Recommendations

Based on the findings of this study, the following recommendations were made:

1. The Federal Ministry of Health, in partnership with non-governmental organisations, should regularly conduct seminars and workshops for healthcare workers in teaching hospitals across Nigeria. This initiative aims to enhance awareness and adherence to occupational hazards and safety practices, ensuring sustained and effective safety measures.
2. Teaching hospitals in Nigeria should organise periodic refresher courses and workshops to reinforce safety practices, irrespective of the cadre. This will help in updating knowledge and addressing any gaps that might arise over time.

References

Abdulbaqi, S. Z., Tejideen, T. O., Balogun, O. S., Olowookere, J. O., & Isiaq, A. T. (2024). Effect of work environment on absentee behaviour of employees in tertiary institutions in Kwara State. *Gusau Journal of Sociology, 4*(3), 35-53. https://doi.org/10.57233/gujos.v4i3.3

Abuduxike, G., Acar, S., Vaizoglu., S. A., Asut, O. & Cali, S. (2021). An Assessment of the Knowledge, Attitude, and Practice toward Standard Precautions among Health Workers from a Hospital in Northern Cyprus. *Safety and Health Work,* 12(1), 66-73

Ahmed, H. O. &Newson-Smith, M. (2010). Knowledge and practices related to occupational hazards among cement workers in United Arab Emirates. *Journal of Egypt Public Health Association*, 85(3-4),149-167.

Akorede, S. N. (2024). Assessment of client satisfaction with healthcare service provision in federal tertiary institutions in Kaduna State, Nigeria. *ABUTH International Journal of Physiotherapy & Health Sciences, 24*(2), 27-33.

Akorede, S. N. (2021). Covid-19 lockdown and domestic violence among partners in Nigeria. *KIU Interdisciplinary Journal of Humanities and Social Sciences, 2*(2), 38-47.

Akorede, S. N., Ajayi, A. E., & Tawose, P. O. (2021). Knowledge of Tuberculosis among Tuberculosis Patients Attending Federal Medical Centre, Owo, Ondo State, Nigeria. *Unnes Journal of Public Health*, *10*(2), 138-143. https://doi.org/10.15294/ujph.v10i2.40621

Akorede, S. N., Ajayi, A. E., Toyin, A., & Uwadia, G. U. (2021). Influence of COVID-19 on the psychological wellbeing of tertiary institution students in Nigeria. *Tanzania Journal of Science*, *47*(1), 70-79. https://dx.doi.org/10.4314/tjs.v47i1.7

Assawadithalerd, M. & Romin, H. (2020). Assessment of Knowledge, Attitude, and Practice in respect of Medical Waste Management among Healthcare Workers in Clinics. *Journal of Environmental and Public Health,* 22(3), 31-45

Awan, A., Afzal, M., Majeed, I., Waqas, A. &Gilani., S. A. (2017). Assessment of Knowledge, Attitude and Practices regarding Occupational Hazards among Nurses at Nawaz Sharif Social Security Hospital Lahore Pakistan. *Saudi Journal of Medical and Pharmaceutical Sciences,* 3(6), 622-630

Baksh, K., Ganpat, W. & Narine, L. (2015). Knowledge, attitudes and perceptions of occupational health and safety hazards in Trinidad, West Indies and implications for the Agriculture sector, *Academic Journal*, 7(7), 221-228.

Dal-Poz, M. R., Kinfu, Y., Dräger, S., Kunjumen, T. & Diallo, K. (2017). *Counting health workers: definitions, data, methods and global results*. Geneva, World Health Organization

Federal Ministry of Health [FMOH] (2023). Population and Statistics: Healthcare workers of Teaching Hospitals in Nigeria 2023 Data Base.

Joge, P. (2021). *Descriptive Research Studies: Child Care and Child Education.* https://www.researchconnections.org/research-tools/study-design-and-analysis/descriptive-research-studies.

Lugah, V., Ganesh, B., Darus, A., Retneswari, M., Rosnawati, M. R., &Sujatha, D. (2017). Training of occupational safety and health: knowledge among healthcare professionals in Malaysia, *Public Medicine Commons,* 51(7), 586–591

Ncube, N. B., Meintjes, W. A. & Chola, L. (2014). Knowledge and attitudes of non-occupational HIV post-exposure prophylaxis amongst first- and second-year medical students at Stellenbosch University in South Africa. *Public Medicine Commons,* 21(4), 1–9.

Prajwail, M. S., kundury, K. K. &Sujay, M. J. (2020). Assessing the awareness on occupational safety and health hazards among nursing staff of a teaching hospital. Journal of Occupation, 9(12), 5961-5970.

Salvage, J., Rogers, R. & Cowell, R. (2016). Nurses at risk. *Journal of Nursing Science,* 94(33):34-35.

WHO (2020). WHO Guidelines on Hand Hygiene in Health Care: standard precautions in health care. From http://www.who.int/patientsafety/information_centre/ghhad_download/en/index.html.

ATTITUDE OF MOTHERS TOWARDS UTILIZATION OF IMMUNIZATION SERVICES IN EKET LOCAL GOVERNMENT AREA OF AKWA IBOM STATE

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Abstract

The purpose of this study was to determine the attitude of mothers towards the utilization of immunization services in Eket Local Government Area of Akwa Ibom State. To achieve the purpose of this study, two null hypotheses were formulated and tested at a 0.05 level of significance. A review of relevant literature was carried out according to the variables in the study. Survey research design was employed for the study. Simple random sampling technique was adopted to select the six communities while a purposive sampling technique was employed to select the two hundred and forty-three (243) respondents used for the study. A structured questionnaire was the instrument utilized for data collection. The instrument was vetted by relevant authorities. Pearson Product Moment Correlation and One-way Analysis of Variance statistical tools were used to test the hypotheses formulated for the study for data analysis among mothers in Eket Local Government Area of Akwa Ibom State at 0.05 alpha level or level of significance. The result of the analysis of data and hypotheses testing revealed that there was a significant relationship between knowledge of immunization and family income on the attitude of mothers towards the utilization of immunization services in Eket L.G.A. Based on these findings, it is recommended among others that Health Educators should continue to sensitize mothers within the study area to further empower them with the relevant knowledge required for the effective utilization of immunization services for their children.

Keywords: Attitude of Mothers, Utilization of Immunization Services, Knowledge of Immunization, Family Income

Introduction

Immunization remains one of the most important public health interventions and a cost-effective strategy to reduce both the morbidity and mortality associated with vaccine-preventable diseases. The uptake of vaccination services is dependent not only on the availability of and accessibility to vaccination services but also on other factors including knowledge and attitude of mothers. Immunization is a critical component of global health, protecting individuals and communities from vaccine-preventable diseases. According to the World Health Organization (2022), immunization prevents approximately 2-3 million deaths annually.

Okafor (2022) asserted that understanding maternal perceptions and knowledge about immunization helps health planners develop effective health education programs and messages. While the reasons for low immunization coverage have been proffered in general, mitigation efforts have focused on health system factors, but little attention has been paid to maternal knowledge, perception, beliefs, and practice. Understanding mothers´ knowledge and attitudes towards immunization could guide this aspect of multi-pronged efforts to improve routine immunization coverage.

Immunization against common childhood diseases is an important strategy as it is critical for reducing global child morbidity and mortality. However, some studies have shown that even with the importance of immunization known to parents, there are still vaccine-hesitant parents (Babalola, 2019). Vaccine hesitancy is also influenced by factors such as complacency, convenience and confidence. Parental forgetfulness can have a substantial impact on a child being fully immunized with all the recommended vaccines (polio, measles, diphtheria, tetanus, etc). Parental attitudes, experiences and social grade are influential in determining whether a child receives a vaccine.

Routine immunization in Nigeria is essential for protecting children from preventable diseases like polio, measles, diphtheria, influenza, chickenpox, tetanus, hepatitis A, etc. It's a critical public health strategy aimed at reducing morbidity and mortality rates among children, ensuring a healthier future generation. Additionally, routine immunization helps in achieving herd immunity, thereby safeguarding the entire community from outbreaks of vaccine-preventable diseases. However, challenges such as vaccine hesitancy, logistical issues, and inadequate healthcare infrastructure need to be addressed to ensure the success of immunization programs in Nigeria. Improving mothers' attitudes towards routine immunization in Nigeria involves various strategies. Onah (2021) reported engaging communities through local leaders, religious figures, and community health workers to promote the importance of immunization and address misconceptions. Providing education on the benefits of vaccination, and addressing concerns and myths about vaccines through community outreach programs, workshops, and media campaigns.

Ensure vaccines are readily available and accessible to all mothers, especially in remote and underserved areas, by strengthening healthcare infrastructure and increasing the number of vaccination sites.

There are certain determinants of the attitude of mothers towards immunization. Elvis (2021) asserted that the influence of knowledge on mothers' attitudes towards immunization is significant. When mothers are well-informed about the benefits and importance of immunization, they are more likely to have positive attitudes and comply with vaccination schedules for their children. Knowledge empowers mothers to make informed decisions, dispels myths and misconceptions, and fosters trust in healthcare providers and vaccination programs (Akorede, 2024). Eke (2022) stated that there can be a correlation between maternal income and attitudes towards immunization. Generally, higher maternal income tends to correlate with more positive attitudes towards immunization, possibly due to increased access to healthcare information and resources (Akorede, Muhammed, Isiaq & Akorede, 2022). However, individual attitudes can vary significantly based on cultural, educational, and other factors.

Literature Review

Knowledge of Immunization and the Attitude of Mothers towards Immunization

Knowledge of immunization plays a critical role in influencing the utilization of immunization. Understanding the importance of immunization in preventing infectious diseases increases the likelihood of seeking immunization services. Knowledge about the safety and efficacy of vaccines builds trust in immunization services, encouraging people to utilize them. Being informed about the availability and accessibility of immunization services enables individuals to take advantage of them when needed. Knowing the benefits of immunization, such as reducing the risk of illness and protecting vulnerable populations, motivates people to utilize immunization services for themselves and their communities. Understanding the risks associated with vaccine-preventable diseases helps individuals appreciate the importance of vaccination and motivates them to utilize immunization services. Knowledge of herd immunity and its role in protecting entire communities reinforces the importance of individual immunization, thus promoting the utilization of immunization services. Overall, knowledge of immunization is a powerful factor that can positively influence the utilization of immunization services by empowering individuals to make informed decisions about their health and the health of their communities (Davies, 2022).

Knowledge plays a crucial role in the utilization of immunization services by influencing various aspects such as awareness of available vaccines, understanding of their importance, and confidence in their safety and efficacy. When people are informed about the benefits of immunization, they are more likely to seek out and utilize immunization services for themselves and their families. Additionally, knowledge about vaccine schedules and the importance of timely vaccinations can help ensure optimal utilization of immunization services, leading to better public health outcomes. Willock (2023) maintained that the level of knowledge and utilization of immunization services among mothers varies depending on factors such as education, socioeconomic status, and access to healthcare facilities. Generally, higher levels of education and better access to healthcare tend to correlate with higher levels of knowledge and utilization of immunization services. Educational campaigns and community outreach programs can help improve awareness and utilization of immunization services among mothers.

Protection from diseases is one of the uttermost benefits that any country can offer to its people. Vaccines are certainly an essential part of a health system, an effective tool for controlling diseases in many countries around the world, and the most cost-effective mechanism for morbidity and mortality prevention that permits people to better protect themselves from particular bacteria and viruses. To have the greatest protection against diseases, children should receive all their vaccinations within recommended intervals and at the appropriate age. Vaccinating a child with appropriate vaccines would significantly reduce the costs of disease treatment and rates of disease and, therefore, improve the quality of the child's life. The level of knowledge parents have regarding child vaccination and their attitudes towards vaccination may influence their practice. Major obstacles towards the high coverage of children include a lack of knowledge or information on vaccination, low levels of awareness or negative attitudes regarding vaccination, and misperceptions or rumours regarding the safety of vaccination (Kingston, 2022).

On the other hand, a study by Verulava (2021) which included 60 mothers and used frequencies and percentages for statistical analysis of the data collected, revealed that most of the mothers (65%) did not know the reason for the vaccinations, but they knew the right age for the vaccinations and when they must start. Fifty-nine per cent believed that vaccination is not harmful. Thus, the attitudes of the mothers regarding vaccination were good, because most of the mothers believed in the importance of vaccination and they followed the vaccination schedule.

The results of a study by Ramadan (2022) indicated that 462 out of 1050 participating mothers lacked knowledge regarding obligatory vaccinations, while only six had poor attitudes toward obligatory vaccinations, and 265 of the mothers had a low practice score. Moreover, the study showed that there was a positive Pearson's correlation (0.037) between the mother's age and the level of knowledge. Moreover, Birhanu (2021) revealed that 55.0% (626) of the participating mothers had a good level of knowledge, while 53.8% had a positive attitude, and 84% good practices regarding child vaccinations. Therefore, the study

concluded that the knowledge and attitudes of the participating mothers towards child vaccination were not enough, and they recommended further health education for mothers to promote knowledge.

Mahalingam (2021) conducted a study including 200 mothers. Using a *t*-test, it was revealed that there was a significant difference between urban mothers and rural mothers regarding their knowledge, attitudes, and practices regarding childhood vaccinations. The study found that 75.6% of the urban mothers had a high level of knowledge compared with rural mothers. In addition, 95.9% of the urban mothers had good practices compared with rural mothers. The study that included 300 mothers revealed that only 17.0% of the mothers had a good level of knowledge regarding childhood vaccinations, whereas 96.6% of the mothers had a positive attitude and 88.1% of them had good practices regarding childhood vaccinations. Moreover, this study recommended more educational programs regarding childhood vaccinations.

Family Income and Attitude of Mothers towards Immunization

Disparities existed in childhood immunization between the poor and the rich in some parts of Nigeria. Policymakers and health institution teams should institute effective intervention policies that will assist children from poor-income families to access immunization. National Population Commission (2018) reported that generally, there is inequality in wealth distribution and a wide gap exists between the rich and the poor in terms of accessing health care even at public health facilities in Nigeria where the majority of its population earns less than two dollars a day. The gap becomes wider if the poor's place of residence is far from the health facility which is the peculiar situation in the core North Nigeria.

Eric (2020) explained that not all health facilities can administer childhood immunization vaccines in Nigeria; they are only available at designated facilities. In an instance where the location of such a facility is far from the home of an impoverished mother, lack of transportation fare can deprive the woman of immunizing her child. According to Antai (2018), in core-northern Nigeria, there is a large disparity in wealth distribution between the rich and the poor; therefore, this is likely to cause variation in healthcare access between them. The inequality in household wealth has been identified to be responsible for the low immunization coverage rates in areas characterized by the core-North situation. Gram, Soremekum and Asbroek (2019) submitted that the prevalence of complete immunization was found to be considerably higher among children of the rich compared to the poor.

Cui and Gofin (2021) in a study conducted on 45 Gavi-supported countries, where inequalities in vaccination coverage were examined, the level of wealth index poverty was one of the dimensions found to be associated with the largest inequalities in childhood immunization coverage. Devasenapathy and Ghosh (2019) stated that complete vaccination probability was higher among children from the highest wealth quintile household compared with the poorest Yenit, Assegid and Abrah (2015) stipulated that several factors are related to low immunization status such as family wealth and rural residence, child sex and age, long distance to health facilities low access to immunization services, poor health infrastructure, inadequate awareness of mother (caregivers, mothers perception to the accessibility of vaccines, missed opportunity, place of delivery, living attitude, lower number of trained manpower and high staff turnover.

The level of family income has been associated with immunization coverage by many; however, various studies looked at the role of parents/mothers' income level in the completion of immunization schedules in different countries and communities (Abdulbaqi, Tejideen & Isiaq, 2024). And the findings from these studies have shown various scenarios that have left some gaps in the literature. A study on the factors influencing compliance with immunization regimen among mothers in Moniya Community Ibadan, Nigeria (Rahji & Ndikom, 2019), and a similar study on the reasons for incomplete vaccination and factors for missed opportunities among rural Nigerian children indicates that children of parents of lower socioeconomic background have reported poor completion of their immunization regimen than children of parents of higher socioeconomic background (Abdulraheem & Onajole, 2021).

The correlation between household income and immunization service utilization is often significant. Lower-income households may face barriers such as lack of access to healthcare facilities, transportation, and information, resulting in lower immunization rates compared to higher-income households. Efforts to address these disparities often involve targeted outreach programs, education initiatives, and ensuring affordable access to vaccines for all socio-economic groups. Income can significantly affect the utilization of routine immunization. Lower-income families may face barriers such as lack of access to healthcare facilities, inability to afford transportation costs, or missed wages due to seeking immunization services. This can lead to lower immunization rates among economically disadvantaged populations compared to wealthier ones. Additionally, education levels and awareness about the importance of immunization can vary among different income groups, influencing their utilization of routine immunization services (Caius, 2021).

According to Elliot (2019), financial support can significantly impact a mother's utilization of immunization services for her children. When financial resources are limited, mothers may face barriers such as transportation costs, missed work, or the inability to afford healthcare expenses. Providing financial support, whether through subsidies for vaccines or assistance with transportation costs, can help improve access to immunization services and increase vaccination rates among children. Additionally, education and outreach programs can help raise awareness about the importance of immunizations and encourage

mothers to prioritize their children's health despite financial constraints. The financial capacity of a household can significantly impact maternal utilization of immunization services. Lower financial capacity may result in barriers such as the inability to afford transportation to healthcare facilities, out-of-pocket costs for vaccines, or missed work to attend appointments. This can lead to lower immunization rates among mothers and their children, affecting public health outcomes.

Purpose of the Study

The purpose of this study was to investigate determinants of the attitude of mothers towards utilization of immunization services in Eket Local Government Area of Akwa Ibom State, Nigeria. Specifically, the study sought to:

1. Examine the relationship between knowledge of immunization and the attitude of mothers towards the utilization of immunization services.
2. Assess how family income influences the attitude of mothers towards the utilization of immunization services.

Research questions

1. How does knowledge of immunization relate to the attitude of mothers towards the utilization of immunization services?
2. To what extent does family income influence the attitude of mothers towards the utilization of immunization services?

Statement of hypotheses

1. There is no significant relationship between knowledge of immunization and the attitude of mothers towards the utilization of immunization services.
2. Family income does not significantly influence the attitude of mothers towards the utilization of immunization services.

Methodology

Survey research design was adopted for this study. The survey design is considered most suitable because the researcher intends to investigate determinants of the attitude of mothers towards the utilization of immunization services. The population of the study consisted of all nursing mothers in Eket Local Government Area of Akwa Ibom State. Records from the State Ministry of Health revealed that there were 12,327 nursing mothers in the study area at the time of this investigation. Simple random sampling technique was adopted in selecting the communities used for the study. The sample of the study consisted of two hundred and forty-three (243) nursing mothers, selected from six (6) communities in Eket Local Government Area of Akwa Ibom State using a purposive sampling technique to ensure that only nursing mothers were selected for the study.

Instrumentation

The instrument used for the data collection in the study was a questionnaire titled Attitude of Mothers towards Utilization of Immunization Services Questionnaire (AMUISQ). The questionnaire was divided into two (2) sections. Section A contained respondents' data. Section B was developed using a modified four-point Likert scale of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD). It contained twenty items measuring the variables of the study. Items 1-5 measured knowledge of immunization, items 6-10 measured family income, and items 11-20 measured the attitude of mothers towards the utilization of immunization services. To ensure the validity of the instrument for data collection, the research presented the designed instrument to a Lecturer in Human Kinetics and Health Education and Measurement and Evaluation for face and content validity. A few modifications were made to some of the items in the research instrument to improve its validity. Data used for the study was obtained directly from respondents through the use of questionnaire designed for data collection. All the null hypotheses were restated and the independent variables and dependent variables were identified as well as the statistical tools utilized for data analysis, which were tested at a 0.05 level of significance.

Result and Discussion

Hypothesis One

There is no significant relationship between knowledge of immunization and the attitude of mothers towards the utilization of immunization services. The independent variable in this hypothesis is knowledge of immunization while the dependent variable is the attitude of mothers towards utilization of immunization services. Pearson Product Moment Correlation Statistical Tool was used for data analysis. The result of this analysis is presented in Table 1.

Table 1: Pearson Product Moment Correlation Analysis of the Relationship between Knowledge of Immunization and Attitude of Mothers towards Utilization of Immunization Services (N=243)

Variables	$\sum x$ $\sum y$	$\sum x^2$ $\sum y^2$	$\sum xy$	Cal.r	P.value
Knowledge of immunization	3639	4268	5327	0.372*	0.000
Attitude of mothers towards immunization	6353	6852			

*Significant at 0.05; df = 237

As presented in Table 1, the result of this analysis showed that the calculated r-value of 0.372 is higher than the p.value of 0.000 at a 0.05 level of significance with 237 degree of freedom. This indication of this result is that the null hypothesis is rejected. As a result, there is a significant relationship between knowledge of immunization and the attitude of mothers towards the utilization of immunization services in Eket Local Government Area of Akwa Ibom State.

Hypothesis Two

Family income does not significantly influence the attitude of mothers towards the utilization of immunization services. The independent variable in this hypothesis is family income while the dependent variable is the attitude of mothers towards utilization of immunization services. One-way analysis of variance statistical tool was employed for data analysis. The result obtained is presented in Table 2.

Table 2: One-way analysis of variance of the influence of family income on the attitude of mothers towards utilization of immunization services in Eket Local Government Area of Akwa Ibom State

Family income		**N**	**$\bar{X}$**	**SD**	
Low		48	26.748	2.683	
Medium		116	26.352	2.511	
High		79	27.016	2.730	
Total		243	26.583	2.642	
Source of variance	SS	df	MS	F	P.value
Between groups	152.435	2	413.135	1.214	.027
Within groups	1782.344	241	2.512		
Total	1934.779	243			

Not significant at 0.05; df= 236

The result as presented in Table 2 shows that the calculated F-value of 1.214 is less than the p.value of 0.027 at 0.05 level of significance with 2 and 236 degree of freedom. This implies that the null hypothesis is rejected. Therefore, there is a significant influence of family income on the attitude of mothers towards the utilization of immunization services in Eket Local Government Area of Akwa Ibom State.

Discussion of Findings

The findings obtained from the analysis of data and testing of the first hypothesis in the study showed that the null hypothesis was rejected. The implication of this finding is that there was a significant relationship between knowledge of immunization and the attitude of mothers towards the utilization of immunization services in Eket Local Government Area of Akwa Ibom State. The reason for this finding could be that the damage caused by the six childhood killer diseases to children has been devastating over the years. This has prompted parents and government agencies to find solutions, which immunization is key. The understanding of the benefits associated with immunization has encouraged several mothers to embrace routine immunization for their children. The knowledge mother has acquired with regard to immunization is largely responsible for their utilization of immunization services in the study area.

The finding of this study agrees with that of Davies (2022) who reported that knowledge of immunization plays a critical role in influencing the utilization of immunization. Understanding the importance of immunization in preventing infectious diseases increases the likelihood of seeking immunization services. Knowledge about the safety and efficacy of vaccines builds trust in immunization services, encouraging people to utilize them. Being informed about the availability and accessibility of immunization services enables individuals to take advantage of them when needed. Knowing the benefits of immunization, such as reducing the risk of illness and protecting vulnerable populations, motivates people to utilize immunization services for themselves and their communities. Understanding the risks associated with vaccine-preventable diseases helps individuals appreciate the importance of vaccination and motivates them to utilize immunization services. Knowledge of herd immunity and its role in protecting entire communities reinforces the importance of individual immunization, thus promoting the utilization of immunization services. Overall, knowledge of immunization is a powerful factor that can positively influence the utilization of immunization services by empowering individuals to make informed decisions about their health and the health of their communities.

The findings obtained from the analysis of data and testing of the second hypothesis in the study showed that the null hypothesis was accepted. The implication of this finding is that there was no significant influence of family income on the attitude of mothers towards the utilization of immunization services in the Eket Local Government Area of Akwa Ibom State. The reason for this finding could be that the income of most mother involved in this study did not constitute a barrier to their utilization of immunization services. Immunization services are not high-cost intensive services that require much financial commitment. This is because, in most instances, healthcare workers visit residences to administer the vaccine to children within the specified age limit.

The finding of this study is contrary to that of Eric (2020) who explained that not all health facilities can administer childhood immunization vaccines in Nigeria; they are only available at designated facilities. In an instance where the location of such a facility is far from the home of an impoverished mother, lack of transportation fare can deprive the woman of immunizing her child. The findings further collaborated with that of Antai (2018), in core-northern Nigeria, there is a large disparity in wealth distribution between the rich and the poor; therefore, this is likely to cause variation in healthcare access between them. The inequality in household wealth has been identified to be responsible for the low immunization coverage rates in areas characterized by the core-North situation. Gram, Soremekum and Asbroek (2019) also supported that the prevalence of complete immunization was found to be considerably higher among children of the rich compared to the poor.

Conclusion

The purpose of the study was to investigate and present findings on the attitude of mothers towards the utilization of immunization services in Eket Local Government Area of Akwa Ibom State. The findings obtained from the analysis of data and testing of hypotheses in the study revealed that there was a significant relationship between knowledge of immunization. The finding further revealed that there was no significant influence on family income and mothers' attitudes towards the utilization of immunization services in the study area.

Recommendations

Based on the findings obtained from the analysis of data and testing of the hypothesis in the study, the following recommendations are made:

1. Health Educators should continue to sensitize mothers within the study area to further empower them with the relevant knowledge required for effective utilization of immunization services for their children.
2. Nursing mothers across various income statuses should be adequately encouraged to continue to embrace the practice of immunization and improve the health of their children.

References

Abdulbaqi, S. Z., Tejideen, T. O., & Isiaq, A. T. (2024). Income level and savings capacity among employees of (public) universities in Kwara, Nigeria: Implications for wealth accumulation and entrepreneurial development. *KIU Journal of Education (KJED), 4*(2), 1-16.

Abdulraheem, T. I. & Onajole, W. O. (2021). Immunization attitude and practice of mothers in Lapei Local Government of Delta State. *Journal of Pediatrics,* 3(4), 54-64.

Akorede, S. N. (2024). Assessment of client satisfaction with healthcare service provision in federal tertiary institutions in Kaduna State, Nigeria. *ABUTH International Journal of Physiotherapy & Health Sciences, 24*(2), 27-33.

Akorede S. N., Muhammed, A. S., Isiaq, A. T., & Akorede, A. A. (2022). Impact and prospects of maternal health care services on maternal health in Zaria Local Government of Kaduna State. *International Journal of Advanced Research in Multidisciplinary Studies, 2*(1), 60-66.

Antai, R. N. (2018). Material knowledge, attitude and compliance regarding immunization of under-five children in primary healthcare centres in Ikorodu Local Government Area, Lagos State. *Journal of Clinical Science,* 16(2), 8-14.

Babalola, S. (2019). Factors influencing vaccine hesitancy among parents in Nigeria. *Journal of Vaccines and Vaccination*, 10(2), 1-8.

Birhanu, G. E. (2021). Assessment of knowledge, attitude and practice of mothers in Jos – North, regarding immunization. *IOSR Journal of Pharmacy*, 7(5) 34-45.

Caius, H. A. (2021). *Vaccination resistance, religion and attitudes to science in Nigeria*, London: The London School of Economic and Political Science (LSE).

Cui, F. E., & Gofin, T. A. (2021). What the world's religions teach, applied to vaccines and immune globulins. *Vaccines,* 31(9), 210-223.

Davies, N. O. (2022). Socio-economic determinants and inequalities in coverage and timeliness of early childhood immunization in rural Ghana. *Tropical Medicine and International Health*, 19(7), 802-811.

Devesenapathy, B. G., & Ghosh, K. A. (2019). Routine vaccination coverage in Northern Nigeria. Resight from 40 district level cluster surveys. *Journal of Pediatrics*, 11(2), 234-242.

Eke, R. B. (2022). Timeliness vaccination of measles containing vaccine and barriers to vaccination among migrant children in East China. *PLoS One*, 8(3), 73-79.

Elliot, G. C. (2019). Knowledge, attitude and practice on immunization among migrant mothers: A questionnaire development and field application. *International Journal of Vaccine Immunization,* 6(2), 1–7.

Elvis, D. A. (2021). Religion and public policy: Intersections interactions and solutions. *Journal Religion Health,* 44(2), 546-560.

Eric, B. D. (2020). Factors influencing full immunization coverage among 12-23 months of age children in Ethiopia. Evidence from the National demographic and health survey. *Public Health,* 15(1), 728-733.

Gram, W. A., Soremekum, K. M. & Asbroek, E. O. (2019). Risk factors for delay in age-appropriate vaccinations among *Gambian children Health Serve Resource,* 15(1), 240-248.

Kingston, S. A. (2022). Factors affecting access to information on routine immunization among mothers of under 5 children in Kaduna State Nigeria. *Pan African Medical Journal,* 27(23), 67-71.

Mahalingam, M. A. (2021). Measle outbreak as a catalyst for stricter vaccine exemption legislation. *JAMA*, 314,1229-1236.

National Population Commission (2018). *Nigeria's population data sheet,* Abuja: National Population Commission.

Okafor, P. N. (2022). Reasons for incomplete vaccination and factors for missed opportunities among rural Nigerian children. *Journal of Public Health and Epidemiology*, 3(4), 194-203.

Onah, N. O. (2021). Timeliness of childhood vaccinations in Kampala Uganda: A community-based cross-sectional study. *PLoS One*, 14(3), 26-34.

Rahji, F. A., & Ndikom, G. A. (2019). Factors Contributing to Low Immunization Coverage: A Review. *Madonna University Journal of Medicine and Health Sciences,* 3(1), 25-31.

Ramadan, T. A. (2022). Malaria vaccine: Prospects and challenges. *Madonna University Journal of Medicine and Health Sciences,* 2(2), 22-32.

Verulava, T. W. (2021). Immunization coverage among slum children: A Case study of Rajdhani City Corporation. *The Middle East Journal of Family Medicine*, 5(6), 124-131.

World Health Organization (2022). *Vaccines and immunization*. Retrieved from https://www.who.int/health-topics/vaccines-and-immunization/

Willock, N. U. (2023). Associated with immunization coverage of children in Assam, India: Over the first year of life. *Journal of Tropical Pediatrics*, 52 21(4), 249-57.

Yenit, R. C., Assegid, B. E., C. D. & Abrah, U. A. (2015). Predictors of defaulting from completion of child immunization in South Ethiopia – A case control study. *BMC Public Health*, 9(5), 213-219.

RELATIONSHIP BETWEEN INCINERATION AND THE INCIDENCE OF COMMUNICABLE DISEASES AMONG HOUSEHOLDS IN NORTH WEST ZONE, NIGERIA

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ABSTRACT

This study examined the relationship between incineration and the incidence of communicable diseases among households in North West, Nigeria. Ex-post facto research design was used. The respondents were drawn through simple random sampling, proportionate sampling and systematic sampling techniques. A total of one thousand, one hundred and fifty-two (1,152) households were used as a sample for this study. A close-ended questionnaire was used to obtain responses from the respondents, one thousand, one hundred and fifty-two (1,152) copies of the questionnaire were administered, retrieved and valid for analysis. Mean and standard deviation were used to answer the research question and the hypothesis was tested at a 0.05 level of significance using PPMC. The findings of the study revealed that there is a significant relationship between incineration and the incidence of communicable diseases (cholera, typhoid and malaria) among households in North West Nigeria. ($p = 0.013 < 0.05$; $r = 0.717$). Based on the findings of the study, it was concluded that there is a positive relationship between incineration and the incidence of communicable diseases among households in North West Nigeria. It was recommended that there should be an effort from the local community to provide a public incineration where households will quickly dispose of the waste product.

keywords: Incineration, Incidence, Communicable Diseases, Households, Environmental Health, Waste Management

Introduction

The relationship between waste management practices and public health has been a subject of significant concern globally, particularly in developing countries where inadequate waste disposal methods contribute to the spread of communicable diseases. Incineration, a waste management technique that involves the combustion of organic substances contained in waste materials, has been widely adopted as a means to reduce waste volume and minimize environmental pollution (Abdulrasaq et al., 2015; Amin et al., 2024; Rahman & Alam, 2020). However, its impact on public health, particularly its association with the incidence of communicable diseases, remains a critical area of investigation. This study focuses on the North West Zone of Nigeria, a region grappling with poor waste management systems and a high burden of communicable diseases, to explore the relationship between incineration practices and the prevalence of these diseases among households.

Globally, communicable diseases remain a leading cause of morbidity and mortality, particularly in low- and middle-income countries. According to the World Health Organization (WHO, 2022), infectious diseases such as tuberculosis, malaria, and diarrheal diseases account for over 17 million deaths annually, with sub-Saharan Africa bearing the highest burden. Murray (2022) reported that communicable diseases contribute to approximately 30% of global disability-adjusted life years (DALYs), underscoring their significant impact on public health. Poor sanitation and inadequate waste management systems exacerbate the spread of these diseases, particularly in regions with limited access to healthcare and clean water (Abdulbaqi, Tejideen & Isiaq, 2019).

In Africa, the burden of communicable diseases is disproportionately high, with the continent accounting for nearly 25% of global infectious disease cases despite representing only 16% of the world's population (Niohuru, 2023). Diseases such as malaria, cholera, and respiratory infections are prevalent, with malaria alone causing an estimated 384,000 deaths in Africa in 2020 (Kabiru et al., 2024; WHO, 2021). The lack of effective waste management systems in many African countries has been identified as a significant contributor to the persistence of these diseases. For instance, open dumping and burning of waste, common practices in many African cities, release harmful pollutants and pathogens into the environment, increasing the risk of disease transmission.

In Nigeria, communicable diseases account for a significant portion of the country's disease burden. According to the Nigeria Centre for Disease Control (NCDC, 2022), diseases such as cholera, Lassa fever, and measles remain endemic, with frequent outbreaks reported across the country. In 2021, Nigeria recorded over 100,000 cases of cholera, resulting in more than 3,000 deaths (NCDC, 2022). Poor waste management practices, including the indiscriminate dumping and burning of waste, have been identified as key factors driving the transmission of these diseases (Akorede et al., 2023; Amin et al., 2024; Aminu et al., 2020; Raphela et al., 2024). The North West Zone of Nigeria, characterized by rapid urbanization and inadequate infrastructure, is particularly vulnerable to the health impacts of poor waste management.

The incidence of communicable diseases is closely linked to environmental factors, including the quality of waste management systems. Improper disposal of waste creates breeding grounds for disease vectors such as mosquitoes and rodents, while the burning of waste releases toxic fumes and particulate matter that can compromise respiratory health (Gebrekidan et al., 2023). In many communities, waste is often burned openly, a practice that not only contributes to air pollution but also fails to destroy pathogens, leaving households at risk of exposure to infectious agents (Abubakar et al., 2022).

Incineration, when properly implemented, is considered an effective waste management practice that can reduce the volume of waste and destroy harmful pathogens (Rahman & Alam, 2020). Modern incineration facilities are designed to operate at high temperatures, ensuring the complete combustion of waste materials and the destruction of infectious agents (Siddiqua, Hahladakis & Al-Attiya, 2022). However, in many developing countries, including Nigeria, incineration is often carried out using rudimentary methods, such as open burning, which lack the necessary controls to prevent the release of harmful emissions. This raises concerns about the potential health impacts of incineration, particularly its role in the transmission of communicable diseases.

The relationship between incineration and the incidence of communicable diseases is complex and multifaceted. On one hand, properly managed incineration can reduce the risk of disease transmission by eliminating waste that serves as a reservoir for pathogens (Mazzei & Specchia, 2023). On the other hand, poorly managed incineration practices can release harmful pollutants and particulate matter, exacerbating respiratory conditions and increasing susceptibility to infections (Mazzei & Specchia, 2023). Additionally, the social and behavioural factors associated with waste disposal practices, such as the proximity of households to waste-burning sites, can influence the likelihood of disease transmission (Fadhullah, Imran, Ismail, Jaafar & Abdullah, 2022).

Previous studies have explored the health impacts of waste management practices, including incineration, in various contexts. For example, a study by Kumar and Goel (2020) found that improper incineration practices in urban slums in India were associated with increased rates of respiratory infections and diarrheal diseases. Similarly, a study in Ghana by Amoah, Abubakari and Gadegbeku (2019) reported that communities practising open burning of waste had higher incidences of malaria and cholera compared to those with access to formal waste management systems. These findings underscore the need for further research to elucidate the specific mechanisms through which incineration practices influence the incidence of communicable diseases, particularly in resource-limited settings.

Despite the growing body of evidence on the health impacts of waste management practices, there is a paucity of research focusing on the relationship between incineration and communicable diseases in Nigeria, particularly in the North West Zone. This region, characterized by high population density, inadequate waste management infrastructure, and a high burden of communicable diseases, presents a unique context for investigating this relationship. The researchers observed that households in the North West Zone of Nigeria are frequently exposed to the harmful effects of poorly managed incineration practices, including the release of toxic fumes and the incomplete destruction of waste. These practices are often carried out near residential areas, increasing the risk of exposure to infectious agents and pollutants. Additionally, the lack of awareness among community members about the health risks associated with improper waste disposal further exacerbates the problem. These observations highlight the urgent need for research to examine the relationship between incineration practices and the incidence of communicable diseases in this region.

Purpose of the Study

The study assessed the relationship between incineration and the incidence of communicable diseases (such as cholera, typhoid fever, and malaria) among households in North West Nigeria.

Research Question

What is the relationship between incineration and the incidence of communicable diseases (cholera, typhoid fever and malaria) among the households in North West Nigeria?

Hypothesis

There is no significant relationship between incineration and the incidence of communicable diseases (cholera, typhoid and malaria) among households in North West Nigeria.

Methodology

This study adopts an ex-post facto research design, which is appropriate since the information required already exists with the respondents, and no manipulation of variables is needed (Yusuf, 2014). The study's population consists of 5,847,472 regular households in the Northwest zone of Nigeria, as reported by the National Bureau of Statistics (NBS) (2022). A sample of 1,152 households was determined using Research Advisor's (2006) guideline, which suggests a sample size of 384 for populations exceeding one million. However, the sample size was tripled to enhance the generalizability of the findings. A multi-stage sampling technique was employed, incorporating simple random sampling for selecting six states, three local government

areas per state, and one town per local government. Proportionate sampling was then used to determine the number of respondents per town, and systematic random sampling was applied to select every fifth household.

The primary instrument for data collection was a structured questionnaire titled Relationship between Incineration and the Incidence of Communicable Diseases among Households in North West Nigeria (RIICDHNWZN). To establish its validity, the questionnaire was reviewed by five jurors from the Departments of Human Kinetics and Health Education and Nursing Sciences at Ahmadu Bello University, Zaria, and their feedback was incorporated into the final version. A pilot study was conducted in the Dogarawa and Emanto areas of Sabon Gari, Kaduna State, involving 115 respondents selected through systematic sampling. The instrument's reliability was confirmed using the Cronbach Alpha reliability test, which yielded a coefficient of 0.957, indicating a high level of reliability (Spiegel, 1992).

For data collection, an introductory letter from the Department of Human Kinetics and Health Education facilitated respondents' cooperation. With the assistance of five research assistants, systematic random sampling was employed to distribute and retrieve the questionnaires immediately after completion. Data analysis involved descriptive statistics (frequency and percentages) for demographic variables, mean and standard deviation for answering research questions, and Pearson Product Moment Correlation (PPMC) to test the hypotheses at a 0.05 significance level.

Results

Research Question: What is the relationship between incineration and the incidence of communicable diseases (Cholera, typhoid fever and malaria) among the households in North West Nigeria?

Table 1: Means Score of Responses to the relationship between incineration and the incidence of communicable diseases (cholera, typhoid fever and malaria) among the households in North West Nigeria

S/N	Items	Mean	Std. Dev.
1	Indiscriminate use of waste disposal facilities in our community has led to persistent outbreaks of communicable diseases (cholera, typhoid fever and malaria)	3.7864	1.27655
2	The lack of adequate drainage facilities in our community is a source of regular outbreaks of communicable diseases (cholera, typhoid fever and malaria)	4.3856	.98762
3	The lack of public toilet facilities in our community is a source of regular outbreaks of communicable diseases (cholera, typhoid fever and malaria)	3.9056	.98644
4	Lack of proper maintenance of public toilet facilities in our community is a source of regular outbreaks of communicable diseases (cholera, typhoid fever and malaria)	4.5674	.91463
5	Indiscriminate defecation in public places within our community is a source of outbreaks of communicable diseases (cholera, typhoid fever and malaria)	4.0789	.87634
	Aggregate Mean	**4.1448**	**1.00831**

Decision mean= 3.00

Table 1 shows that there is a significant relationship between incineration and the incidence of communicable diseases (cholera, typhoid fever and malaria) among the households in North West Nigeria. The aggregate mean of responses 4.1448 was found to be greater than the decision mean of 3.00. Since the aggregate mean is greater than the decision means, it can be concluded that there is a significant relationship between incineration and the incidence of communicable diseases (cholera, typhoid fever and malaria) among the households in North West Nigeria.

Hypothesis: There is no significant relationship between incineration and the incidence of communicable diseases (cholera, typhoid and malaria) among households in North West Nigeria.

Table 2: Pearson Product Moment Correlation Statistics on the relationship between incineration and the incidence of communicable diseases (cholera, typhoid and malaria) among households in North West Nigeria.

Variable		Incineration	Communicable Diseases
Incineration	Correlation Coefficient	1.000	.717**
	Sig. (2-tailed)	.	.013
	N	1,152	1,152
Communicable Diseases	Correlation Coefficient	.717**	1.000
	Sig. (2-tailed)	.013	.
	N	1,152	1,152

****. Correlation is significant at the 0.05 level (2-tailed).**

Table 2 shows the p-value of 0.013 is less than the 0.05 alpha levels of significance at a correlation index (r) level of 0.717. This shows that there is a relationship between incineration and the incidence of communicable diseases among households in North West Nigeria. Therefore, the null hypothesis which states that there is no significant relationship between incineration and the incidence of communicable diseases among households in North West Nigeria was rejected.

Discussions

The finding from the study revealed that there is a significant relationship between incineration and the incidence of communicable diseases (cholera, typhoid and malaria) among households in North West Nigeria. ($p = 0.013 < 0.05$ and $r =$

0.717). This finding aligns with several previous studies that have explored the environmental and health impacts of waste management practices. For instance, a study by Adedoyin, Akinwumi and Ojo (2020) in Nigeria found that improper waste disposal methods, including incineration, significantly contribute to the spread of waterborne and vector-borne diseases due to the contamination of air, water, and soil. Similarly, Olorunnimbe and Ojo (2021) highlighted that incineration, when not properly managed, releases harmful pollutants that exacerbate respiratory and gastrointestinal diseases, which are often precursors to communicable diseases like cholera and typhoid. These findings are consistent with the observed correlation in the study, confirming that incineration practices in North West Nigeria may be contributing to the high incidence of these diseases.

However, the relationship between incineration and malaria is less straightforward, as malaria is primarily transmitted through vector-borne mechanisms rather than direct environmental contamination. A study by Okeke, Eze and Uzochukwu (2019) argued that while incineration can reduce mosquito breeding sites by eliminating organic waste, improper incineration practices can create stagnant water pools in incineration pits, which may serve as breeding grounds for mosquitoes. This dual effect could explain the significant correlation observed in the study. On the other hand, a study by Smith, Brown and Johnson (2022) in a similar context in sub-Saharan Africa found no direct link between incineration and malaria incidence, suggesting that other factors such as climate and housing conditions may play a more critical role. This discrepancy indicates that the relationship between incineration and malaria may be context-specific and warrants further investigation.

Conclusion

The study concluded that there is a relationship between incineration and the incidence of communicable diseases (cholera, typhoid fever and malaria) among households in North West Nigeria.

Recommendations

Based on the findings of this study, the study recommended that there should be an effort from the local community to provide a public incineration where households will quickly dispose of the waste products.

References

Abdulbaqi, S. Z., Tejideen, T, O., & Isiaq, A. T. (2019). Perceived effects of poor sanitation on health of undergraduate students in Hall of Residents, University of Ilorin. *Osun Sociological Review, 5*, 112-122.

Abdulrasaq, Q. O., Jidda, K. A. & Akorede, S. N. (2015). Perceived Influence of Drainage and Waterways Dumping on the Environment among the People of Ilorin South Local Government Area. *Ilorin Journal of Health Promotion and Environmental Health Education, 1*(1), 104-114.

Abubakar, I. R., Maniruzzaman, K. M., Dano, U. L., AlShihri, F. S., AlShammari, M. S., Ahmed, S. M., Al-Gehlani, W. A. G., & Alrawaf, T. I. (2022). Environmental Sustainability Impacts of Solid Waste Management Practices in the Global South. *International Journal of Environmental Research and Public Health, 19*(19), 12717. https://doi.org/10.3390/ijerph191912717

Adedoyin, O. O., Akinwumi, I. A., & Ojo, A. T. (2020). Environmental health risks of improper waste disposal in Nigeria: A case study of Lagos State. *Journal of Environmental Management, 260*, 110-120.

Akorede, S. N., Isiaq, A. T., & Akorede, A. A. (2023). Assessment of cholera preventive practices among residents of Samaru Community, Sabon-Gari, Kaduna State, Nigeria. *Unnes Journal of Public Health, 12*(1), 46-52. https://doi.org/10.15294/ujph.v12i1.55178

Amin, A., Abdulrauf, A., & Isiaq, A. T. (2024). Strategies for the implementation of environmental protection regulations towards sustainable waste management in Oyo State. *Gusau International Journal of Management and Social Sciences, 7*(2), 83-104. https://doi.org/10.57233/gijmss.v7i2.05

Aminu, Y., Abdulkareem, A. B., & Akorede, S. N. (2020). Attitude towards malaria prevention strategies among registered antenatal care pregnant women in North-East zone, Nigeria. *Global Journal of Health Related Researches, 2*(2), 8-14.

Amoah, S. T., Abubakari, A., & Gadegbeku, C. A. (2019). Waste management practices and public health in urban Ghana: A case study of Accra. *Journal of Environmental Health Research, 19*(3), 45-58.

Fadhullah, W., Imran, N. I. N., Ismail, S. N. S., Jaafar, M. H., & Abdullah, H. (2022). Household solid waste management practices and perceptions among residents in the East Coast of Malaysia. *BMC public health, 22*(1), 1. https://doi.org/10.1186/s12889-021-12274-7

Gebrekidan, T. K., Weldemariam, N. G., Hidru, H. D., Gebremedhin, G. G., & Weldemariam, A. K. (2023). Impact of improper municipal solid waste management on fostering One Health approach in Ethiopia — Challenges and opportunities: A systematic review. *Science in One Health, 3*, 100081. https://doi.org/10.1016/j.soh.2024.100081

Kabiru, A., Akorede, S. N., Aminu, Y., Yusuf, B., Shehu, S., & Sani, M. A. (2024). Assessment of awareness, attitude and practice of non-pharmaceutical protocols in prevention of severe acute respiratory tract infections among non-civil servants in Northern Nigeria. *Global Journal of Health Related Researches, 6*(1), 57-62.

Kumar, S., & Goel, S. (2020). Health impacts of waste incineration in urban slums: Evidence from India. *International Journal of Environmental Health Research, 30*(4), 567-580.

Mazzei, H. G., & Specchia, S. (2023). Latest insights on technologies for the treatment of solid medical waste: A review. *Journal of Environmental Chemical Engineering, 11*(2), 109309. https://doi.org/10.1016/j.jece.2023.109309

Murray, C. J. L. (2022). The Global Burden of Disease Study at 30 years. *Nature Medicine, 28*(10), 2019–2026. https://doi.org/10.1038/s41591-022-01990-1

National Bureau of Statistics (2022). *Demographic Statistical Bulletin 2022*. https://www.nigerianstat.gov.ng/download/1241422

Nigeria Centre for Disease Control (NCDC). (2022). *Annual report on communicable diseases in Nigeria*. Abuja: NCDC.

Niohuru, I. (2023). Disease burden and mortality. In *Healthcare and disease burden in Africa* (pp. 35–85). SpringerBriefs in Economics. Springer. https://doi.org/10.1007/978-3-031-19719-2_3

Okeke, C. C., Eze, P. M., & Uzochukwu, B. S. (2019). Waste management and malaria prevalence in urban slums of Enugu, Nigeria. *African Journal of Environmental Science and Technology, 13*(4), 145-153.

Olorunnimbe, R. O., & Ojo, T. O. (2021). Health implications of waste incineration in developing countries: A Nigerian perspective. *International Journal of Environmental Health Research, 31*(3), 321-335.

Rahman, M., & Alam, J. (2020). Solid Waste Management and Incineration Practice: A Study of Bangladesh. *International Journal of Nonferrous Metallurgy, 9*, 1-25. doi: 10.4236/ijnm.2020.91001.

Raphela, T., Manqele, N., & Erasmus, M. (2024). The impact of improper waste disposal on human health and the environment: A case of Umgungundlovu District in KwaZulu Natal Province, South Africa. *Frontiers in Sustainability, 5*, 1386047. https://doi.org/10.3389/frsus.2024.1386047

Research Advisor (2006). *Research Advisor Sample Size*. http://www.researchadvisors.com.

Siddiqua, A., Hahladakis, J. N., & Al-Attiya, W. A. K. A. (2022). An overview of the environmental pollution and health effects associated with waste landfilling and open dumping. *Environmental Science and Pollution Research, 29*, 58514–58536. https://doi.org/10.1007/s11356-022-21578-z

Smith, J. A., Brown, L. M., & Johnson, K. R. (2022). Waste management and disease prevalence in sub-Saharan Africa: A systematic review. *Environmental Health Perspectives, 130*(2), 250-260.

Spiegel, M., (1992). Synthesizing evaluation perspectives, practices and evidence. *Proceedings of the American Evaluation Association*. Extension Evaluation Tropical Group: Seatle.

World Health Organization (WHO). (2021). *Global health estimates 2021: Disease burden by cause, age, sex, by country and region, 2000–2019*. Geneva: WHO.

World Health Organization (WHO). (2022). *World health statistics 2022: Monitoring health for the SDGs*. Geneva: WHO.

Yusuf, K. A. (2014). Evaluation of groundwater quality characteristics in Lagos City. *Journal of Applied Science, 7*, 1780-1784.

ASSESSMENT OF IMPACTS OF FLOOD DISASTER AND HAZARDS ON COMMUNITY HEALTH IN ILESE-IJEBU, OGUN STATE: THE HEALTH EDUCATION IMPLICATIONS

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ABSTRACT

Floods are one of the most common hazards to cause disasters and have led to extensive morbidity and mortality throughout the world. The study aimed to assess the impacts of flood disasters on community health, and the health education implications. and to identify, evaluate and determine the use of managerial skills on urban drainage systems and flood disasters in the community. A descriptive survey research design was adopted for the study. Two hundred and fifty (250) respondents were randomly selected among the inhabitants of Ilese-Ijebu. The findings reveal that 80% have adequate knowledge regarding flood disasters, they were aware that flood can lead to loss of life and properties, 70% of respondents agree that the waste disposal habit of the people is poor and has an impact on the occurrence of flood disaster, Results indicated by the perception of 98.4% that Health Education is vital to floods disaster mitigation. (80%) agreed that impacts on community health can be reduced by efficient disease surveillance during and after flooding, location of Health Care Facilities is also key to community health. The study concluded that people's perspective has a great impact on the consequences of flooding. The following recommendations were made the government should enforce environmental law and policy, and make provision for health educators and qualified environmental health officers in the community to educate and enlighten people on the proper way of disposing of their waste materials, causes and consequences of flood disaster.

Keywords; Flood Disaster, Community Health, Impacts, Health Education, Consequences

Introduction

Floods took over the access road to Ogun State College of Health technology due to poor drainage and other human activities in Ilese-Ijebu, Floods are the most common hazard to cause disasters and have led to extensive morbidity and mortality throughout the world. The impact of floods on the human community is related directly to the location and topography of the area, as well as human demographics and characteristics of the built environment (Du, FitzGerald, Clark & Hou, 2010). A common environmental problem in Nigeria is flood and it is said to occur when a body of water moves over and above an area of land which is not normally submerged. It could also be seen as the inundation of an area not normally covered with water, through a temporary rise in the level of stream, river, lake or heavy rainfall. Flood is a natural occurrence brought on by rainwater entering a drainage basin. The amount of flood varies according to precipitation and the drainage basin. In the words of Jonkman and Kelman (2015), flooding is "the presence of water in locations that are typically dry. Floods are defined as "the condition that occurs when water overflows the natural or artificial confines of a stream, river, or other body of water, or accumulates by drainage over low-lying areas." It is also described to be the accumulation of an abnormally large volume of water in an area which has refused to percolate or flow away, it usually occurs when there is heavy rainfall in an area and all the water refuses to sink into the soil but flows on the earth`s surface as floods. When such floods occur in the cities it is referred to as Urban Flooding (Ward, 2018).

Floods are typically categorized as natural disasters because they frequently result in severe property destruction, widespread homelessness, and, in many cases, fatalities. Excessive rainfall can result in rivers and canals overflowing their natural routes and spreading across the nearby area, which can result in floods. Additionally, storm-force winds pushing the ocean inland through low-lying areas can be the culprit (Robert, 2016). The occurrence of flood represents a major risk to riverside populations and floodplains, in addition to causing substantial impacts on the environment, including aquatic fauna and flora, and bank erosion. Flooding is becoming an increasingly severe and more frequent problem in Nigeria. Nigeria has witnessed diverse flood events in the past years and due to the high level of vulnerability and lack of coping capacity of the people, with the fast occurrence of extreme events resulting from climate change, many lives and properties are at risk of its impacts. According to Hunt (2015), weather elements like heavy or prolonged precipitation, snowmelt, or storm surges from cyclones, as well as significant human factors like structural dam and levee failures, changes to absorbent land cover with impervious surfaces, and insufficient drainage systems can increase the intensity of floods. Although the consequences of floods vary in intensity and scope depending on the topography, the level of human activity, the amount of water present, and the stakeholders' level of preparedness, they are always incapacitating (Dalil, Mohammad, Yamman, Husaini & Mohammed, 2015). Flooding is perhaps the weather-related hazard with the most significant global reach It can happen almost everywhere.

According to ActionAid (2006), four types of urban flooding can be recognized; localized flooding which occurs many times a year due to few and blocked drains, small streams in urban areas rising quickly after heavy rains but often passing through small culverts under roads, a major river flowing through urban area, and wet season flooding in lowland and coastal cities (Doswell, 2015).

Flooding occurs in Nigeria in three main forms which are; river flooding, urban flooding and coastal flooding. The heavy rainfall coupled with bad human activities about the environment and lack of drainage infrastructure in most Nigerian cities has left hundreds of people distressed and homeless. It should be mentioned that flooding in cities can contaminate water supplies and intensify the spread of epidemic diseases, diarrhoea, typhoid, scabies, cholera, malaria, dysentery and other water-borne diseases (Akorede, Isiaq & Akorede, 2023; Aminu, Abdulkareem & Akorede, 2020). However, flooding is not entirely natural and threatens the ecosystem. Furthermore, due to man's propensity towards coastal areas and flood plains, flooding frequently has an unfavourable impact on human activities and poses a risk when it does (Dalil, Mohammad, Yamman, Husaini & Mohammed, 2015).

Elaborated on the causes of flood disasters around the world, including the following: Human Interaction with his environment, As was already established, human contact with the environment through industrialization, technological advancement, urbanization, deforestation, fossil fuel burning, and agricultural activities significantly contribute to flooding. This is closely followed by Bad Planning**:** which is also the product of poor design, the building of structures on natural waterways or canals, and when humans have tried to control the water resources available to them by damming and other water control structures leading to floods (Agbonkhese, Agbonkhese, Aka, Joe-Abaya, Ocholi, & Adekunle, 2014).

Heavy/Excessively Prolonged Rainfall: Floods are typically brought on by prolonged or excessively heavy rain, or perhaps by both. Flooding can occur along sea coasts as a result of tropical typhoons hurricane-related wind-driven storm surges, and rain-swollen streams. Amongst others including, human activities, and natural flooding through streams**,** the most frequent or typical flooding in Nigeria occurs naturally through streams and is usually brought on by heavy downpours. Water in the stream or river will inevitably spill across its border and into surrounding settlements as a result of this. Floods happen for several reasons, but climatological factors are the most significant. Smaller amounts of rainfall may also cause flooding in a region already submerged (Agbonkhese et al. 2013). Causal factors of flood in Nigeria which include indiscriminate dumping of refuse on drainage channels to channel adjustment and poor drainage conditions have been observed by People and it is indeed becoming increasingly vulnerable as the urban population increases and the poor ones are pushed into the fragile areas which are prone to flooding. This invariably causes water in the stream or river to flow beyond its boundary to nearby settlements. Flooding is, however, not totally a natural phenomenon but an environmental hazard. Flood becomes a hazard when they impinge unfavourably on human activities as they frequently do because of the affinity which man tends to have for flood plains and coastal locations (Agbonkhese et al. 2013).

Effective community communication of risks to the community is essential for those at risk to limit the health risks and health consequences both in the short and long term. The health consequences of floods may be categorized broadly as direct or indirect. Direct consequences are those resulting from direct exposure to the water and the flooded environment which include drowning, injuries from debris, chemical contamination, and hypothermia. Indirect consequences are those associated with risks associated with the damage done by the water to the natural and built environment and include infectious diseases, malnutrition, poverty-related diseases, and diseases associated with displaced populations (Akorede, Dayil, Akorede & Isiaq, 2022; Ahern & Kovat, 2010; Nofiu, Akorede, Abubakar & Hussaini, 2021). Impacts of flooding and perhaps its hazards according to Obinna et al. (2018) include economic damage, disease outbreaks, contamination of potable water, mental health challenges and growth of settlement.

Flood menaces in Nigeria have been on the increase and have gotten worse in recent times, to reduce the threat of floods, proactive and preventive approaches combining structural and non-structural measures must be developed and implemented to curb the menace of floods.

Statement of the Problem

In Nigeria, flooding has remained a prevalent environmental problem. Natural Hazards such as flood events are part of nature and natural processes. Except for some floods generated by dam failure or landslides, floods are climatological phenomena influenced by geology, geomorphology, relief, soil, and vegetation conditions, and more recently climate crisis activity. Referring to the latter, our society has become more vulnerable to natural hazards such as flooding due to our human activities, environmental interventions and activities impacting the natural environment. Urbanization, agricultural practice, deforestation, and alterations in the natural drainage patterns have considerably changed the status quo of the river system, exposing communities to risk and vulnerability to flooding. Available studies have shown that there is frequent occurrence of flooding. Bamidele and Badiora (2019) confirmed that flooding has negative implications for the survival of livelihoods, and social and economic activities. Udoh (2014) and corroborated by Evans, Dominic, Evans and Utting (2017) affirmed that flooding in Nigeria is caused by the weak implementation of various policies, including physical planning, urban drainage system, lack of adherence to environmental sanitation which leads to streams and channel obstruction due to indiscriminate

waste disposal habits and human activities in flood plains. This research is therefore designed to assess the impacts of flood disasters on community health and identify, evaluate and determine the use of managerial skills on urban drainage systems and flood disasters in the community.

Objective of the Study

The specific objectives are to;

1. assess the impacts of flood disasters on community health.
2. Evaluate and determine the use of managerial skills on urban drainage systems and flood disasters in the community
3. Use of health education skills to reduce the causes of flooding

Research Questions

1. What are the impacts of flood disasters on community health?
2. What are the uses of managerial skills in urban drainage systems and flood disasters in the community?
3. What are the health education skills required to reduce the causes of flooding in the community?

Methodology

This study was carried out on the assessment of the impacts of flood disasters and hazards on community health in Ilese-Ijebu Area of Ogun State, the health education implication. The researchers adopted a descriptive survey research design because it is broader and accepted for this kind of study, it enables collections of personal and general information on the study area. The population of the study comprises the inhabitants of Ilese-Ijebu, it is located in Ijebu North East Local Government area of Ogun State with a cosmopolitan outlook. The sample for this study was two hundred and fifty (250) inhabitants of Ilese-Ijebu. The instrument adopted to obtain information was a self-structured questionnaire with a reliability index of 0.95. The four rating scales of strongly agree, agree, disagree and strongly disagree was used, and the questionnaire was validated by research experts. The data obtained were analyzed using frequency and percentage count.

Results and Discussion

Table 1: Distribution of Respondents' Socio-Demographic Characteristics (n = 250)

Variables	Frequency	Percentage (%)
Gender		
Female	160	64
Male	90	36
Age		
21-40	60	24
41-50	70	28
50 and above	120	48
Educational Status		
Primary	110	44
Secondary	80	32
Tertiary	60	24
Occupation		
Civil Servant	70	28
Farmer	50	20
Petty Trader	130	52

Table 1 above indicates that 160(64%) of the participants were female while 90 (36%) of the respondents were male, this implies most of the respondents were female. With regard to age, 60(24%) of the respondents were between the age of 21-40 years, 70 (28%) were between ages 41-50 and 120 (48%) were above > 51. In terms of Educational status, 80 (32%) of the respondents are secondary school holders, 110(44%) passed through primary school before embarking on the business and 60(24%) had tertiary certificate holders. This indicated that the majority of the respondents had one form of education or the other. The study shows that 70 (28%) of the respondents were occupied by civil servants, 50 (20%) were farmers, and while majority of the respondents were occupied by petty traders representing 130 (52%).

Table 2*:* Tabular Reflection of Participants' Knowledge about Flooding, Attitude Towards Flooding, Attitude Towards Mitigation Measures, Risk Perception of Flooding and Managerial Skills Towards Flooding.

Variables	Frequency	Percentage
Knowledge about flooding		
Poor knowledge	50	20%
Good knowledge	200	80%
Attitude towards flooding		
Unfavorable attitude	175	70
Favorable attitude	75	30
Attitude towards mitigation measures of flooding		
Unfavorable attitude	150	60
Favorable attitude	100	40
Risk perception of flooding		
High risk	200	80
Low risk	50	20
Managerial skills towards flooding		
Waste disposal/drainage	85	34
Environmental sanitation/ health education	165	66

Table 3, Measurement of Impact of Flood Disaster, Use of Managerial and Health Education Skills to Reduce Causes of Flood Disaster in the Community

Variable name	Category	Frequency	COR (95%CI)	AOR(95%CI)	P_value
Are you aware of flood disasters?	No	50	1	1	
	Yes	200	2.02(1.45, 2.82)	2.39(1.66, 3.45)	0.001
Attitude of people towards flood disaster	Unfavorable attitude	175	1	1	
	Favourable attitude	75	0.63(0.37, 1.09)	0.96(0.53, 1.75)	0.91
Impact of health promotion and environmental health Officers towards the mitigation of flooding	Good	205	2.16(1.19, 3.90)	1.64(0.86, 3.11)	0.31
	Poor	45	1	1	
Effectiveness of monthly environmental sanitation in the community	Good	100	1	1	
	Poor	150	2.27(1.58, 3.24)	1.58(1.03, 2.43)	0.04
The most common method adopted by the people in the community to avoid flooding	Indiscriminate waste dumping	170	1	1	0.38
	Bush burning	80	0.41(0.30, 0.57)	0.79(0.46, 1.34)	
Do the government provide sufficient waste disposal systems in the environment?	Yes	50	1	1	
	No	200	2.68(1.94,3.71)	2.54(1.79,3.60)	0.001
Do the behavioural patterns of the people have an impact on the occurrence of flood disasters?	Yes	180	1	1	
	No	70	0.44 (0.32, 0.61)	0.75 (0.45, 1.24)	0.26
Does the means of construction of a drainage system have an impact on flood disasters?	Yes	190	1	1	
	No	60	0.41 (0.30, 0.58)	0.76(0.48, 1.19)	0.23
Do the government check the building system of the environment regularly	Yes	65	0.57(0.39,0.83)	0.61 (0.41, 0.92)	
	No	185	1	1	0.02

Reveal of association between all potential independent variables on impacts, and attitude of the people towards flood disasters, drainage channels in the community and the use of managerial skills on urban drainage systems were analyzed using binary logistic regression.

Discussion of Findings

The findings reveal that 80% have adequate knowledge regarding flood disasters, they were aware that flood can lead to loss of life and properties, 70% of respondents agree that the waste disposal habit of the people is poor and has an impact on the occurrence of flood disaster, Results indicated by the perception of 98.4% that Health Education is vital to floods disaster mitigation. (80%) agreed that impacts on community health can be reduced by efficient disease surveillance during and after flooding, location of Health Care Facilities is also key to community health. The above findings are corroborated by the study of Agbonkhese, Agbonkhese, Aka, Joe-Abaya, Ocholi and Adekunle (2014). The findings of this study indicated that more than half of the study participants (60%) had poor attitudes towards flood mitigation measures. Among the mitigation strategies used by the respondents was indiscriminate waste dumping with 68% and 32% practising bush burning.

Conclusion

Flood menaces in Nigeria have been on the increase in recent times. Based on the theoretical review carried out by diverse scholars, the study concludes that flooding is a menace that rides with it a plethora of negative emotional, psychological, economic, and physiological impacts that require swift human intervention to manage, minimize and possibly prevent its occurrence ever again. One recent study of flooded Nigeria residents found that 64% felt the disaster had adversely affected people's health, with stress and anxiety. Even those living in areas that have not been directly affected by flooding could experience an increase in the incidence of mosquito-borne diseases or household mould, which can make some people quite ill. From the study people's perspective has a great impact on the consequence of flooding, perhaps inadequate health education knowledge and attitude of the people also has an impact on the occurrence of flooding in the area. This occurs due to human interaction with the environment, indiscriminate waste disposal, and inappropriate building planning, lack of drainage, inappropriate and bad planning, excessive and prolonged rainfall.

Proactive and preventive options involving structural and non-structural measures need to be adopted and implemented to curb the menace of floods. Structural measures such as check dams, levees, flood walls and adequate drainage systems will help control periodic inundation in the areas that are liable to flooding (Agbonkhese, Yisa & Daudu, 2013). The importance of sensitizing government and communities at all levels on the reality of climate change and possible risk reduction strategies is crucial in preventing flood menace in Nigeria. The need for an effective community-based early warning system for flood prevention and control in Nigeria cannot be over-emphasized. The government of any nation, among its functions, must protect the lives and properties of its citizens. Government at all levels need to shift from being reactive to being proactive in responding to flood menace.

Recommendation

The following recommendations are stipulated which if followed by the authority of the communities shall improve the knowledge of the people toward the causes and consequences of flood disaster.

1. The government should enforce environmental law and policy, and make provision for health educators and qualified environmental health officers in the community to educate and enlighten people on the proper way of disposing of their waste materials, causes and consequences of flood disaster.
2. House management agencies and town planners should ensure that the building of houses and structures are supervised and well-planned in a way that will not precipitate flooding, also mobilizing the community on the proper ways of constructing their gully system.
3. Health education and the environmental health officer must be embraced by the community and encouraged to carry out their duties as partners in progress.
4. Mitigation strategies should be improved upon in the community to prevent flooding before it happens rather than looking for solutions after damages have been done.

Reference

Agbonkhese, O., Agbonkhese, E. G., Aka, E. O., Joe-Abaya, J., Ocholi, M., & Adekunle, A. (2014). Flood menace in Nigeria: Impacts, remedial and management strategies. *Civil and Environmental Research, 6*(4), 71-88.

Agbonkhese, O., Yisa, G. L., & Daudu, P. I. (2013). Bad Drainage and its Effects on Road Pavement Conditions in Nigeria. Vol. 3 No 10

Ahern, M., & Kovat, S. (2010). *The Health Impacts of Floods: Floods Hazards and Health*. Trowbridge: Cromwell Press, pp 28–53.

Ahern, M., Kovats, R. S., Wilkinson, P., Few, R. & Matthies, F. (2015). Global health impacts of floods: Epidemiologic evidence. *Epidemiologic Reviews, 27*, 36-46.

Akorede, S. N., Dayil, B. K., Akorede, A. A., & Isiaq, A. T. (2022). Assessment of knowledge of malnutrition among Mothers of Under-5 in Sabon Gari Zaria. *Alhikmah Journal of Business Education, 2*(1), 17-21.

Akorede, S. N., Isiaq, A. T., & Akorede, A. A. (2023). Assessment of cholera preventive practices among residents of Samaru Community, Sabon-Gari, Kaduna State, Nigeria. *Unnes Journal of Public Health, 12*(1), 46-52. https://doi.org/10.15294/ujph.v12i1.55178

Amada, Ripley (2006). Flood, Tornadoes, Hurricanes, Wildfires, Earthquakes. Why we don't prepare? Time. August 28.

Aminu, Y., Abdulkareem, A. B., & Akorede, S. N. (2020). Attitude towards malaria prevention strategies among registered antenatal care pregnant women in North-East zone, Nigeria. *Global Journal of Health Related Researches, 2*(2), 8-14.

Bamidele, O. F., & Badiora, A. I. (2019). Flood disaster vulnerability in North Central Nigeria. *International Journal of Research and Innovation in Social Science, 3*(12), 364-371

Blaikie, P., Cannon, T., Davis, I., & Wisner, B. (1994). *At risk: natural hazards, people's vulnerability and disasters*. London: Routledge.

Center For Research on the Epidemiology of Disasters (2019). *International disasters database.* http://www.em-dat.net/.

Dalil, M., Mohammad, N. H., Yamman, U. M., Husaini, A. & Mohammed, S. E. (2015). An assessment of flood vulnerability on physical development along drainage channels in Minna. Niger State, Nigeria. *African Journal of Environmental Science and Technology, 9*(1), 38-46.

David E.A, Micah U 2022: A Breviloquent Review of the 2022 Flooding in Rivers State, Nigeria: Causes, Impact, and Panacea. *International Journal of Engineering and Information Systems (IJEAIS), 6*(12), 85-96.

Doswell, C. A. (2015). *Flooding*. University of Oklahoma Press.

Du, W., FitzGerald, G. J., Clark, M., & Hou, X. Y. (2010). Health impacts of floods. *Prehosp Disaster Med., 25*(3), 265–272.

Etuonovbe, A. K. (2011). *The devastating effect of flooding in Nigeria*. Hydrography and Environment: Epworth, Zimbabwe.

Evans, U. F., Dominic, K. O., Evans, G. U., & Utting, C. (2017). Analysis of the relative contributions of climatic elements and environmental variables to flood disaster in Uyo, Akwa Ibom State, *Nigeria. International Journal of Environmental Sciences and Natural Resources, 6*(2)52-56

Gwary, D. (2008). *Climate change, food security and Nigeria Agriculture*. Paper presented at the workshop on the challenges of climate change for Nigeria. NISER 19th-20th May 2008.

Ishaya, S., Ifatimehin, O. O., & Abaje, I. B. (2009). Mapping flood vulnerable areas in a developing urban centre of Nigeria. *Journal of Sustainable Development in Africa, 11*(4), 180-194

Jonkman, S. N. & Kelman, I. (2015). An analysis of the causes and circumstances of flood disaster death. *Journal of Disaster, 29*(1), 75-97.

Jonkman, S. N. (2005). Global perspectives on loss of human life caused by floods. *Journal of Natural Hazards, 34*(2), 151-175.

Kolawole, O. M., Olayemi, A. B., & Ajayi, K. T. (2011). Managing flood in Nigerian cities: Risk analysis and adaptation options – Ilorin city as a case study. *Archives of Applied Science Research, 3*(1), 17-24.

Nofiu, O. D., Akorede, S. N., Abubakar, B. S., & Hussaini, I. M. (2021). Influence of mass media in solving nutritional problems among junior secondary school students in Ilorin South Local Government Area, Kwara State. *Global Journal of Health Related Researches*, *3*(1), 42-49.

Obinna, V. C., Gobo, A. E., & Obinna, R. O. (2014). *Socio-economic and health impacts of the 2012 flooding in parts of the Niger Delta and policy implication*. Proceedings of the 2nd International Conference on Flood and Erosion Prevention, Protection and Mitigation. Sodave Classic Publication, Port Harcourt, Nigeria, 323.

Obinna, V. C., Weje, I. I., & Eli, Z. E. (2018). Perennial flooding and coping strategies of residents along Taylor Creek Channel in the Niger Delta Region, Nigeria. *The International Journal of Humanities & Social Studies, 6*(10), 169-177.

Robert, C. (2016). *Natural disasters and how we cope*. Millennium House Pty Ltd.

Robinson, H. (2019). *Morphology and landscape*. University Tutorial Press Limited.

Smith, K. & Ward, R. (2018). *Floods: Physical processes and human impacts*. John Wiley and Sons

Udoh, J. J (2015). Multi-hazard vulnerability mapping: An example of Akwa Ibom State, Nigeria. *European Scientific Journal, 11*(29), 293-300.

United States Department of Commerce (June 2012). "Hurricane Katrina Service Assessment Report" (PDF). Retrieved 2012

Wachukwu, F. C., Obinna, V. C., & Weje, I. I. (2020). Effects of 2019 flood and willingness of residents to relocate in parts of Obio/Akpor Local Government Area, Rivers State, Nigeria. *International Journal of Scientific and Research Publications, 10*(10), 57-71.

Ward, R. C. (2018). *Floods; A geographic perspective*. New York Press.

World Health Organization (2011). *Climate change: Fact and figures*. WHO Regional Office for Europe.

EFFECT OF HEALTH EDUCATION INTERVENTION PROGRAMME ON UTILIZATION OF IMPLANT AND INTRAUTERINE DEVICE FAMILY PLANNING METHODS AMONG WOMEN IN BAUCHI STATE, NIGERIA

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Abstract

This study assessed the effect of health education intervention programme on the utilization of implant and intrauterine devices of family planning methods among women in Bauchi State, Nigeria. Quasi-experimental pre-test and post-test experimental and control group design was adopted for this study. The population of the study comprised 1,661,760 women in Bauchi State. The sample size of this study was one hundred (100) participants selected using a multi-stage sampling technique. The instrument used for data collection in this study was a researcher-structured close-ended questionnaire. Descriptive statistics of Frequency counts and percentages were used to describe the socio-demographic information of the respondents, Means and standard deviations were used to answer the research questions. Paired sample test was used to test the hypotheses formulated, at 0.05 level of significance. The findings of the study revealed that There was a significant difference between control and experimental groups on utilization of implant (t=4.210; P=.000); intrauterine device (IUD) (t=4.877; P=.000) contraceptive method as a family planning among women in Bauchi State, before and after health education intervention. Based on the findings of this study it was concluded that the health education intervention programme promotes the utilization of injectable, oral pill implant female sterilization diaphragm contraceptive method of family planning among women in Bauchi State because the effect of health education intervention programme was significant. It was, therefore, recommended among others that since there was a significant increase in the utilization of injectable contraceptives, targeted campaigns and educational programs should be implemented to further promote this method. Providing additional information on the benefits and proper usage of injectable contraceptives can help sustain and increase their utilization.

Keywords: Effect, health education intervention programme, utilization, family planning methods and women

Introduction

Family planning methods and utilization, especially the use of modern contraceptives, seem to remain a complex problem and challenging among women in contemporary society, despite huge leaps of gains registered in some parts of the world, like Latin America (Frost & Doodo, 2021) since it was launched more than 50years ago. World Health Organization (WHO) (2019) defined family planning as a method that allows people to attain their desired number of children and determine the spacing of pregnancies. This is achieved through the use of contraceptive methods and the treatment of infertility. According to Elton, Sabula and Hussein (2023), family planning is the ability of women to space or limit their pregnancies between specified times, family planning refers to the use of different methods and techniques to regulate the number and spacing of children born to a family. Family planning is a method that allows one to control the number of children and the time between births, in other words, it is a way a woman decides whether she wants to have children, how many children she wants to have and when (WHO, 2020). Utilization of family planning methods needs to be increased and the content of such methods, Injectable, oral pills, implants, intrauterine devices (IUD), female sterilization, and diaphragm contraceptive methods expand to achieve the reproductive health of women (Akorede, Muhammed, Isiaq & Akorede, 2022).

The contraceptive method birth control implant may have temporary side effects the periods may become irregular, heavier, lighter, longer or shorter. It may make acne worse it doesn't offer any protection against sexually transmitted infections (STIs). It may interfere with certain medications and antibiotics. There is a small risk of skin infection at the site of the implant (WHO, 2021). Rapid population growth, which often paces economic growth and environmental sustainability, is a reality in most developing countries in sub-Saharan Africa. Since the early 1980s population growth rates in this region have remained at high levels; and contraceptive prevalence levels in many countries have remained 15% (World Bank, 2021). High rates of maternal and child mortality are often associated with rapid population growth (WHO, 2021). The contraceptive implant is about 1.6 inches long (4 centimetres) and approximately eight inches in diameter, the birth control implant is not known to have any side effects. Most side effects subside within a few months. Some of the potential side effects are; Acne, sporting or changes in normal menstrual bleeding, headache, sore breasts, and mood swings, let your provider know if you have side effects that last longer than a few months. There may be some ways to treat side effects before the removal of the device. But your provider can remove your implant at any time and can try another type of birth control (National Health Insurances Scheme, 2019).

An intrauterine device (IUD) is a form of birth control that a healthcare provider inserts into your uterus. Once it is inserted, an IUD can prevent pregnancy for up to 10 years or more, depending on the specific type. Your provider can remove your IUD at any time if you decide to become pregnant (Moshe, 2021). They are small, flexible plastic devices that are inserted into the woman's uterus. The most common (IUDs) contain copper and hormonal, and they work by preventing sperm from reaching an egg. Depending on the type, IUDs can protect 5 to 12-year-old women living with HIV can safely use IUDs. However, those at very risk of STIs or who currently have an active STI, such as gonorrhoea or Chlamydia, should not have an IUD inserted (Suleiman, Suleiman, Dashe & Akorede, 2024). The IUDs are very popular and widely used in Nigeria, particularly by older married women (John, 2019). The promotion of family planning in many countries especially Nigeria with high birth rates has the potential to reduce poverty and hunger, while at the same time averting 32 per cent of all maternal deaths and nearly 10 per cent of child mortality (Ross, 2022).

Globally, It requires heavier investment in education, health and transport merely to maintain these. To reduce the population growth rate, as well as the risk of women and children and the poverty level of society, contraceptive methods have been used as an effective measure in family planning all over the world: we must also step up efforts for family planning, which has a direct impact on maternal health. The need for family planning is growing fast, and it is estimated that "unmet needs" will grow by 40 per cent during the next 15 years (World Bank, 2020). African Countries with a large population especially Nigeria, and high density relative to available resources suffer tremendously from high fertility rates (WHO, 2019). Family planning practices reduce the spread of sexually transmitted diseases (STDs); and by addressing the problems of STDs, it helps reduce rates of infertility, it helps couples avoid unintended pregnancies.

Family planning in Nigeria in the present day context is nothing new nor is it any surprising concept. People now do not raise their eyebrows to hear the word 'family planning', rather it has been now accepted as something beneficial by the general public in the urban, and rural cities and towns, even though the control of population in Nigeria is a delicate issue given its social, cultural and economic condition. Family planning was listed alone of the basic elements of primary health care at the WHO conference in (2021), for which Nigeria was a party. It is an indispensable strategy for promoting family health planned deliveries promote the health of the mother, child and of husband, the mother is given enough time to recover from the effects of pregnancy and birth (John, Stan, Anna & Jolene, 2019) explains that the promotion of family planning in countries with high birth rates has the potential to reduce poverty and hunger and prevent 32% of all maternal deaths and nearly 10% of childhood deaths. However, in half of the 75 larger low-income and lower-middle-income countries (mainly in Africa), contraceptive methods remain low and fertility, population growth, and unmet need for family planning are high (Eastwood & Lipton, 2021). In 2023 the contraceptive prevalence rate among women in Nigeria was measured at 18 percent. Among Nigerian women who were married or in union, the rate stood at 21 percent, on 15 December 2023 (NHIS, 2023). The childbirth spacing (CBS) statistic of the state reveals that the majority of women of reproductive age (15-49 years) are unable to access CBS information and serious resulting in the maternal mortality ratio of 1859/100,000 higher than the national average of 700 maternal deaths per 100,000 live births and an estimated 12.5 per cent of married women using modern contraceptive methods in Bauchi State (NDHS, 2022) Bauchi State happens to be one of the State with low contraceptive prevalence rate reasons being largely that men perceive childbirth spacing as more of female responsibility hence, how involvement of male partners in childbirth spacing decision resulting in low uptake CBS services in the State. (NDHS, 2022)

The researcher observed that rising fertility rates and overpopulation growth continue to pose challenges to married women that result in unwanted pregnancies due to inadequate information in healthcare facilities and access to healthcare providers, lack of health education, and higher maternal mortality rate in Bauchi State. It was also observed that married women from the age of 15-49 years died as a result of problems linked to pregnancy and childbirth or developed a serious disability. The problems of delay in attending anti-natal care, pre-natal and post-natal health care may affect the health of the infants. It was discovered that religious beliefs are a means of discouragement for family planning methods.

Other issues identified by NHIS that affect the use of family planning methods are the overall cost and availability of contraceptive commodities, transportation and provider fees for contraceptive and health care services, fear of side effects, spouse approval, and cultural and religious factors among others. The childbirth spacing (CBS) statistic of the state reveals that the majority of women of reproductive age (15-49 years) are unable to access CBS information and serious resulting in the maternal mortality ratio of 1859/100,000 higher than the national average of 700 maternal deaths per 100,000 live births and an estimated 12.5 per cent of married women using modern contraceptive methods in Bauchi State (NDHS, 2022). Bauchi State happens to be one of the States with a low contraceptive prevalence rate reasons being largely that men perceive childbirth spacing as more of a female responsibility hence, how involvement of male partners in childbirth spacing decisions results in low uptake of CBS services in the State. (NDHS, 2022). There is a continued need for investment in family planning and related productive health services particularly for those who have difficulty obtaining these important services (Department of Health and Human Services, 2020). It is against this statement that the researcher intends to assess the effect of health education intervention programmed on the utilization of family planning methods among women in Bauchi State Nigeria.

Methodology

The research design for this study is quasi-experimental of pre-test and post-test experimental and control groups will be used. A quasi-experimental is an empirical intervention study used to estimate the causal impact of an intervention on a target population without random assignment. However, a quasi-experimental design of pre and post-test experiments and a control group is appropriate to investigate the effects of the educational intervention are common in educational research, the two groups will give a pre-test after which the researcher introduces a manipulation, for the study because the dependent variable of the study is measured one before the treatment is implemented. The population for the study consist of the entire married women in Bauchi State, which comprises twenty local government areas, the estimated population of married women is 1,661,760 which is of the total population of Bauchi State (NPC,2022).

The sample size of this study consists of one hundred (100) married women who were drawn from the population of Bauchi State Nigeria. This selection relied on Cohen and Manion (2001), who suggested that a minimum of (20) participants for the experimental research produced the desirable effect. Therefore, to have wider coverage and for generalization, the researcher decided to use 5% (100) of the participants out of the target population of 89,380 participants as a sample size for the study, fifty (50) experimental group and fifty (50) for the control group. Multistage sample techniques were used which involved the following stratified sampling, simple random, purposive sampling cluster sampling and convenient sampling. The stages are as follows: A **s**tratified sampling technique was used to divide the Bauchi State into three (3) strata. Namely: Bauchi South, Bauchi Central, and Bauchi North Senatorial Zone. Stratified random sampling is a method of sampling that involves the division of a population into smaller sub-groups known as strata.

Simple random sampling was used to select one senatorial zone from three stratums. A fish and bowl method of writing the name of each zone and container was used representing the list of the three senatorial zones of Bauchi State. The name of the LGAs was written on a piece of paper, folded and dropped into the corresponding container. Purpose sampling was used to select two wards from one local government area of Bauchi were we select. Cluster sampling was used to form participants into two (2) groups for the study which are experimental and control groups. The first select Ward PHC served as the control group while the second select Ward PHC served as the experimental group. This is because each ward has one PHC. A convenient sampling was used to select married women in the sampled wards, who were available to participate in the study, fifty for the experimental and fifty for the control group. This technique was used to give an equal chance of selection among all respondents. This was done to give equal chance to everyone.

The instrument that was used for data collection in this study is a researcher-structured close-ended questionnaire. The questionnaire was divided into seven (7) sections: Section A, B, and C, Section A contains four (4) items on demographic characteristics of the respondents, age, occupation, family income, and level of education. Section B consists of six (6) items on the utilization of Injectable contraceptive methods of family planning among women. Section C consists of six (6) items on the utilization of oral pills and contraceptive methods of family planning among women.

The researcher-developed instrument tagged “Effect of Health Education Intervention Programme in Utilization of Family Planning Methods among Women Questionnaire” (EHEIPUFPMAWQ) in Bauchi State. The researcher employed two trained research assistants from the wards and instructed them on various areas of assistance. The researcher and his research assistants proceed to each sampled ward to meet with the Ward Head, Religious leaders and the Head (in charge) of the primary health care (PHC) facility for introduction to the research work. The religious leader was requested to announce and invite participants from their congregation who were interested in participating in the research. Ward heads also be requested to invite interested adults within the community to participate in the research. Town criers and announces were used in the community to invite people to the study. These procedures were applied in all selected wards. The in charge of the PHC was requested to permit to use of the facility as a meeting point with respondents for intervention (lectures and experiments).

Furthermore, the researcher’s second visit to the sampled wards carried out the systematic sampling for participants on the number of people that turned out for the research. This procedure took place at the Local Government Educational Authority (LEA) Primary School of each selected ward. After the selection of samples at each ward, each L.G.A was one control and one experimental group at different wards. During this visit, a calendar for the intervention was drafted to suit the availability of respondents to enable optimum participation within six weeks. In this second visit, it involved the researcher selecting respondents based on the inclusion and exclusion criteria. Selected respondents from the study involved participants from the two selected wards. The name, address and phone number of all samples were recorded for documentation and follow-ups. They were notified of the venue for the intervention (treatment).

The effect of health education intervention programme on the utilization of family planning methods among women was implemented through teaching, instruction and demonstration in six-week sessions. A scheme of work and lesson plan has been planned and designed to be used for the period of the intervention. The programme implementation will be for 60 minutes per session. The six sessions will span for six (6) weeks with each session taking place weekly. The researcher with two assistants collected data from the respondents in both control and experimental groups before the intervention at the first session. Respondents in the treatment group received an educational intervention as described below.

While after the health education intervention programme data was collected from the control and experimental (treatment) group. Finally, to address the cues to action dimension of the HBM, the cell phone number of participants obtained during the first contact was used to call and send a text message reminder every two weeks for two months after the intervention on the importance of utilization of family planning methods. Posttest data will be collected after six (6) weeks from the intervention programme. The period of pretest and posttest data collection was twelve (12) weeks.

After collecting and sorting out copies of the questionnaire, a coding scheme was developed and each questionnaire was reviewed and coded into a computerized database using a Microsoft Excel spreadsheet. A descriptive statistic of frequencies and percentages was used to describe the demographic characteristics of the respondents and mean and standard deviation were used to answer research questions for the study. An inferential statistic of Paired sample t-test was used to test the formulated null- hypotheses 1, and 2 at 0.05 level of significance.

Result

Table 2: Demographic Information of the Respondents (N=100)

Age	Experimental Frequency	Experimental Percentage	Control Frequency	Control Percentage
16-20 years	07	14.0	06	12.0
21-25	12	24.0	11	22.0
26-30	10	20.0	10	20.0
31-35	08	16.0	09	18.0
36-40	11	22.0	10	20.0
41 and above	02	04.0	04	08.0
Total	**50**	**100.0**	**50**	**100.0**
Education				
Non-Formal Education	15	30.0	15	30.0
Primary School Certificate	17	34.0	12	24.0
Secondary School Certificate	13	26.0	10	20.0
Tertiary Education	05	10.0	13	26.0
Total	**50**	**100.0**	**50**	**100.0**
Occupation				
Civil Servant	15	30.0	17	34.0
Farmer	20	40.0	19	39.0
Business	15	30.0	14	28.0
Total	**100**	**100.0**	**50**	**100.0**
Socio-economic Status				
Family Monthly Income				
Below ₦50, 000	16	32.0	18	36.0
60,000-100,000	19	38.0	15	39.0
₦Above ₦100,000	15	30.0	17	30.0
Total	**30**	**100.0**	**50**	**100.0**

Table 1 shows the socio-demographic information of respondents of the experiment group, 07(14.0%) of the respondents are between the age of 16-20 years of age, 12(24.0%) are between the age of 21-25 years of age, 10(20.0%) are between 26-30 years of age, 08(16.0%) are between 31-35 years of age, 11(22.0%) of the respondents are between the age of 36-40 years while 02(04.0%) of the respondents are 41 and above years of age. The Table also shows the socio-demographic information of respondents of the control group, 06(12.0%) of the respondents are between the ages of 16 and 20 years of age, 11(22.0%) are between the ages of 21-25 years, 10(20.0%) are between 26-30 years of age, 09(18.0%) are between 31-35 years of age, 10(20.0%) of the respondents are between the age of 36-40 years while 04(08.0%) of the respondents are 41 and above years of age.

Regarding the educational status of the experiment group, 15(30.0%) have non-formal education, 17(34.0%) have primary school certificates, 13(26.0%) of the respondents have secondary school certificates, and 10(10.0%) of the respondents attended tertiary education. The Table further shows the educational status of the control group, 15(30.0%) are non-formal education, 12(24.0%) have primary school certificates, 10(20.0%) of the respondents have secondary school certificates, 10(10.0%) of the respondents attended tertiary education. Regarding the occupation of the experiment group, 15(30.0%) are civil servants, 20(40.0%) are farmers, and 15(30.0%) of the respondents are business. While, the control group, 17(34.0%) are civil servants, 19(39.0%) are farmers, and 15(30.0%) of the respondents are business. Table 1 also indicated the socio-economic status of the experiment group, 16(32.0%) earned below ₦50, 000, 19(38.0%) ₦60,000-100,000 monthly incomes while 15(30.0%) earned above ₦100,000 monthly income. While the family monthly income of the control group, 18(36.0%) earned below ₦50, 000, 15(39.0%) ₦60,000-100,000 monthly incomes while

Answering of Research Questions

Research Question one: What is the difference between control and experimental groups on utilization of implant contraceptive method of family planning among women in Bauchi State, before and after health education intervention programme?

Table 2: **Mean Scores and Standard Deviation on the Difference Between Control and Experimental Groups on Utilization of Implant Contraceptive Method of Family Planning among Women in Bauchi State, Before and After Health Education Intervention Programme**

			Control		Experimental		
Variable	**N**	**Test**	**Mean**	**SD**	**Mean**	**SD**	**Mean Difference**
Implant	50	Pre-test	8.78	4.15	9.44	4.29	0.66
	50	Post-test	9.48	3.90	17.74	5.81	8.26

Decision mean = 2.50

Table 2 indicated that there is a difference between the control and experimental group in the utilization of the oral pill contraceptive method of family planning after the health education intervention programme. The table also indicates that no pre-test mean score difference between the control (8.78) and the experimental group (9.44). However, there is a difference in the post-test mean score between the control (9.48) and experimental group (17.74). Therefore, the pre-test means the difference between the control and experimental is 0.66 which is less than the decision mean of 2.50, while the post-test means the difference between the control and experimental is 8.26 greater than the decision mean of 2.50. This shows that there was a difference between the control and experimental utilization of the oral pill contraceptive method of family planning among women in Bauchi State, before and after health education intervention programme.

Research Question Two: What is the difference between control and experimental groups on utilization of intrauterine device (IUD) contraceptive method of family planning among women in Bauchi State, before and after health education?

Table 3: **Mean Scores and Standard Deviation on the Difference Between Control and Experimental Groups on Utilization of Intrauterine Device (IUD) Contraceptive Method of Family Planning among Women in Bauchi State, before and after health education**

			Control		Experimental		
Variable	**N**	**Test**	**Mean**	**SD**	**Mean**	**SD**	**Mean Difference**
IUD	50	Pre-test	9.12	4.26	9.44	4.29	0.32
	50	Post-test	9.62	3.99	18.04	5.62	8.42

Decision mean = 2.50

Table 3 shows that there is a difference between the control and experimental group in the utilization of intrauterine device (IUD) contraceptive method of family planning after the health education intervention programme. The table also indicates that no pre-test mean score difference between the control (9.12) and experimental group (9.44). However, there is a difference in the post-test mean score between the control (9.62) and the experimental group (18.04). Therefore, the pre-test means the difference between the control and experimental is 0.32 which is less than the decision mean of 2.50, while the post-test means the difference between the control and experimental is 8.42 greater than the decision mean of 2.50. This shows that there was a difference between the control and experimental on utilization of intrauterine device (IUD) contraceptive method of family planning among women in Bauchi State, before and after health education intervention programme.

Testing of Research Hypotheses

Hypotheses One: There is no significant difference between control and experimental groups on the utilization of implant contraceptive method as a family planning among women in Bauchi State, before and after health education intervention programme

Table 4: Summary of Paired sample t-test on significant difference between control and experimental groups on utilization of implant contraceptive method as a family planning among women in Bauchi State, before and after health education intervention programme

Variable	**Test**	**N**	**Experimental**		**Control**		**Mean Diff.**	**t-value**	**Df**	**p-value**
			Mean	**Std. Dev.**	**Mean**	**Std. Dev.**				
Utilization of implant contraceptive method	Pre-test	50	9.44	4.29	8.78	4.15	0.66	4.210	99	0.000
	Post-test	50	17.74	5.81	9.48	3.90	8.26			

(t-critical = 1.96, df=99, p <0.05)

The test result for the hypothesis revealed in Table 4 that there is a significant difference in the pre and post-test of the experimental and control groups. The table indicates that no pre-test mean score difference between the control (8.78) and the

experimental group (9.44). However, there is a difference in the post-test mean score between the control (9.48) and the experimental group (17.74). Therefore, the pre-test means the difference between the control and experimental is 0.66 which is less than the decision mean of 2.50, while the post-test means the difference between the control and experimental is 8.26 greater than the decision mean of 2.50. The analysis further shows that a p-value of 0.000 was less than 0.05 (0.000<0.05) and a t-value of 4.210 is greater than 1.96. These observations provided enough evidence for retaining the null hypothesis. Thus, with this result, we can conclude that the null hypothesis: There is a statistically significant difference between the control and experimental group in on utilization of the implant contraceptive method as a family planning among women in Bauchi State, before and after health education intervention programme is rejected. It means that there is a significant difference between the control and experimental group in on utilization of implant contraceptive methods as a family planning among women in Bauchi State, before and after health education intervention programme.

Hypotheses Two: There is no significant difference between control and experimental groups on the utilization of intrauterine device (IUD) contraceptive method as a family planning among women in Bauchi State, before and after health education intervention programme

Table 5: Summary of Paired Sample t-test on the Significant Difference Between Control and Experimental Groups on Utilization of Intrauterine Device (IUD) Contraceptive Method as a Family Planning among Women in Bauchi State, Before and after Health Education Intervention Programme

Variable	Test	N	Experimental		Control		Mean Diff.	t-value	Df	p-value
			Mean	Std. Dev.	Mean	Std. Dev.				
Utilization of intrauterine device (IUD) contraceptive method	Pre-test	50	9.44	4.29	9.12	4.26	0.32	4.877	99	0.000
	Post-test	50	18.04	5.62	9.62	3.99	8.42			

(t-critical = 1.96, df=99, p <0.05)

The test result for the hypothesis revealed in Table 5 that there is a significant difference in the pre and post-test of the experimental and control groups. The mean score for the pre-test of 9.11 and the post-test of 13.61 respectively while the difference is 4.50. The mean value for both tests showed that it is above the benchmark mean of 2.50. The standard deviation value for the pre-test of 4.22 and the post-test of 4.86 respectively. The analysis further shows that a p-value of 0.000 was less than 0.05 (0.000<0.05) and a t-value of 4.210 is greater than 1.96. These observations provided enough evidence for retaining the null hypothesis. Thus, with this result, we can conclude that the null hypothesis: There is a statistically significant difference between the control and experimental group in on utilization of implant contraceptive method as a family planning among women in Bauchi State, before and after health education intervention programme is rejected. It means that there is a significant difference between the control and experimental group in on utilization of implant contraceptive methods as a family planning among women in Bauchi State, before and after health education intervention programme.

Discussion

The mean value indicates that no pre-test mean score difference between the control (9.12) and the experimental group (9.44). However, there is a difference in the post-test mean score between the control (9.62) and experimental group (18.04). Therefore, the pre-test means the difference between the control and experimental is 0.32 which is less than the decision mean of 2.50, while the post-test means the difference between the control and experimental is 8.42 greater than the decision mean of 2.50. The analysis further shows that a p-value of 0.000 was less than 0.05 (0.000<0.05) and a t-value of 4.210 is greater than 1.96. These observations provided enough evidence for retaining the null hypothesis. Thus, with this result, we can conclude that the null hypothesis: There is a statistically significant difference between the control and experimental group in on utilization of the implant contraceptive method as a family planning among women in Bauchi State, before and after the health education intervention programme is rejected. The mean difference of 4.50 indicates a difference. It means that there is a significant difference between the control and experimental group in on utilization of implant contraceptive methods as a family planning among women in Bauchi State, before and after health education intervention programme. The result is in line with another study conducted by Ellis, Moab, Marathi and Await (2021) on the effect of utilization practices of family planning among married women in Maser, intervention was undertaken on a random sampling of married women (n = 100) attending healthcare service in the town of Maser during the years (2021) for infant care. The finding of the study revealed that the awareness level of married women about the benefits of utilization of family planning practice was significantly increased from 9% before intervention to 35% after the health education intervention.

The mean value table indicates that no pre-test mean score difference between the control (9.12) and the experimental group (9.44). However, there is a difference in post-test mean scores between the control (9.62) and the experimental group (19.08). Therefore, the pre-test means difference between the control and experimental is 0.32 which is less than the decision mean of

2.50, while the post-test means difference between control and experimental is 9.46 greater than the decision mean of 2.50. The analysis further shows that a p-value of 0.000 was less than 0.05 (0.000<0.05) and a t-value of 4.210 is greater than 1.96. These observations provided enough evidence for retaining the null hypothesis. Thus, with this result, we can conclude that the null hypothesis: There is a statistically significant difference between the control and experimental group in on utilization of implant contraceptive method as a family planning among women in Bauchi State, before and after health education intervention programme is rejected. The mean difference of 4.55 indicates a difference. It means that there is a significant difference between the control and experimental group in on utilization of implant contraceptive methods as a family planning among women in Bauchi State, before and after health education intervention programme. The result does not agree with the study of Adam (2020) on factors effect on utilization of family planning among women in India. A study was conducted among 500 women in two of India, who were selected from different health care services. The intervention group (n = 100) received 2hours of health education intervention in small groups (four or five mothers per group) every 2 weeks for 3 consecutive months and the result of the study indicated that women in the intervention group had a significant increase in awareness regarding utilization practice of family planning from 40% to 70% after the intervention.

Summary of Major Findings

Based on the data collected, analysed and discussed, the following results were obtained:

1. There was a significant difference between control and experimental groups on the utilization of injectable contraceptive methods as a family planning among women in Bauchi State, before and after health education intervention (t= 3.010, P=.001).
2. There was a significant difference between control and experimental groups on the utilization of oral pills contraceptive method as a family planning among women in Bauchi State, before and after health education intervention programme (t=2.323, P=.000).

Conclusions

Based on the findings of this study, the following conclusions were drawn:

1. Health education intervention programme improves utilization of implant contraceptive method as a family planning of women in Bauchi State.
2. Health education intervention programme enhances the utilization of the intrauterine device (IUD) contraceptive method as a family planning for women in Bauchi State.

Recommendations

The findings indicate that there were significant differences between control and experimental groups on the utilization of various contraceptive methods as family planning among women in Bauchi State before and after the health education intervention. The following are;

1. Married Women: Continue to seek information about different family planning methods and how they align with your health needs and personal circumstances.
2. Health Educators: Integrate comprehensive family planning education into community outreach programs, focusing on correcting misconceptions and providing information on the various available methods.
3. Health Care Providers: Offer counselling on different family planning methods and provide follow-up services to support continuous use. This should include addressing any side effects and changing methods if necessary.
4. Government: Develop policies that promote access to family planning services, including subsidizing costs for low-income families. Improve the quality and accessibility of reproductive health services by training more healthcare workers, upgrading facilities, and integrating family planning services into primary healthcare.
5. Non-Governmental Organizations (NGOs): Partner with local communities to organize outreach programs that educate women and families about the importance of family planning.
6. Community Members: Form support groups among women to share experiences, and encourage, and promote the use of family planning methods.

References

Akorede S. N., Muhammed, A. S., Isiaq, A. T., & Akorede, A. A. (2022). Impact and prospects of maternal health care services on maternal health in Zaria Local Government of Kaduna State. *International Journal of Advanced Research in Multidisciplinary Studies, 2*(1), 60-66.

Ehlers, D., Elton, J. Sabula., Hussein. &. (2019). Integration of an Essential Services Package (ESP) in Child and Reproductive Health and Family Planning with a Micro-credit Program for Poor Women: E\experience from a Pilot Project in Rural Bangladesh. *World Dev., 29*(9), 1611- 1621.

Etukudo, I.W. (2018). Information as Determinant of Utilization of Family Planning Services in Rural Akwa Ibo State of South-South Nigeria. Mediterranean Journal of Social Sciences, 6 (4) 445- 453

Frost, F.& Do doo, T. (2021). Successful Proof of Concept of Family Planning and Immunization Integration in Liberia. *Glob Health Sic Part, 3*(1), 71-84.

John, C., Jolene, F., Stan, B, Alex E, Anna, G., & Jolene, I. (2019). Family planning the unfinished agenda The Lancet Sexual and Reproductive Health Series October 2018. http://www.who.int/reproductivehealth/publications/general/lancet_3.pdf

Mosher, I. H., & Ruben R. (2021). Communication, Knowledge, Social Network and Family Planning Utilization among Couples in Kwanzaa, Tanzania. *Afar J Reproduction Health, 17*(3), 57-69.

NHIS (2020) Knowledge and use of contraceptive methods in rural Serer Senegal. *Santé, 13*(1), 31-37.

NPC (2022). National Bureau of statistic (web, 2022)

Ross, J. A., & Winfrey, W. L. (2022). Contraceptive use, intention to use and unmet need during the extended postpartum period. *International Family Planning Prospect, 27*(1), 20-27.

Suleiman, H., Suleiman, S., Dashe, V., & Akorede, S. N. (2024). Assessment of practice HIV/AIDS prevention strategies among commercial sex workers in Kano metropolis, Kano State, Nigeria. *Zaria Journal of Studies in Education, 6*(1), 174-181.

WHO (2021) Family planning/Contraception Available from: http://www.who.int/en/newsroom/fact-sheets/detail/family-planningth sexually transmitted infection in Hong Kong, J. Sex Med. 2019; 9(12):3009-3017. doi:10.1111/j.1

WHO Maternal mortality WHO (2022) http://www.who.int/mediacentre/factsheets/fs348/en/

World Bank (2019).Niger - Providing all Nigeriens with food, education and health care: a demographic perspective. Washington, DC: World Bank. http://documents.worldbank.org/curated/en/138391468124172844/Niger-Providing-all-Nigeriens-with-food-education-and-health-care-a-demographic-perspective

World Health Organization WHO (2022) family planning retrieved from www.who.

ASSESSMENT OF THE INFLUENCE OF STANDARD SPORTS FACILITIES ON THE PERFORMANCE OF BASKETBALL PLAYERS IN NIGERIAN UNIVERSITY GAMES ASSOCIATION (NUGA) COMPETITIONS

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Abstract

This study assessed the influence of standard sports facilities on the performance of Basketball players in Nigeria University Games Association (NUGA) competitions. Three (3) purposes and their corresponding Research Questions and Hypotheses were formulated to guide the study. Ex-post-facto research design was employed in the study. The population for this study was one thousand seven hundred and twenty-eight (1,728). This consisted of 96 Directors of Sports 96 Deputy Directors of Sports of Universities, 96 Basketball coaches and 1440 Basketball Players in Federal and States Universities in Nigeria. The sample size for this study was five hundred and forty (540) drawn using simple random and purposive sampling techniques. The instrument used in this study was a self-developed questionnaire. The questionnaire consisted of three (3) sections A to C formed with (4) point modified Likert's rating scale. In deciding on the research questions, the decision mean score of 2.50 was used. To validate the instrument and establish its reliability, a pilot study was conducted using fifty (50) respondents from Michael Opkara University Umudike, Abia State (25) and Adamawa State University, Mubi (25) where a Cronbach Alpha reliability index of 0.833 was obtained which made the instrument reliable for the study. The researcher and twelve (12) research assistants administered and retrieved the questionnaire for the study within six (6) weeks. The data collected was analyzed using Statistical Package for Social Science (SPSS) version 26. Mean and standard deviation were used to answer the research questions, while Chi-Square statistic was used to test all the null hypotheses at 0.05 alpha level of significance. Findings from the study revealed that Standard sports facilities significantly influenced the motivation, training and safety of basketball players for effective performance in NUGA competitions ($p = 0.000$). It was concluded that adequate provision of standard sports facilities influenced the level of motivation, player training and safety for the effective performance of basketball players in NUGA competitions. The study thus recommended that there is a need to ensure continuous provision of sports facilities for Basketball among Universities involved in the NUGA games competitions to maintain the level of motivation of players for effective performance.

Keywords: Assessment, Influence, Standard Sports Facilities, Performance, Basketball Players, Nigerian University Games Association (NUGA), Competitions

Introduction

Sports performance is a multifaceted phenomenon influenced by various factors, including the quality of sports facilities, coaching, athlete motivation, and training regimens. In basketball, the availability and standard of sports facilities play a critical role in shaping the performance of players. Globally, the importance of standard sports facilities in enhancing athletic performance has been widely acknowledged. According to the International Association of Athletics Federations (IAAF), the quality of sports infrastructure directly affects the physical and psychological readiness of athletes (IAAF, 2020). A well-maintained basketball courts with proper flooring, lighting, and facilities reduce the risk of injuries and enhance player performance. Studies have shown that athletes training in substandard facilities are more prone to injuries and perform below their potential (Smith, Brown & Harris, 2019). In contrast, athletes with access to state-of-the-art facilities demonstrate improved skills, endurance, and overall performance (Jones & Green, 2021).

In Africa, the state of sports facilities remains a challenge, impacting the performance of athletes across various disciplines. Many African countries struggle with inadequate funding for sports infrastructure, leading to poorly maintained facilities and limited access to modern facilities (Adeyemo, 2018). For basketball players, this often translates to playing on uneven courts, using outdated facilities, and training in unsafe environments. These conditions not only hinder performance but also discourage young athletes from pursuing sports professionally (Mbang & Okon, 2020). Despite these challenges, some African nations, such as South Africa and Kenya, have made strides in improving sports facilities, resulting in notable improvements in athlete performance (Kipchumba, 2021). However, the majority of African countries, including Nigeria, still lag in this regard.

In Nigeria, the state of sports facilities is a pressing issue that has hindered the development of athletes across various sports, including basketball. Many universities and sports centres lack standard basketball courts, modern training facilities, and adequate lighting systems (Oluwatoyin, 2019). This has significantly impacted the performance of basketball players, particularly those participating in NUGA competitions. A study by Adeleke and Ojo (2020) revealed that Nigerian university

basketball players often train in substandard facilities, which limits their ability to compete effectively at higher levels. Furthermore, the lack of proper maintenance of existing facilities exacerbates the problem, leading to frequent injuries and reduced motivation among players (Eze & Onyema, 2021).

The Nigerian University Games Association (NUGA) competitions are a prestigious platform for university athletes to showcase their talents and compete at a national level. Established in 1966, NUGA has played a pivotal role in promoting sports among Nigerian universities and nurturing young athletes (NUGA, 2021). However, the quality of sports facilities available to participants has been a recurring concern. Many universities lack the infrastructure needed to support effective training and competition, particularly in basketball. This has raised questions about the extent to which NUGA competitions truly serve as a breeding ground for future basketball stars (Akinola, 2020).

Standard sports facilities are essential for optimizing athlete performance, particularly in a highly technical sport like basketball. These facilities include well-designed courts, modern training facilities, proper lighting, and safety measures such as padded flooring and first aid provisions (Johnson, Martinez & Lopez, 2020). The absence of such facilities can lead to suboptimal training conditions, increased injury rates, and diminished player morale. For basketball players, access to standard facilities ensures that they can practice essential skills such as dribbling, shooting, and defensive manoeuvres in a safe and conducive environment (Williams & Brown, 2019). Moreover, standard facilities contribute to the psychological well-being of athletes, as they feel valued and supported in their pursuit of excellence (Taylor, 2021).

The influence of standard sports facilities on the performance of basketball players cannot be overstated. Research has shown that athletes who train in high-quality facilities exhibit better technical skills, physical fitness, and tactical awareness (Martinez & Lopez, 2020). In NUGA competitions, the availability of standard basketball courts and training facilities can significantly enhance the performance of players. For instance, playing on a well-maintained court with proper markings and flooring allows players to execute movements with precision and confidence (Harris, 2021). Conversely, substandard facilities can lead to poor performance, as players struggle to adapt to uneven surfaces and inadequate facilities (Okafor, 2019). Therefore, investing in standard sports facilities is crucial for improving the performance of basketball players in NUGA competitions.

Standard sports facilities also play a vital role in motivating basketball players to perform at their best. When athletes have access to modern and well-maintained facilities, they are more likely to feel motivated and committed to their training (Smith & Jones, 2020). This is particularly important for university athletes, who often balance academic responsibilities with sports. The psychological impact of training in a conducive environment cannot be underestimated, as it fosters a sense of pride and belonging among players (Brown & Green, 2021). In contrast, the lack of standard facilities can lead to frustration and demotivation, ultimately affecting player performance (Adeyemi, 2019).

Adequate training is another critical aspect influenced by the availability of standard sports facilities. Basketball players require consistent and high-quality training to develop their skills and physical fitness. Standard facilities provide the necessary infrastructure for effective training, including access to modern facilities, proper court dimensions, and adequate lighting (Johnson, Martinez & Lopez, 2020). These elements enable players to engage in rigorous and structured training sessions, which are essential for improving performance. On the other hand, the absence of standard facilities limits the quality and intensity of training, as players are forced to adapt to suboptimal conditions (Oluwatoyin, 2019).

The safety of basketball players is another critical consideration influenced by the quality of sports facilities. Standard facilities are designed with safety in mind, incorporating features such as padded flooring, proper court markings, and first aid provisions (Harris, 2021). These measures reduce the risk of injuries and ensure that players can train and compete in a safe environment. In contrast, substandard facilities often lack these safety features, increasing the likelihood of accidents and injuries (Eze & Onyema, 2021). For basketball players in NUGA competitions, the availability of safe facilities is essential for minimizing the risk of injuries and ensuring their long-term well-being. This study therefore assessed the influence of standard sports facilities on the performance of Basketball players in NUGA competitions.

Purpose of the Study

The purpose of this study was to assess the influence of:

1. Standard sports facilities on the motivation of Basketball Players for effective performance in NUGA competitions.
2. Standard sports facilities on adequate training of Basketball skills for effective performance in NUGA competitions.
3. Standard sports facilities on the safety of Basketball Players for effective performance in NUGA competitions.

Research Questions

Based on the purpose of the study, the following research questions were raised:

1. To what extent would standard sports facilities influence the motivation of Basketball Players for effective performance in NUGA competitions?
2. To what extent would standard sports facilities influence adequate training of Basketball Players for effective performance in NUGA competitions?
3. To what extent would standard sports facilities influence the safety of Basketball Players for effective performance in NUGA competitions?

Hypotheses

1. Standard sports facilities do not significantly influence the motivation of Basketball Players for effective performance in NUGA competitions.
2. Standard sports facilities do not significantly influence the adequate training of Basketball Players for effective performance in NUGA competitions.
3. Standard Sports facilities do not significantly influence the safety of Basketball Players for effective performance in NUGA competitions.

Methodology

The research employed Ex-post-facto research design. According to Asenahabi (2019), this design allows for the collection of non-manipulable data, which is suitable for evaluating the influence of existing sports facilities on player performance. Data was gathered through a self-developed questionnaire, which was structured into three sections. A modified four-point Likert scale (Strongly Agree = 4, Agree = 3, Disagree = 2, Strongly Disagree = 1) was used to score responses, with a decision mean score of 2.50 set as the benchmark for interpreting results. The questionnaire was validated by five experts in sports management, and a pilot study involving 50 respondents from two universities (Michael Opkara University Umudike and Adamawa State University, Mubi) was conducted to establish reliability. The Cronbach's Alpha reliability index of 0.833 confirmed the instrument's reliability, as values closer to 1 indicate higher reliability (Zakariya, 2022).

The study population comprised 1,728 individuals, including 96 Directors of Sports, 96 Deputy Directors of Sports, 96 basketball coaches, and 1,440 basketball players from federal and state universities across Nigeria. The universities were categorized into 16 zones, with each zone represented by a mix of federal and state institutions. A sample size of 540 respondents was selected using a two-stage sampling procedure. In the first stage, simple random sampling was employed to select one federal and one state university from each of the 16 NUGA zones, ensuring equal representation. This was achieved by randomly picking two universities from each zone using a blindfolded selection process. In the second stage, purposive sampling was used to select Directors of Sports, Deputy Directors, coaches, and basketball players from the 30 sampled universities.

Data collection was conducted over six weeks, with the researchers and 12 trained research assistants administering the questionnaires. Before data collection, permission was obtained from the Head of the Department of Human Kinetics and Health Education at Ahmadu Bello University, Zaria, to facilitate access to the respondents. The collected data was analyzed using the Statistical Package for Social Sciences (SPSS) version 26. Descriptive statistics of mean and standard deviation were used to address the research questions, while Chi-Square statistics were employed to test the null hypotheses at a 0.05 level of significance.

Results

Research Question One: To what extent would standard sports facilities influence the motivation of basketball players for effective performance in NUGA competitions?

Table 1: Mean scores and Standard Deviation of Responses on the Influence of Standard Sports Facilities on the Performance of Basketball Players in NUGA Competitions

S/N	Items	Mean	Std. Dev.
1	My level of motivation improves when modern facilities are provided for effective performance in NUGA competitions	2.47	1.030
2	My confidence level improves when better facilities are provided for effective performance in NUGA competitions	2.71	1.079
3	My level of motivation improves when there are available Basketball facilities for effective performance in NUGA competitions	2.72	1.047
4	My performance level in Basketball improves when sports facilities are adequate for effective performance in NUGA competitions	2.62	1.042
5	My level of motivation improves when sports facilities are adequately maintained for effective performance in NUGA competitions	2.69	1.074
6	The provision of sports facilities for NUGA competitions has motivated me to improve my performance in Basketball for effective performance in NUGA competitions	2.63	1.055
7	My level of performance has improved with the provision of adequate modern sports facilities for effective performance in NUGA competitions	2.69	1.030
8	My level of performance in Basketball NUGA competitions has not improved as a result of inadequate sports facilities for effective performance in NUGA competitions	2.90	1.019
	Aggregate mean	**2.68**	**1.047**

(Benchmark = 2.50)

Table 1 indicated that the respondents were generally of the view that the provision of standard sports facilities influences the motivation of basketball players for effective performance in NUGA as indicated by their mean scores in Table 1. The respondents agreed that their level of motivation improved when modern facilities were provided and they had more confidence in effectiveness along with performance improvement. Respondents agreed that their performance levels improved when standard sports facilities were adequately maintained. The respondents agreed that the provision of sports facilities for NUGA competitions motivated them to improve their performances during the competitions and helped them to maintain improved performances in NUGA competitions. The respondents were therefore of the view that inadequacies in the provision of standard facilities would lead to a lack of improvement in the game during the competitions. The analysis reveals a mean aggregate of 2.68 which is greater than the benchmark of 2.50 (2.68 > 2.50). The result of the analysis implies that the respondents believed that the availability of standard sports facilities influences the motivation of basketball players for effective performance in NUGA competitions.

Research Question Two: To what extent would standard sports facilities influence adequate training of basketball players for effective performance in NUGA competitions?

Table 2: Mean scores and Standard Deviation of Responses on the Influence of Standard Sports Facilities on Adequate Training for Effective Performance of Basketball Players in NUGA Competitions

S/N	Items	Mean	Std. Dev.
1	My level of performance has improved due to the effective execution of Basketball skills for effective performance in NUGA Competitions	2.79	1.070
2	The provision of sports facilities has enhanced my effective execution of Basketball skills for effective performance in NUGA competitions	3.00	1.051
3	I will find it difficult to effectively execute Basketball skills as a result of outdated sports facilities for effective performance in NUGA competitions	2.88	1.114
4	My performance in basketball competition would have improved the execution of my basketball skills if defective sports facilities were used for effective performance in NUGA competitions	2.60	1.060
5	Partaking in basketball competitions has improved my skills as a result of the proper use of sports facilities	2.75	1.057
6	Regular participation in NUGA Basketball competitions with the availability of sports facilities has enhanced the proper execution of skills for effective performance in NUGA Competitions	2.81	1.102
7	I have good execution of Basketball skills due to proper maintenance of sports facilities for effective performance in NUGA Competitions	2.67	1.163
8	I regularly participate in Basketball competitions for effective execution of Skills for effective performance in NUGA Competitions	2.79	1.113
	Aggregate mean	**2.79**	**1.091**

(Benchmark = 2.50)

Respondents believed that standard sports facilities have a major influence on adequate training by basketball players for effective performance in NUGA competitions. It was the opinion of the respondents that their levels of performance improved due to the effective execution of basketball skills attributable to the availability of standard facilities during the competitions. Respondents were of the view that the available improved facilities enhanced the effective execution of basketball skills by them during the competitions and that they would find it difficult to effectively execute acquired basketball skills where outdated sports facilities were used in the competitions. Respondents were of the view that the improved execution of basketball skills would not be possible where defective sports facilities were involved in such competitions. The respondents believed that their partaking in the competition improved their skills as a result of proper use of the available standard sports facilities. The respondents agreed that regular participation in NUGA basketball competitions with the use of available standard sports facilities enhanced the proper execution of their acquired skills for effective performance in the competitions. This could explain their agreement with the suggestion that they have good execution of basketball skills due to proper maintenance of sports-provided facilities for effective performance in the competitions. In what could be described as a motivational strategy, the respondents agreed that they regularly participate in basketball competitions for the effective execution of acquired skills towards effective performance in NUGA competitions. The analysis reveals a mean aggregate of 2.79 which is greater than the benchmark of 2.50 (2.79 > 2.50). The result of the analysis implies that sports facilities influence adequate training of basketball players for effective performance in NUGA competitions.

Research Question Three: To what extent would standard sports facilities influence the safety of basketball players for effective performance in NUGA competitions?

Table 3: Mean opinions of Respondents on the Influence of Standard Sports Facilities on the Safety of Basketball Players for Effective Performance in Competitions

S/N	Items	Mean	Std. Dev.
1	Regular use of sports facilities in Basketball competitions has improved my safety for effective performance in NUGA competitions	2.79	1.100
2	Basketball Player's safety depends on the proper use of sports facilities for effective performance in NUGA Competitions	3.32	0.986
3	Players proper usage of sports facilities promotes their safety for effective performance in NUGA Competitions	3.27	0.969
4	Proper adherence to instructions promotes the safety of Basketball players for effective performance in NUGA Competitions	3.13	0.940
5	Warming up during competitions in Basketball promotes the safety of Basketball players for effective performance in NUGA Competitions	2.77	0.903
6	Educating Basketball players on the use of sports facilities promotes their safety Warming up during competitions in Basketball promotes the safety of Basketball players for effective performance in NUGA Competitions	2.85	0.941
7	Providing sufficient players rest during practice situations promotes the safety of Basketball players for effective performance in NUGA Competitions	3.13	0.951
8	I wear protective equipment for NUGA competitions to promote my safety for effective performance in NUGA Competitions	3.02	0.951
	Aggregate mean	**3.04**	**0.962**

(Benchmark = 2.50)

The respondents agreed that those standard sports facilities had a major influence on the safety of basketball players' effective performance in NUGA competitions. In the table, the respondents were of the view that regular use of sports facilities in basketball competitions improved their safety and enhanced their performances in the competitions. The respondents agreed that basketball players' safety depends on the proper use of sports facilities and that proper usage of sports facilities promotes the safety of players towards effective performance in competitions. Respondents were of the view that players have to adhere to instructions to promote safety and ensure effective performance in the game during competitions. The respondents therefore agreed that educating basketball players on the use of sports facilities could help in promoting their safety along with providing them sufficient time to rest during practices. Respondents were of the view that players wear protective equipment for safe and effective performance during the games. The analysis reveals a mean aggregate of 3.04 which is greater than the benchmark of 2.50 (3.04 > 2.50). The result of the analysis implies that standard sports facilities influence the safety of basketball players for effective performance in NUGA competitions.

Hypotheses Testing

Hypothesis I: Standard sports facilities do not significantly influence the motivation of basketball players for effective performance in NUGA competitions.

Table 4: Chi-square (χ^2) Analysis of the Influence of Standard Sports Facilities on the Motivation of Basketball Players for Effective Performance in NUGA Competitions

Variable	N	df	Cal. χ2 value	p-value	Decision
Facilities and motivation of players	540	21	156.668	0.000	Rejected

X^2 Crit =*32.7*, (df = 21) P < 0.05

Results in Table 4 above show that Standard sports facilities significantly influence the motivation of basketball players for effective performance in NUGA competitions. The reason is that the P-value of 0.000 is less than 0.05 level of significance, while the chi-square (χ2) Cal. value of 156.668 is greater than the chi-square critical value of 32.7 (X^2 Cal (156.668) > X^2 Crit (32.7), P < 0.05) at df 21. Therefore, the null hypothesis which states that "Standard sports facilities do not significantly influence the motivation of basketball players for effective performance in NUGA competitions' was rejected. Hence, the

result implies that Standard sports facilities significantly influence the motivation of basketball players for effective performance in NUGA competitions.

Hypothesis II: Standard sports facilities do not significantly influence adequate training of basketball players for effective performance in NUGA competitions

Table 5: Chi-square Analysis on the Influence of Adequate Training of Basketball Players for Effective Performance in NUGA Competitions

Variable	N	df	Cal. $\chi 2$ value	p-value	Decision
Facilities and Players' Training	540	21	97.398	0.000	Rejected

X^2 Crit =*32.7*, (df = 21) P < 0.05

Results in Table 5 above show that Standard sports facilities significantly influence the adequate training of basketball players for effective performance in NUGA competitions. The reason is that the P-value of 0.000 is less than 0.05 level of significance, while the chi-square ($\chi 2$) Cal. value of 97.398 is greater than the chi-square critical value of 32.7 (X^2 Cal (97.398) > X^2 Crit (32.7), P < 0.05) at df 21. Therefore, the null hypothesis which states that "Standard sports facilities do not significantly influence adequate training of basketball players for effective performance in NUGA competitions' was rejected. Hence, the result implies that Standard sports facilities significantly influence the adequate training of basketball players for effective performance in NUGA competitions.

Hypotheses III: Standard facilities do not significantly influence the safety of basketball players for effective performance in NUGA competitions.

Table 6: Chi-square Analysis of the Influence of Standard Sports Facilities on the Safety of Basketball Players for Effective Performance in NUGA Competitions

Variable	N	df	Cal. $\chi 2$ value	p-value	Decision
Facilities and Safety of the players	540	21	421.333	0.000	Rejected

X^2 Crit =*32.7*, (df = 21) P < 0.05

Results in Table 6 above show that Standard facilities significantly influence the safety of basketball players for effective performance in NUGA competitions. The reason is that the P-value of 0.000 is less than 0.05 level of significance, while the chi-square ($\chi 2$) Cal. value of 421.333 is greater than the chi-square critical value of 32.7 (X^2 Cal (421.333) > X^2 Crit (32.7), P < 0.05) at df 21. Therefore, the null hypothesis which states that "Standard facilities do not significantly influence the safety of basketball players for effective performance in NUGA competitions.' was rejected. Hence, the result implies that Standard facilities significantly influence the safety of basketball players for effective performance in NUGA competitions.

Discussion of Findings

Hypothesis One revealed that the provision of standard sports facilities significantly influences players' motivation towards effective performance of basketball during the NUGA competitions. It was revealed that respondents were of the view that their level of motivation improved when modern facilities were provided and that such provisions enhanced their confidence for performance improvement. The study revealed that respondents agreed that their performance levels improved when the sports facilities were standard and adequately maintained. The respondents were of the view that lack of such facilities does not motivate players in their performance and often leads to a lack of improvement in the game during the competitions. The test of the hypothesis revealed that the expressed opinion was significant. This finding is in line with Vealey and Chase (2016) who opined that some psychological factors may serve as barriers, blocking players from getting to this zone of optimal functioning which include the level of motivation and availability of Basketball facilities.

The finding of this study was also in line with that of Weiss and Wiese-Bjornstal (2009) who worked on Psychosocial Aspects of Sports Injury Rehabilitation and found that sports facilities influence an athlete's motivation and performance. Weiss and Wiese-Bjornstal (2009) argue that the quality of sports facilities plays an integral role in motivating athletes. When facilities are well-equipped, athletes can train more effectively, which enhances their physical and mental preparedness. Furthermore, quality facilities can boost athletes' morale by providing an environment that reflects the institution's commitment to their success. According to Weiss and Wiese-Bjornstal (2009), athletes feel more motivated to perform well when they have access to facilities that meet their training needs and competitive demands. This idea aligns with the finding from the study, where the availability of standard facilities led to enhanced motivation and performance during the NUGA competitions. This study also supported that of Schneider and Fortier (2012) who found that the availability of high-quality sports facilities is crucial for improving athletes' emotional and psychological states. They added that a positive environment in terms of well-equipped

gyms, courts, and other training areas can significantly enhance an athlete's motivation by fostering a sense of pride, belonging, and institutional support. When athletes feel that they have access to world-class facilities, they are more likely to feel confident in their training and competition, leading to improved performance. More so, the study supported that of Baker and Roberts (2016) who found that better sports infrastructure has a direct correlation with enhanced athlete performance. They argued that athletes who train in well-maintained, state-of-the-art facilities have a higher sense of self-efficacy, leading to improved motivation, better mental focus, and greater success in competition. Their study also, emphasized that sports infrastructure goes beyond just physical facilities to include the support systems that accompany them, such as coaching staff, medical support, and access to performance technology.

Hypothesis Two: the study revealed that the use of standard sports facilities significantly influences the adequate training of basketball players for effective performance in NUGA competitions. It was found that respondents believed that players' levels of performance improved due to the effective execution of basketball skills attributable to the availability of standard facilities during the competitions. It was found that available improved facilities enhanced the effective execution of basketball skills by players during the competitions and that players find it difficult to effectively execute acquired basketball skills where outdated sports facilities were used in the competitions. Respondents were of the view that the improved execution of basketball skills would not be possible when defective sports facilities were involved in such competitions. The study revealed partaking in the competition improved the skills of players as a result of proper use of the available standard sports facilities. The study revealed that the use of available standard sports facilities enhanced the proper execution of the acquired skills by players which was one of the reasons the players regularly participate in the games. The finding here supported a previous report by Oyilogwu (2017) in his study titled “The psychological effect of facilities on athletes’ who found that it would be impossible to achieve satisfactory results from basketball players whose training facilities are inadequate or substandard.

Hypothesis Three: revealed that the provision of standard sports facilities significantly influences the safety of basketball players for effective performance in NUGA competitions. The finding revealed that regular use of standard sports facilities for basketball competitions improved the safety and enhanced performances of players in the competitions. It was revealed that respondents agreed with the notion that basketball players' safety depends on the proper use of sports facilities and that proper usage of sports facilities promotes the safety of players towards effective performance in competitions. It was revealed that respondents held the opinion that players have to adhere to instructions to promote safety and ensure effective performance in the game during competitions. The respondents were therefore of the opinion that educating basketball players on the use of sports facilities could help in promoting their safety along with providing them with sufficient rest time during practices. The finding is consistent with the report of Ojeme (2020) who found that the realization of sustainable sports development in Nigeria to become a world-class sporting nation and that training facilities as well as frequent competitions are those major factors which place the United State-based basketball players in better standard than the home-based.

Conclusion

Based on the findings of the study, the study concluded that:

1. The provision of standard sports facilities significantly enhances the motivation of basketball players, contributing to their effective performance in NUGA competitions.
2. The availability of standard sports facilities plays a crucial role in ensuring adequate training for basketball players, which is essential for their effective performance in NUGA competitions.
3. The use of standard sports facilities positively influences the safety of basketball players, which is a critical factor for their effective performance in NUGA competitions.

Recommendations

The following recommendations are made based on the findings and conclusion reached in this study:

1. There is a need to ensure continuous provision of sports facilities for Basketball among Universities involved in the NUGA games competitions to maintain the level of motivation of players for effective performance.
2. There is a need to ensure continuous training with standard facilities for effective performance in NUGA competition.
3. There is a need to ensure continuous provision of sports facilities in universities involved in NUGA games competitions to maintain the level of safety of players for effective performance.

References

Adeleke, F. O., & Ojo, O. T. (2020). The impact of sports facilities on the performance of university athletes in Nigeria. *Journal of Sports Science, 12*(3), 45-56.

Adeyemi, T. (2019). Motivational factors influencing the performance of Nigerian university athletes. *African Journal of Physical Education and Sport Science, 8*(2), 78-89.

Adeyemo, A. (2018). Challenges of sports development in Africa: A case study of Nigeria. *International Journal of Sports Management, 10*(1), 23-34.

Akinola, B. (2020). The role of NUGA in promoting sports among Nigerian universities. *Nigerian Journal of Sports Studies, 15*(4), 12-20.

Asenahabi, B. M. (2019). Basics of research design: A guide to selecting appropriate research design. *International Journal of Contemporary Applied Researches, 6*(5), 76-89.

Baker, A. R., & Roberts, A. L. (2016). Infrastructure and Athlete Performance: The Impact of Facilities on Sports Success. *Journal of Sports Infrastructure Development*, 18(3), 123-134.

Brown, L., & Green, M. (2021). Psychological impact of sports facilities on athlete performance. *Journal of Applied Sport Psychology, 33*(2), 145-160.

Eze, C., & Onyema, P. (2021). Safety concerns in Nigerian sports facilities: Implications for athlete performance. *African Journal of Health and Safety, 9*(1), 67-78.

Harris, R. (2021). The role of standard sports facilities in injury prevention among basketball players. *Journal of Sports Medicine, 14*(3), 89-102.

International Association of Athletics Federations (IAAF). (2020). *Global standards for sports facilities*. Retrieved from https://www.iaaf.org

Johnson, P., Martinez, L., & Lopez, R. (2020). The impact of sports infrastructure on athlete training and performance. *International Journal of Sports Science, 18*(2), 34-45.

Jones, R., & Green, S. (2021). The relationship between sports facilities and athlete performance: A global perspective. *Journal of Sports Economics, 22*(4), 56-70.

Kipchumba, E. (2021). Sports infrastructure development in Africa: Lessons from Kenya and South Africa. *African Journal of Sports Management, 13*(1), 45-58.

Martinez, L., & Lopez, R. (2020). The influence of sports facilities on technical and tactical skills in basketball. *Journal of Basketball Studies, 7*(1), 12-25.

Mbang, U., & Okon, E. (2020). Challenges of sports development in Nigeria: A focus on basketball. *Nigerian Journal of Sports Science, 11*(2), 23-34.

NUGA. (2021). *History and objectives of the Nigerian University Games Association*. Retrieved from https://www.nuga.org.ng

Ojeme, E. O. (2020). Standard sports facilities, equipment and the new challenges of the 21st century and sports development in Nigeria. *Federal Ministry of Sports and Social Development* (pp. 112-122). Abuja.

Okafor, C. (2019). The impact of substandard sports facilities on athlete performance in Nigeria. *Journal of African Sports Development, 10*(3), 67-78.

Oluwatoyin, A. (2019). Sports infrastructure and athlete performance in Nigerian universities. *Nigerian Journal of Physical Education and Sports Science, 14*(2), 45-56.

Oyilogwu, D. B. (2017). The psychological effect of facilities on athletes. *Journal of Sport, 4*, 23-26.

Schneider, M., & Fortier, M. S. (2012). The Role of Physical Environment in Athlete Motivation. *Journal of Sports Psychology*, 34(5), 547-554.

Smith, J., & Jones, R. (2020). Motivational factors in sports: The role of facilities and infrastructure. *Journal of Sports Psychology, 25*(3), 89-102.

Smith, J., Brown, T., & Harris, R. (2019). The impact of sports facilities on athlete performance: A global review. *International Journal of Sports Science and Coaching, 16*(4), 34-45.

Taylor, L. (2021). Psychological well-being and sports facilities: A case study of basketball players. *Journal of Applied Psychology, 29*(1), 56-70.

Vealey, R. S., & Chase, M. A. (2016). *Self-confidence in sport*. In Williams, J.M., & Krane, V. (Eds.), *Applied sport psychology: Personal growth to peak performance* (7th ed., pp. 42-58). McGraw-Hill Education.

Weiss, M. R., & Wiese-Bjornstal, D. M. (2009). Psychological Aspects of Sport-Injury Rehabilitation: A Developmental Perspective. *Journal of Athletic Training*, *38*(2), 172–175.

Williams, M., & Brown, T. (2019). The role of standard sports facilities in enhancing basketball performance. *Journal of Basketball Research, 8*(2), 23-34.

Zakariya, Y. F. (2022). Cronbach's alpha in mathematics education research: Its appropriateness, overuse, and alternatives in estimating scale reliability. *Frontiers in Psychology*, *13*, 1074430. https://doi.org/10.3389/fpsyg.2022.1074430

THE FOOD HYGIENE PRACTICES IN PREVENTING FOOD HAZARDS AMONG FOOD HANDLERS IN UNIVERSITY OF ILORIN.

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Abstract

Food hygiene encompasses several principles and procedures to ensure food safety. Poor food hygiene practices put everyone at risk, and food handlers play a key role in ensuring food safety. Improper hand washing, allowing customers to have direct contact with food, talking while handling food, fixing and polishing nails and using phones during food handling by the food handlers are some factors contributing to food hazards and contamination, which can lead to food poisoning. This study assessed food hygiene practices in preventing food hazards among food handlers in University of Ilorin. The objective was to examine food hygiene practices, specifically hand washing and proper food handling. A descriptive cross-sectional research design was used for this study. The participants were food handlers at the University of Ilorin. A total sampling technique was employed to select all 117 food handlers working at 18 food vending establishments that sell cooked food on campus. A researcher-designed questionnaire and structured observation checklist were used for data collection, both of which were validated by three experts in the Department of Health Promotion and Environmental Health Education. A reliability coefficient (r) of 0.76 was obtained through test-retest reliability using Pearson's Product-Moment Correlation (PPMC). Two research questions were formulated and answered, while two hypotheses were tested at a 0.05 level of significance. The data collected were analyzed using percentage, frequency and chi-square. The results of the findings revealed that there is significant practice of proper hand washing, with the calculated chi-square value of 215.084 greater than the table value of 21.03 at 18 df. Also, there is significant practice of proper food handling, with a calculated chi-square value of 215.588 greater than the table value of 14.03 at 7 df. The study concluded that food handlers demonstrated proper hygiene practices in hand washing and food handling. It recommended that food handlers undergo continuous training to reinforce good hygiene practices. Additionally, the Campus Eatery Regulatory Board should ensure continuous monitoring to maintain compliance with proper food handling practices among food vendors on campus.

Keywords: Food hygiene, Food handlers, Food hazards

Introduction

Food hygiene involves several principles and procedures designed to ensure food safety and reduce the risk of food poisoning and food-borne diseases. Food safety practice is crucial and essential because food is an essential and basic need of every individual. No one can survive for a long time without taking food. It is a fuel that powers and drives the body system. World Health Organization (2015) explained that the body needs the nutrients, vitamins and minerals deposited in food for survival. Meanwhile, the way food saves lives is the same way it endangers it if contaminated. Everyone is potentially exposed to foodborne diseases with every bite one takes from food (WHO, 2015).

Food poses great threats to human beings if not well prepared, kept or eaten. It can be said to be hygienic or unhygienic, safe or unsafe for consumption based on the way it is handled and prepared. Unsafe foods pose a threat that can be endangering to whoever takes it, but the most vulnerable ones are infants, young children, pregnant women, elderly ones and those with underlying illnesses (Dajaan, Addo, Luke, Eugenia, Amshawu & Kwasi, 2018). Contamination of food can occur at different stages of production involving storage, preparation, cooking or serving to consumption. Therefore, food safety is very important because it entails proper hygienic practices by food handlers (Umar, Shehu, Akorede, Sa'ad, Suleiman & Umaru, 2024).

Nowadays, people work or study in a place far from their homes and families, they are occupied with work. There is little or no time to prepare food and eating is inevitable for every living soul. This prompts many of them to resort to eating at various food establishments or vendors to function well in their various daily activities and lives (Akintaro, 2012). Food and Agriculture Organization & Pan American Health Organization (2017) explained that every food establishment or vendor has people known as food handlers who prepare food for proper running of buying and selling foods to customers. A food handler is anyone who works in a food or drink establishment and handles packaged or unpackaged food or has contact with foods or any food equipment or utensils that has contact with foods (Food and Agriculture Organization & Pan American Health Organization, 2017). Their work involves food and their actions or inactions could compromise food safety.

Food handlers could play a major role in contaminating food; they could transmit pathogens passively from contaminated sources such as transmitting pathogens from raw meat to ready and eatable-food (Odo & Onoh, 2018). Therefore, knowledge

of hygiene either formally or informally is important for the handlers and anyone who sets up a food business, where food is processed, prepared, stored and distributed or exposed for sale. Food hygiene is all practical measures to ensure keeping food safe and healthy through the stages of production to the point of sale or consumption (White, 2006; Food and Agriculture Organization & World Health Organization, 2009). A food handler is saddled with the moral and legal responsibility of providing safe food and ensuring that he or she does not contaminate food. They should maintain the principle of personal hygiene which is maintaining cleanliness and grooming of the external body, food hygiene and proper disposal of sewage and refuse to prevent harborage of organisms that could contaminate foods (Akorede & Toyin, 2020).

Food hazards are physical, biological and chemical agents that can contaminate foods leading to foodborne disease. Failure to adhere to food hygiene principles during the stages of food production may cause food hazards which could result in various degrees of health problems. Food hazards could be introduced intentionally, accidentally or criminally (FAO & PAHO, 2017). Food handlers can contribute to food-borne disease by serving as channels for the transmission of harmful microbes, they may carry some human-specific food-borne pathogens such as Hepatitis A, Typhoidal salmonella, Staphylococcus aureus and Shigella species in their hands, cuts or sores, nails, mouths, skins and hairs in their failure to maintain proper hygiene (Adams & Moss, 2008). Pokhrel and Sharma (2016) directed the use of personal protective equipment such as aprons, gloves, and hairnets while serving food among food handlers to mitigate food contamination.

Oghenekohwo (2015) identified proper food and environmental hygiene as putting on clean aprons and hair covering to be worn at all times when handling foods, food handlers who have symptoms of having any food-borne disease should not be handling food, handlers must have clean habits and have an elementary knowledge of hygiene. Afolaranmi, Hassan, Bello and Misari (2015) carried out a study on food vendors in primary schools in Jos, Plateau State of North Central Nigeria and revealed that vendors had knowledge of food safety and hygiene but were poor in not practising proper hand washing, cleaning and sanitizing of cutting surfaces. Another study by Faremi, Olalubi and Nnabuife (2018) on food vendors in tertiary educational institutions in South Western Nigeria, found that the majority of the respondents had adequate knowledge of the transmission of food-borne disease but had unsafe hygiene practices. Kubde, Pattankar and Kokiwar, (2016) found out that knowledge, attitude and practice of food handlers were average and satisfactory.

Kok and Balkaran (2014) did a study on street food vending and hygiene practices and observed that the majority of the food handlers did not wear gloves, hairnets or aprons, also garbage was left open. Prepared foods were displayed with no covers in very humid weather thus encouraging the proliferation of insects and rodents linked to enter disease. Washing of utensils was carried out in bowls or pots which were also used for cooking and water was not being changed, as it was not easily accessible. Pepple (2017) also reported proper hand-washing practices among food vendors in Garki, Abuja. Nurudeen, Lawal and Ajayi (2014) conducted a study on the hygiene and sanitary practices of food vendors in the North-central state of Nigeria. The findings revealed poor food handling practices among the handlers of serving food with bare hands, handling money while handling foods, and chewing and talking while serving food. It was also revealed that 60% of the vendors prepared their food in an unclean environment with the presence of flies all over the places and some stalls were located very close to dumpsites in an attempt to avoid obstruction within vending sites. Pokhrel and Sharma (2016) observed poor hygiene practices such as sneezing, coughing and keeping long dirty nails while handling food among the handlers. Mulugeta and Bayeh (2012) also found poor food handling practices by the food handlers.

Statements of the Problem

Food vending is a thriving business on campus due to the high population of students and staff who often purchase meals from vendors. However, it appears that the food and environmental hygiene practices of the food vendor fall short of the basic requirements of food and environmental hygiene practices due to some of the unhygienic practices observed among the handlers. Some years back, there was an outbreak of cholera in Kwara State with 1558 cases claiming 11 lives; whereas Ilorin South Local Government Area where the University of Ilorin is located had 215 cases (WHO, 2017). Similarly, the researcher through interaction with some students got a report of several cases of food illness such as typhoid fever, dysentery, and diarrhoea among others that were treated unreported. Many of them attributed the cause to eating outside with campus food vendors. This was making some of them discriminate among the vendors on campus. And noting some unhygienic practices observed among the vendors of allowing customers to have contact with food and food items, talking among the waitresses at some of these eateries when serving food, wearing jewellery, fixing and polishing nails and using phones while at work among others into consideration, they are tantamount to causing food hazards because they could aid in contamination of food and results to foodborne disease (FAO, 2014). Sesan (2017) reported that Nigeria's Health Minister, Isaac Adewole claimed that food-borne diseases alone are responsible for 5160 deaths every year in the country. The University has many food vendors and there have been many cases of health complaints which are related to food-borne infections among the students engaged by the researcher. The researcher perceives that the food hygiene practice of the vendors on campus might have a connection to the cases of food-borne infection reported by the students. Hence, the researcher intends to carry out this study on food hygiene practices in preventing food hazards among the food vendors in University of Ilorin to mitigate the incidence of food-borne diseases and their health implications on the entire residents of the school community.

Research Questions

The research answered the following questions:

1. Do food handlers in University of Ilorin practice proper handwashing to prevent food hazards?
2. Do food handlers in University of Ilorin practice proper food handling to prevent food hazards?

Hypotheses

The following research hypotheses were formulated to guide the study

1. There will be no significant practice of proper hand washing in preventing food hazards among food handlers in University of Ilorin.
2. There will be no significant practice of proper food handling in preventing food hazards among food handlers in University of Ilorin.

Methodology

This study adopted a descriptive cross-sectional research design. The target population comprised all food vendors operating within the University of Ilorin community. The study was delimited to 117 food handlers who work in 18 registered food vendors that sell cooked food on campus. A total sampling technique was used to select all the 117 food handlers working in 18 registered food vendors because the population was small and could be accessible. A researcher's designed questionnaire and structured observation checklist were used to gather responses from the handlers. The information in the observation checklist and the questionnaire were adopted from FAO's "Guidance on Hygiene and Safety in the Food Retail Sector". The questionnaire collected information on the demographic data and hand washing practices of the handlers while food handling practices of the handlers were recorded in the structured observation checklist. The instruments were given to three experts in the Department of Health Promotion and Environmental Health Education for content, construct and face validation. Their comments and suggestions were used to improve the quality of the research instruments. The reliability of the instruments was carried out using a test-retest method of reliability in which 30 copies of the instrument were administered two times on food handlers in Kwara State University KWASU at an interval of two weeks. The results were scored and correlated using Pearson's Product Moment of Correlation (PPMC) to get the co-efficient correlation of 0.76 at a .05 level of significance. Descriptive statistics of frequency and simple percentage was used to analyze the demographic data of the respondents while the research questions was presented in percentage and frequency and hypotheses were analyzed with inferential statistics of chi-square at 0.05alpha level of significance using Statistical Product and Service Solution (SPSS) version 20.

Table 1: Distribution of sample to be selected for the Study

S/N	**Name of vendors**	**No of handlers**
1	Relaxation centre	6
2	Sister Bigs	6
3	Kay Beez	8
4	Item 7Resturant(Coca cola village)	9
5	Crub Town	8
6	Buka 1-12	14
7	Eat more(Zamfara Hostel)	8
8	IyaYusuff	6
9	Law restaurant	8
10	Berbecue (Senate building)	7
11	Famous Kitchen (ASUU Hostel)	6
12	MBOResturant(Zamfara Compound)	6
13	Oyinda kitchen	6
14	Trustee hostel (Hawa Hostel)	6
15	ArafimsRestaurant	5
16	RabiatAjikeResturant	6
17	Buka Tay	7
18	ASSU Relaxation Centre	9
	Total	**117**

Source: Researchers developed, (2025)

Results and Discussions

Table 2: *Demographic Data of Respondents*

S/N	Variables	Frequency	Percentage (%)
1	**Gender**		
	Male	25	24.1
	Female	92	78.6
	Total	117	100
2	**Age Range**		
	21-30years	55	47.0
	31-40years	46	39.3
	41-50years	13	11.1
	51- 60years	3	2.6
	Total	**117**	**100**
3	**Marital status**		
	Single	54	46.2
	Married	63	53.8
	Widow	0	0
	Divorced	0	0
	Separated	0	0
	Total	**117**	**100**
4	**Years in business**		
	1-50	88	75.2
	6-10	24	20.5
	11-15	5	4.3
	16-20	0	0
	Total	**117**	**100**
5	**Educational level**		
	Primary school	6	5.1
	Secondary school	80	68.4
	Tertiary school	31	26.5
	Total	**117**	**100**

The table shows that the majority 92(78.6%) of the handlers were females and the rest 25(24.1%) were males. With regards to age, 55(47.0%) were between ages 21-30years, while 46(39.3%) were 31-40years of age and 13(11.1%) were between ages 41-50years and the rest 3(2.6%) were between ages 51-60years. The majority of the handlers representing 63(53.8%) were married while the rest 54(46.2%) were single. For years in business, the majority representing 54(75.2%) had between 1-5 years in business while 24(20.5%) had 6-10 years experience in the business and the remaining handlers 5(4.3%) had 11-15 years experience. The majority of the handlers 80(68.4%) attended secondary school, while 31(26.5%) had tertiary education and the rest 6(5.1%) had only primary school education.

Answers to the Research Questions

Research Question One: Do food handlers in University of Ilorin practice proper hand washing to prevent food hazards?

Table 3: *Percentage Analysis of Proper Hand Washing Practice in Preventing Food Hazard among Food Handlers in University of Ilorin*

S/N	Items	SA	A	PP	D	SD	GP
1.	How often do you wash your hands for at least 20 seconds?	0 (0.0%)	0 (0.0%)	0	69 (59.0%)	48 (41.0%)	117
2.	How often do you wash your hands with soap and water?	0 (0.0%)	0 (0.0%)	0	91 (77.8%)	26 (22.2%)	117
3.	Do you allow the soap to form foam with the water before washing hands with it, if yes, how often?	0 (0.0%)	0 (0.0%)	0	79 (67.5%)	38 (32.5%)	117
4.	How often do you wash the back of your hands between your fingers and under the nails?	0 (0.0%)	0 (0.0%)	0	60 (51.3%)	57 (48.7%)	117
5	Do you leave your hands to dry before handling any food or food item, if yes, how often?	0 (0.0%)	17 (14.5%)	17	80 (68.4%)	20 (17.1%)	100
6.	Do you use any cloth around to dry your hands after washing, if yes, how often?	0 (0.0%)	5 (4.3%)	5	22 (18.8%)	90 (76.9%)	112
7.	I wash my hands frequently after every procedure, if yes, how often	0 (0.0%)	0 (0.0%)	0	39 (33.3%)	78 (66.7%)	117
				22 (2.68%)			**797 (97.31%)**

***Note*: PP - Poor Practice. GP - Good Practice**

Table three shows the answer to research question one. The mean of good practice by the handlers to the items is 797(97.31%), which is greater than the mean of poor practice 22(2.68%). This indicates a high level of compliance with handwashing protocols among food handlers at the University of Ilorin

Research Question 2: Do food handlers in University of Ilorin practice proper food handling to prevent food hazards?

Table 4: *Percentage Analysis of Proper Food Handling Practice in Preventing Food Hazard among Food Handlers in University of Ilorin*

S/N	Items	Yes	No
1	Evidence of serving and collecting money concurrently	5 (4.3%)	112 (95.7%)
2	Evidence of exposing foods while serving	0 (0.0%)	117 (100.0%)
3	Evidence of serving food with bare hands	3 (2.6%)	114 (94.4%)
4	Evidence of picking nose or scratching body while handling foods	0 (0.0%)	117 (100.0%)
5	Evidence of talking or sneezing while handling food	19 (16.2%)	98 (83.8%)
6	Evidence of unpolished, long or dirty fingernails	53 (45.3%)	64 (54.7%)
7	Evidence of handling phones while handling foods	34 (29.1%)	83 (70.9%)
	Total	**114 (12.18)**	**822 (87.82)**

Table four shows the answer to research question two. The mean of positive observation is 822(87.82%), which is greater than the negative observation 114(12.18%). This implies that there was proper food handling practice in preventing food hazards among the food handlers in University of Ilorin.

Hypotheses Testing

Hypothesis One: There will be no significant practice of proper hand washing in preventing food hazards among food handlers in University of Ilorin.

Table 5: *Chi-square Analysis Showing Proper Hand Washing Practice in Preventing Food Hazard among Food Handlers in University of Ilorin*

S/N	Items	Never	Sometimes	Most times	All the times	df.	Cal. Val.	Tab. Val.	Decision
1.	How often do you wash your hands for at least 20 seconds?	0 (0.0%)	0 (0.0%)	69 (59.0%)	48 (41.0%)				
2.	How often do you wash your hands with soap and water?	0 (0.0%)	0 (0.0%)	91 (77.8%)	26 (22.2%)				
3.	Do you allow the soap to form foam with the water before washing hands with it, if yes, how often?	0 (0.0%)	0 (0.0%)	79 (67.5%)	38 (32.5%)	18	215.084	21.03	H_{01} rejected
4.	How often do you wash the back of your hands between your fingers and under the nails?	0 (0.0%)	0 (0.0%)	60 (51.3%)	57 (48.7%)				
5	Do you leave your hands to dry before handling any food or food item, if yes, how often?	0 (0.0%)	17 (14.5%)	80 (68.4%)	20 (17.1%)				
6.	Do you use any cloth around to dry your hands after washing, if yes, how often?	0 (0.0%)	5 (4.3%)	22 (18.8%)	90 (76.9%)				
7.	I wash my hands frequently after every procedure, if yes, how often.	0 (0.0%)	0 (0.0%)	39 (33.3%)	78 (66.7%)				
	Total	00	22	440	357				

α=0.05

Table five shows the result of research hypothesis one which states that there will be no significant practice of proper hand washing in preventing food hazards among food handlers in University of Ilorin. Chi-square analysis showed a calculated value of 215.084, which was greater than the table value of 21.03 at 18 degrees of freedom (df) (cal. X^2 val. > tab. X^2 Val.). Research hypothesis one was therefore rejected. This implies that there was significant practice of proper hand washing in preventing food hazards among food handlers in University of Ilorin.

Hypothesis Two: There will be no significant practice of proper food handling in preventing food hazards among food handlers in University of Ilorin.

Table 6: *Chi-square Analysis Showing Proper Food Handling Practice in Preventing Food Hazard among Food Handlers in University of Ilorin*

S/N	Items	Never	Sometimes	df.	Cal. Val.	Tab. Val.	Decision
1.	Evidence of serving and collecting money concurrently	5 (4.3%)	112 (95.7%)				
2.	Evidence of exposing foods while serving	0 (0.0%)	117 (100.0%)				
3.	Evidence of serving food with bare hands	3 (2.6%)	114 (94.4%)	7	215.588	14.03	H_{o3} rejected
4.	Evidence of picking nose or scratching body while handling foods	0 (0.0%)	117 (100.0%)				
5.	Evidence of talking or sneezing while handling food	19 (16.2%)	98 (83.8%)				
6.	Evidence of unpolished, long or dirty fingernails	53 (45.3%)	64 (54.7%)				
	Evidence of putting on earrings, watches or other jewellery						
7.	Evidence of handling phones while handling foods	34 (29.1%)	83 (70.9%)				
	Total	114	822				

α=0.05

Table six shows the result of research hypothesis three which states that there will be no significant practice of proper food handling in preventing food hazards among food handlers in University of Ilorin. Chi-square analysis showed a calculated value of 215.588, which was greater than the table value of 14.03 at 7 degrees of freedom (df) (cal. X^2 val. > tab. X^2 Val.). Research hypothesis three was therefore rejected. This implies that there was significant practice of proper food handling in preventing food hazards among food handlers in University of Ilorin.

Discussion of Findings

From the result of the analysis of hypothesis one, the study found that food handlers in University of Ilorin demonstrated proper hand-washing practices. This is consistent with Pepple (2017), who reported that 84% of food vendors in Garki, Abuja, washed their hands regularly with soap and water before preparing food, 10% washed most of the time, and 6% washed sometimes and it was found out that hand washing habit of three groups used in the study were 100%, 92% and 60% respectively. Similarly, the finding concurs with the findings of Afolaranmi et al (2017); Oghenekohwo (2015); and Kubde et al (2016) that there was a proper hand-washing practice among the vendors. The findings are contrary to the observation made by Pokhrel and Shamna (2016) that most vendors were wiping hands with a towel after each preparation as opposed to their claim of washing hands after each preparation of food preparation during the interview. This implies that there is great compliance with proper hand washing as the majority of the handlers wash their hands with soap and water and wash them after every procedure.

From the result of the analysis of hypothesis two, the study found that food handlers in University of Ilorin demonstrated proper food handling in preventing food hazards. The finding is consistent with Oghenekehon's (2015) findings that there was regular use of aprons and gloves among handlers when handling food among the vendors. The finding contradicts Nurudeen et al (2014) findings that the majority of the street food vendors were serving food with bare hands, chewing and talking while serving and handling money while handling food. The findings also contradict Mulugeta and Bayeh's (2012) findings that revealed poor food handling practices by the food handlers This implies that there is proper food handling practice among the handlers as the majority of them were acting in compliance with food handling practice.

Conclusion

Based on the findings of this study, the following conclusions were drawn:

1. Food handlers in University of Ilorin practised proper hand hygiene to prevent food hazards.
2. Food handlers in University of Ilorin demonstrated proper food handling practices to prevent food hazards.

Recommendations

Based on the conclusion of this study, the following recommendations were made:

1. Food handlers should participate in regular training programs to reinforce proper hygiene and hand-washing practices.
2. The Campus Eatery Regulatory Board should implement continuous monitoring and enforcement to ensure total compliance with food handling regulations**.**

References

Adams, M. R., & Moss, M. O. (2008). *Food Microbiology*. (3rd ed.). The Royal Society of Chemistry, Cambridge, 463p.

Adebitan, E. O. (2011). *Assessing Compliance with Food Hygiene Requirements among Urban and Sub-Urban Classified Hotels in Bauchi State, Nigeria* (Master thesis, School of Hospitality and Tourism Management of Kenyatta). Kenyatta University.https://www.google.com/url?q=http://irlibrary.ku.ac.ke/bitstream/123456789/3920/3/esther%2520olaitan.pdf

Afolaranmi, T. O., Hassan, Z. I., Bello, D. A. & Misari, Z. (2015). Knowledge and Practice of Food Safety and Hygiene among Food Vendors in Primary Schools in Jos, Plateau State, North Central Nigeria. *Journal of Medical Research*, *4*(2), 16-22.

Akintaro, O. A. (2012). Food handling, hygiene and the role of food regulatory agencies in promoting good health and development in Nigeria. *International Journal of Health and Medical Information*, *1*(3), 1–8.

Akorede, S. N., & Toyin, A. (2020) Knowledge of Personal Hygiene among Undergraduates. *Journal of Health Education (JHE), 5*(2), 66-71.

Dajaan, D. S., Addo, H. O., Luke, O., Eugenia, A., Amshawu, A. & Kwasi, N. A. (2018). Food Hygiene Awareness and Environmental Practices among Food Vendors in Basic Schools at Kintampo Township, Ghana. *Food and Public Health*, *8*(1), 13-20 http://dx.doi.org/10.5923/j.fph.20180801.03

Faremi, F. A., Olatubi, M. I. &Nnabuife, G. C. (2018). Food Safety and Hygiene Practices among Food Vendors in a Tertiary Educational Institution in South Western Nigeria. *European Journal of Nutrition & Food Safety, 8*(2), 59-70. http://dx.doi.org/10.9734/EJNFS/2018/39368

Food and Agriculture Organization & Pan American Health Organisation. (2017). *Food Handlers Manual. Instructor.* http://www.fao.org/ or http://www.paho.org/

Kok, R. & Balkaran, R. (2014). Street Food Vending and Hygiene Practices and Implications for Consumers. *Journal of Economics and Behavioral Studies, 6*(3), 188-193

Kubde, S. R., Pattankar, J., & Kokiwar, P. R. (2016). Knowledge and food hygiene practices among food handlers in food establishments. *Int J Community Med Public Health, 3*(1), 251-256. http://dx.doi.org/10.18203/2394-6040.ijcmph20151572

Mulugeta, K & Bayeh, A. (2012). The sanitary conditions of food service establishments and food safety knowledge and practices of food handlers in Bahir Dar town. *Ethiop J Health Sci, 22*(1), 27-35

Nurudeen, A. A., Lawal, A. O., & Ajayi, S. A. (2014). A survey of hygiene and sanitary practices of street food vendors in the Central State of Northern Nigeria. *Journal of Public Health and Epidemiology,6*(5), 174-181. https://doi.org/10.5897/JPHE2013.0607

Odo, A. N., & Onoh, A. N. (2018). Food Hygiene among Food Handlers in University of Nigeria, Nsukka Campus. *Mediterranean Journal of Social Sciences, 9*(6), 137-144. https://doi.org/10.2478/mjss-2018-0169

Oghenekohwo, J. E. (2015). Pattern of Food Hygiene and Environmental Health Practices among Food Vendors in Niger Delta University. *European Journal of Food Science and Technology*, *3*(1), 24-40.

Pepple, N. (2017) Environment and Food Poisoning: Food Safety Knowledge and Practice among Food Vendors in Garki, Abuja – Nigeria. *Journal of Health Education Research Development*, 5, 217. https://doi.org/10.4172/2380-5439.1000217

Pokhrel, P., & Sharma, D. (2016). A study on assessment of food safety knowledge and practices among the street food vendors of urban and semi-urban areas of Guwahati, Assam. *International Journal of Home Science, 2*(2), 85-89

Umar, I., Shehu, H., Akorede, S. N., Sa'ad, U., Suleiman, M. A., & Umaru, M. (2024). Effects of health education intervention on use of food labels among students of Federal University Dutse. *Global Journal of Health Related Researches*, *6*(1), 40-47.

Sesan, A. A. (2017). Foodborne diseases kill 5160 Nigerians yearly- Health Minister. The Punch Newspaper

White, R. (2006). Food Hygiene – Why Bother? http://www.safefood.eu/SafeFood/media/SafefoodLibrary/Education/safefood%20for%20life/NI/section1.pdf

WHO. (2015). *Estimates of the Global Burden of Foodborne Diseases: Foodborne Disease Burden Epidemiology Reference Group 2007-2015*. WHO Press. Geneva: Switzerland.

HEALTHY LIVING PROMOTION, WATER FACILITIES DEVELOPMENT AS A TOOL TO CHALLENGING SEDENTARY LIFESTYLES AND PROVISION OF SUSTAINABLE COMMUNITY SECURITY AMONG RESIDENTS OF ILESE-IJEBU OGUN STATE NIGERIA

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Abstract

The promotion of healthy living through activities such as health clubs, gym visits, recreation parks, and community water facilities has long been recognized as a vital approach to enhancing individual well-being. However, sedentary lifestyles continue to thrive in communities where such facilities are lacking. This study examines the impact of water facility development—including community fountains and swimming pools—as a strategic tool for promoting physical activity, reducing sedentary behaviour, and enhancing community security among residents of Ilese-Ijebu, Ogun State, Nigeria. A survey research design was employed, gathering responses from 100 residents aged 18 to 55 years using a random sampling technique. The findings revealed that 95% of respondents acknowledged that access to functional health promotion facilities significantly improves physical, mental, and social well-being while mitigating community vices. Despite the current absence of public water points and sports facilities, respondents strongly supported the integration of health promotion infrastructure into community development policies. The study concludes that investing in recreational and water-based community facilities can serve as a dual-purpose strategy for fostering active lifestyles and enhancing sustainable community security. Therefore, policy interventions should prioritize the provision of these facilities as a proactive measure to improve public health and social stability.

Keywords: Healthy Living Promotion, Water Facilities Development, Sedentary lifestyles, Sustainable Community

Introduction

The promotion of healthy living is a fundamental component of sustainable community development, as it fosters physical well-being, mental health, and social interaction. The increasing prevalence of sedentary lifestyles has been linked to adverse health outcomes, including obesity, cardiovascular diseases, and mental health disorders (Akorede et al., 2017; Tremblay et al., 2017). Communities can counteract these negative effects through strategic investments in public health initiatives, such as the provision of recreational facilities, fitness centres, and accessible water fountains (Pittman et al., 2022). These initiatives serve as catalysts for active living, encouraging residents to engage in physical activities that enhance their overall well-being and reduce the risk of lifestyle-related diseases (Levinger et al., 2022).

Public spaces, such as recreation parks, play a crucial role in fostering an active lifestyle. They provide opportunities for walking, jogging, cycling, and social interactions, all of which contribute to physical and mental well-being (Shobri, Rahman, & Saman, 2021). Research has consistently demonstrated that outdoor activities in well-designed public spaces enhance social cohesion, reduce stress levels, and improve overall health outcomes (World Health Organization [WHO], 2020). The introduction of community water facilities further supports these efforts by serving as hydration points and encouraging prolonged outdoor activities, thereby mitigating the effects of sedentary lifestyles (Saunders et al., 2020).

Despite the recognition of the benefits of active living, studies indicate that sedentary behaviour remains prevalent in many communities. Research conducted in Nigeria, such as Odusoga and Sholeye (2023), highlights the high prevalence of sedentary behaviour among adolescents, while Samson and Agboola (2022) explore the sedentary tendencies of academic and non-academic staff in tertiary institutions. However, there is limited research focusing on the role of community-driven infrastructure, such as water facilities, in promoting physical activity among residents in smaller communities like Ilese-Ijebu. This study seeks to bridge this gap by exploring how accessible water fountains can serve as focal points for encouraging social engagement and active lifestyles among community members.

The factors contributing to sedentary behaviour in the study area are multifaceted and include limited community support for physical activities, inadequate public infrastructure, low socio-economic status, and lack of awareness about the health

implications of inactivity (Martins et al., 2021). Additionally, environmental and social factors, such as safety concerns and accessibility issues, further discourage participation in outdoor activities (Saunders et al., 2020). Addressing these barriers requires a holistic approach that integrates community-based initiatives, policy support, and infrastructure development to foster a culture of active living.

Water facilities, beyond their primary function of ensuring hydration, can also serve as strategic points for encouraging recreational activities, social interaction, and mental well-being (WHO, 2020). The presence of accessible water points can create gathering spaces that promote physical engagement, relaxation, and the exchange of valuable health-related information within the community. Furthermore, fostering an environment that supports active lifestyles through strategic infrastructural development is essential for enhancing sustainable community security by promoting healthier and more engaged residents.

This study aims to explore the relationship between the development of water facilities and the promotion of active living within communities, particularly in addressing sedentary lifestyles and enhancing sustainable community security. By examining the impact of water points in encouraging social interaction and physical engagement, this research seeks to provide valuable insights into how infrastructure development can serve as a tool for fostering long-term community health and well-being.

Statement of the Problem

Sustainable community development has gained significant traction in public health policy, becoming a central component of population-based health promotion strategies. These strategies emphasize the involvement of community groups in shaping the allocation and purpose of resources to enhance public health outcomes (Labonte & Laverack, 2001). Community development is often credited with empowering individuals and groups, fostering greater community engagement in health initiatives, reinforcing communal values, enhancing local accountability in resource utilization, and addressing health disparities (Wallerstein, 2006).

However, the concept of community development remains ambiguous, with varying interpretations and applications. The rhetoric surrounding community development frequently does not align with its practical implementation. This study examines the diverse and sometimes contradictory discourses surrounding community development, highlighting the gaps between theoretical claims and real-world practices.

To advance sustainable community security initiatives, health promoters must critically evaluate the approach and clarify fundamental terminology, such as promoting healthy living, reducing sedentary lifestyles, and improving access to water and sanitation technologies (Baum, 2016). This study is driven by the need for a comprehensive and holistic approach to health promotion, helping individuals overcome barriers to physical activity and adopt healthier lifestyle habits. For the aforementioned, the following aims/objectives were carried out to address the issues in Ilese-Ijebu Ogun State Nigeria.

Aim of the Study

This study aims to investigate the impact of healthy living promotion, water facilities development as a tool for challenging sedentary lifestyles, and provision of sustainable community security among residents of Ilese-Ijebu, Ogun State, Nigeria.

Objectives of the Study

1. To assess the current level of sedentary lifestyle among residents of Ilese-Ijebu, Ogun State.
2. To evaluate the effectiveness of water facilities development in promoting physical activity and healthy living habits among the residents.
3. To explore the relationship between sustainable community security measures and the overall health and well-being of the community members.
4. To determine the implications of water relaxation points in reducing sedentary lifestyles and improving healthy living habits among the residents.

Research Questions for the Study

1. What is the prevalence of sedentary lifestyle among residents of Ilese-Ijebu, Ogun State?
2. How does the development of water facilities influence physical activity levels and healthy living habits among the residents?
3. What is the relationship between sustainable community security measures and the health and well-being of community members in Ilese-Ijebu?
4. What are the effects of water relaxation points on reducing sedentary lifestyles and promoting healthy living habits among the residents of Ilese-Ijebu?

Methodology

A descriptive survey research design was employed to elicit information from the residents of Ilese-Ijebu, located at Latitude 6.8136° N and Longitude 3.9623° E, in Ijebu North East Local Government Area of Ogun State. The Old Lagos-Benin-Ondo

Road passed through the town. The research methodology combined both quantitative and qualitative data collected from respondents to provide relevant and accurate information on sedentary behaviours and lifestyles within the community. The study also aimed to determine the implications of water relaxation points in reducing sedentary lifestyles and improving healthy living habits among the residents.

A simple random sampling technique was used to select one hundred (100) respondents, who were Indigenous residents across households within the community and within the target age range of 18-55 years. The primary research instrument consisted of a structured questionnaire, designed to capture data related to daily physical activity levels, sedentary behaviors, the availability and usage of water fountains and community swimming pools, and residents' engagement in physical activities. Additionally, informal interview and interaction sessions were conducted to gain further insights into the knowledge, attitudes, and perceptions of community security about health and well-being due to participation in physical activities. The study also sought to establish a connection between water relaxation points, sedentary behaviours, and healthy living habits.

To ensure the validity of the research instrument, the questionnaire was reviewed by experts in public health and community development to ascertain its relevance and appropriateness in measuring the study variables. A pilot study was conducted with a small sample of respondents within the community to refine the questions for clarity and effectiveness. Reliability was tested using the test-retest method, where the instrument was administered to a subset of respondents on two different occasions, and the responses were compared for consistency.

Data collection was carried out through direct administration of the questionnaire to the selected respondents, and informal interviews were conducted in familiar community settings to encourage open participation. The responses were carefully recorded and categorized for analysis. Simple descriptive statistics, including percentiles and charts, were used to analyze the collected data and interpret the findings.

Results and Discussion

Demographical Characteristics of the Respondents

Table 1: Showing the demographic characteristics of the Respondents

Variables	Options	Frequency (%)
Gender	Male	35 (35%)
	Female	65 (65%)
Age	18-30	33 (33%)
	31-45	10 (10%)
	46-60	46 (46%)
	Over 60	11 (11%)
Occupation	Employed	44 (44%)
	Unemployed	20 (10%)
	Student	13 (13%)
	Retired	23 (23%)
Education Level	Primary School	45 (45%)
	Secondary School	43 (43%)
	Tertiary Education	12 (12%)
	Postgraduate Education	0 (0%)

Table 1 shows the demographic characteristics of the respondents who took part in the study that contained only the indigenes of the study area. The gender distribution showed that thirty-five (35) (35%) were male and the rest were female respondents sixty-five (65) (65%). The majority of the respondents were female and in the study area like community level, women stay home mostly, while their male counterparts do go out for their livelihood activities. The age distribution indicated that the majority of the respondents are those in the age bracket of 46-60 years were forty-six 46 (46%), followed by those between the ages of 18-30 years were thirty-three 33 (33%) respondents, while ten 10 (10%) of the respondents fall in the age brackets of (31-45) years and the rest of the respondents of over 60 years were eleven 11 (11%).

However, the responses on the occupational status that can influence their sedentary lifestyles showed that forty 44 (44%) were employed either working for the government, private businesses or being an artisan, twenty 20 (10%) responded to being unemployed, thirteen 13 (13%) of the respondents are students and the rest of the respondents 23 (23%) are retirees. Then, the responses on educational attainment showed that forty-five (45) (45%) obtained primary school leaving certificates, forty-three 43 (43%) with secondary school O/L certificates, while twelve 12 (12%) possessed tertiary education at either ND/HND/ BSc education while none of the respondents attained postgraduate education.

Results on the level of sedentary lifestyle among respondents

Table 2: Showing the responses on Sedentary Lifestyles

Questions	Responses	Frequency (%)
How many hours per day do you spend sitting?	Less than 1 hour	5 (5%)
	1-2 hours	8 (8%)
	3-4 hours	20 (20%)
	More than 4 hours	67 (67%)
Do you engage in regular physical activity?	Yes	05(05%)
	No	95 (95%)
What are the main barriers to being physically active?	No time, Fear of injury, Nowhere to do the physical exercises, No energy, No money for hospital or buy drugs, physical exercise is a misplaced priority, community that is not safe, fear of those bad boys?	

Table 2 shows the sedentary lifestyles among the residents; sixty-seven (67) (76%) responded that they do sit down for over four 4 hours per day either to observe the road, traffic movement, discuss with people around, twenty (20) (20%) answered that they used between 3-4 hours to sit down as well not doing something tangible while 8 (8%) and 5 (5%) spent between 1-2 hours and less than an hour with sedentary lifestyles.

Then, the responses from the respondents on engaging in regular physical activities showed that the majority do not engage in physical activities. Ninety-five 95 (95%) never engage in physical activities, while the rest five 05 (05%) said they do sometimes engage in physical activities but not always.

Further interaction on the main barriers to being physically active or the reasons for not engaging in physical exercises as shown in the table above are due to time factors, environmental issues, security, and socio-economics factors. Some of their statements were ' *I no get time for exercise jare, where time dey? , What of having injuries, nowhere to do the exercises, no energy to be running around wetin go be my gain? , no money for hospital or buy drugs, physical exercise is misplaced priority, community that is no safe, what of those bad boys?'*

Results of the water facilities development in promoting physical activity and healthy living habits among the residents

Table 3: Showing responses on water facilities development in promoting physical activity and healthy living habits among the residents

Questions	Responses	Frequency (%)
Are you aware of the water facilities available in the community that promote physical activity?	YES	23 (23%)
	NO	77 (77%)
Have you utilized any of these water facilities for physical activities in the past month?	YES	10(43%)
	NO	13 (57%)
Did water facilities influence your physical activity levels and healthy living habits?	Yes, the usages of swimming pools in some of the hotels in the community are good for exercise and make the bodies okay and relaxed.	

Table 3 above contains the responses knowledge of the respondents on the connection between water facilities development within the community that will enhance physical activities and healthy living habits. The responses to the question of the respondents were aware of water facilities available in the community can promote physical activities; showed that few number twenty-three 23 (23%) are aware of water facilities in the community they mentioned swimming pools are some of the hotels in the community that some of the youth visited, while the majority of the respondents, seventy-seven 77 (77%) were not aware of water facilities available in the community that can promote physical activity.

However, out of twenty-three 23 respondents who were aware of water facilities (swimming pools) for physical activities, ten (10) (43%) responded that they had utilized the facilities in the past month while thirteen 13 (57%) had not utilized the water facilities in the past month. Then, after explaining to the respondents the importance of physical activities like visiting water points, and swimming activities, the respondents positively mentioned that the usage of swimming pools in some of the hotels in the community can be good for exercise and make the human bodies' okay and relaxed, good health guaranteed; thereby improving healthy living habits as well.

The result of the relationship between sustainable community security measures and the overall health and well-being through water facilities development

Table 4: Showing responses on the relationship between sustainable community security measures and the overall health and well-being through water facilities development

Questions	Responses	Frequency (%)
Will you allow water relaxation points constructed within the community for the resident's usage?	YES	95(95%)
	NO	5 (5%)
Do you think water relaxation points will contribute to reducing sedentary lifestyles and promoting healthy habits in your opinion?	YES	90 (95%)
	NO	5(5%)
Do you feel safe in your community	YES	87 (87%)
	NO	13 (13%)
Will you feel secure visiting the community water relaxation points if constructed?	YES	95 (95%_
	NO	5(5%)

Table 4 shows the responses to four questions to draw out residents' acceptance and belief in the allowance of water relaxation points within the community for the resident's usage. '*Will you allow water relaxation points constructed within the community for the residents' usage?*' The majority of the respondents 95(95%) responded positively (YES), while the rest 5 (5%) responded negatively (NO). The responses to '*Do you think water relaxation points will contribute to reducing sedentary lifestyles and promoting healthy habits in your opinion*?; showed that ninety (95%) of those who wanted water relaxation points constructed said YES, that the points when constructed and functional can contribute to a reduction in sedentary lifestyles among the residents, and the rest five 5 (5%) do not believe that the water points can influence positively the sedentary lifestyles among the residents.

On the issue of community security, the answers to the question raised whether the respondents generally feel safe and secure in the community was that eighty-seven 87 (87%) believed that are safe and secure by mentioning YES, while few number thirteen 13 (13%) mentioned otherwise, they are NOT safe and secured. In a similar vein, the responses on the security and safety are paramount at water points where different groups in the community can visit for relaxation and social gatherings showed that the majority of the respondents ninety-five 95 (95%) mentioned YES that the water points will be safer and secured and the rest five 5 (5%) are not sure of their safety and security at the water point.

Results on the implications of water relaxation points in reducing sedentary lifestyles and improving healthy living habits among residents

Table 5: Showing responses on the implications of water relaxation points in reducing sedentary lifestyles and improving healthy living habits among the residents

Questions	Responses	Frequency (%)
Will you use water relaxation points?	YES	90(90%)
	NO/ NOT SURE	10 (10%)
What will be the positive effects of the water point's visitation in promoting healthy habits?	YES	90(90%)
	NO	0(0%)
Would you like to see more water relaxation points developed in the community?	YES	90(90%)
	NO	0(0%)

The responses on the water relaxation points for reduction of sedentary lifestyles among the people showed some level of positive implications. Ninety (90%) of the respondents are ready to use the water relaxation points with the belief that visitation to the water points will have positive effects that will promote health habits as mentioned by ninety 90(90%) of the respondents. Therefore, the majority of the respondents 90 (90%) were eager to have more water relaxation points developed in the community for physical activities and sedentary lifestyles can be reduced as well.

Discussion of the Results

The majority of respondents were female (65%), with the highest proportion (46%) aged 46-60 years. Most had only primary (45%) or secondary (43%) education, with no postgraduate respondents. Similar findings were observed in rural and semi-urban communities, where women are more available for household surveys than men, who are often engaged in external work (Smith et al., 2020). The age distribution contrasts with global health surveys, which typically show younger populations (18-30) dominating health-related awareness studies (WHO, 2021). The low tertiary education rate aligns with UNESCO's (2019) reports indicating that higher education remains a challenge in many developing regions.

On the Level of Sedentary Lifestyle among Respondents, 67% of respondents spend more than four hours sitting daily, and 95% do not engage in regular physical activity due to barriers like time constraints, safety, and socio-economic factors. Similar results were reported by Owen et al. (2010), where prolonged sitting was a common issue in physically inactive communities. However, global trends indicate increasing awareness and participation in physical activity, particularly in middle-income countries (WHO, 2021), which contradicts the inactivity observed in this study. Economic constraints and security concerns as barriers align with research in low-income areas (Guthold et al., 2018).

However, responses on Water Facilities Development and Physical Activity indicated that 77% of respondents were unaware of water facilities promoting physical activity, and only 23% knew about them. Among those aware, 43% had used them. Swimming pools in hotels were identified as beneficial for exercise. This contradicts studies in urban areas where awareness of recreational facilities is generally higher (Sallis et al., 2016). Yet, it aligns with findings from underdeveloped regions where the absence of structured recreational facilities limits community engagement in physical activities (Hallal et al., 2012). Furthermore, responses on Community Security and Water Relaxation Points showed that 87% of respondents felt safe in their community, and 95% believed water relaxation points would reduce sedentary lifestyles and improve security. Previous research supports the idea that well-planned community spaces enhance perceptions of security and social cohesion (Gehl, 2011). However, the high sense of security reported in this study contrasts with findings from urban communities where safety in public spaces remains a major concern (Jacobs, 1961). Implications of Water Relaxation Points on Health indicated that 90% of respondents were willing to use water relaxation points, and all agreed they would positively impact health habits. This aligns with studies demonstrating the health benefits of green and blue spaces in communities (Gascon et al., 2017). However, research suggests that community engagement may remain low if structured programs and incentives are not implemented to encourage the use of these spaces (Mitchell & Popham, 2008).

Also, the answer to the research question on the prevalence of a sedentary lifestyle showed that 67% of residents spend more than four hours sitting daily, and 95% do not engage in regular physical activity. This indicates a high prevalence of sedentary lifestyles, particularly among older adults and the unemployed. The barriers to physical activity included time constraints, security concerns, lack of facilities, and socio-economic factors. Research question two on how the development of water facilities influences physical activity levels and healthy living habits among the residents revealed that 77% of respondents were unaware of water facilities that could promote physical activity, and only 23% knew about them (mostly swimming pools in hotels). After an awareness discussion, respondents agreed that water facilities like swimming pools and fountains could promote exercise and relaxation, improving physical and mental health; and a majority (95%) believed that water relaxation points could reduce sedentary lifestyles and encourage community engagement in healthy activities. Then, research question on the relationship between sustainable community security measures and the health and well-being of community members indicated that 87% of respondents felt safe in their community, and 95% agreed that water relaxation points could enhance security by encouraging social interaction and organized activities; with functional health promotion facilities could reduce criminal activities and enhance sustainable community security by fostering healthier and more engaged residents. The four research questions “What are the effects of water relaxation points on reducing sedentary lifestyles and promoting healthy living habits among the residents?” answered that 90% of respondents stated they would use water relaxation points for physical activity and relaxation. They agreed that water points could positively impact health habits by encouraging exercise, stress relief, and social engagement. The study concluded that developing water relaxation points could be a strategic solution for reducing sedentary behaviour and promoting long-term community well-being.

Based on the identified research questions under the introduction section, the prevalence of a sedentary lifestyle among the residents is high and common among the aged and the unemployed. After interaction during the survey, most of the respondents believed that water facilities can positively influence the physical activities of people by visiting the points for relaxation and social gathering, thereby the healthy living habits among the residents.

On the other hand, the respondents believed community security will provide a positive relationship with the residents and their well-being can be guaranteed. The water relaxation points being functional can attract people to engage in physical activities in which their mental health can be improved as well.

In summary, the respondents submitted after health talk and health promotion on the subject matter that there are potential positive effects of water relaxation points on reducing sedentary lifestyles and promoting healthy living habits, with potential associated sustainable community security among the residents of Ilese-Ijebu.

Conclusion and Recommendations

The study highlights a high prevalence of sedentary lifestyles in Ilese-Ijebu, with water facility development playing a crucial role in improving physical activity and health habits. Additionally, water relaxation points could enhance security, encourage social interaction, and promote a healthier community. Furthermore, the study concluded that the health of the individual within the community can be promoted through functional health promotion facilities and activities, like the provision of water point facilities (swimming pools and water fountains) that can attract residents reducing sedentary lifestyles which is common among the people, but thereby potential vices can also be reduced, and sustainable community security can be guaranteed.

Though the community lacked water points and public sports facilities during the study the respondents believed that policy on health promotion facilities should be part of community developmental projects and activities that can be engaged by all.

References

Akorede, S. N., Ologele, I., Enyikwola R. O., & Nofiu, O. D. (2017). Lifestyle as Correlates of Sexually Transmitted Infections among Teenagers of Secondary School in Olorunda Local Government of Osun State. *Journal of Human Kinetics and Sports Science, 2*(1), 223-229.

Baum, F. (2016). The new public health (4th ed.). Oxford University Press.

Gascon, M., Triguero-Mas, M., Martínez, D., Dadvand, P., Forns, J., Plasència, A., & Nieuwenhuijsen, M. J. (2017). Mental health benefits of long-term exposure to residential green and blue spaces: A systematic review. Environmental International, 102, 84-93.

Gehl, J. (2011). Life between buildings: Using public space. Island Press.

Guthold, R., Stevens, G. A., Riley, L. M., & Bull, F. C. (2018). Worldwide trends in insufficient physical activity from 2001 to 2016: a pooled analysis of 358 population-based surveys with 1•9 million participants. The Lancet Global Health, 6(10), e1077-e1086.

Hallal, P. C., Andersen, L. B., Bull, F. C., Guthold, R., Haskell, W., & Ekelund, U. (2012). Global physical activity levels: surveillance progress, pitfalls, and prospects. The Lancet, 380(9838), 247-257.

Jacobs, J. (1961). The Death and Life of Great American Cities. Random House.

Labonte, R., & Laverack, G. (2001). Capacity building in health promotion, part 1: For whom? And for what purpose? Critical Public Health, 11(2), 111-127. https://doi.org/10.1080/09581590110039838

Levinger, P., Dunn, J., Abfalter, E., Dow, B., Batchelor, F., Garratt, S., ... & Hill, K. D. (2022). The role of recreational facilities in promoting physical activity and well-being. Journal of Public Health Research, 11(2), 102-118.

Martins, R., Saunders, J., & Wilson, K. (2021). Community infrastructure and its impact on sedentary behaviour: A systematic review. Global Health Reports, 9(3), 45-62.

Mitchell, R., & Popham, F. (2008). Effect of exposure to natural environment on health inequalities: an observational population study. The Lancet, 372(9650), 1655-1660.

Odusoga, O. B., & Sholeye, O. O. (2023). Sedentary behaviour among male adolescents in Sagamu, Southwest Nigeria. African Journal of Health Studies, 15(1), 87-103.

Owen, N., Healy, G. N., Matthews, C. E., & Dunstan, D. W. (2010). Too much sitting: the population health science of sedentary behaviour. Exercise and Sport Sciences Reviews, 38(3), 105-113.

Pittman, M., Johnson, R., & Callahan, T. (2022). Promoting healthy lifestyles through community engagement. Health Promotion International, 37(4), 520-536.

Sallis, J. F., Cerin, E., Conway, T. L., Adams, M. A., Frank, L. D., Pratt, M., ... & Owen, N. (2016). Physical activity in relation to urban environments in 14 cities worldwide: a cross-sectional study. The Lancet, 387(10034), 2207-2217.

Samson, A., & Agboola, R. (2022). A comparative study on sedentary behaviour of academic and non-academic staff in University of Ilorin, Nigeria. Journal of Health and Fitness Studies, 8(2), 64-79.

Saunders, J., Wilson, K., & Brown, L. (2020). The role of environmental factors in shaping physical activity patterns. International Journal of Environmental Research and Public Health, 17(14), 5024.

Shobri, N. I. M., Rahman, N. A., & Saman, N. H. M. (2021). Recreational parks and their role in community well-being. Journal of Urban Planning and Development, 147(2), 45-59.

Smith, L., Ma, L., Yates, T., & Coppinger, T. (2020). Rural-urban differences in physical activity and sedentary behaviour. Journal of Rural Health, 36(4), 477-485.

Tremblay, M. S., Carson, V., Chaput, J. P., Connor Gorber, S., Dinh, T., Duggan, M., ... & Zehr, L. (2017). Canadian 24-hour movement guidelines for children and youth. Applied Physiology, Nutrition, and Metabolism, 42(6), 311-322.

UNESCO. (2019). Global education monitoring report 2019: Migration, displacement, and education. UNESCO Publishing.

Wallerstein, N. (2006). What is the evidence on the effectiveness of empowerment to improve health? Health Evidence Network Report, WHO Regional Office for Europe.

World Health Organization (WHO). (2021). Physical activity and sedentary behaviour: A global perspective. World Health Organization Report.

World Health Organization. (2020). Global recommendations on physical activity for health. WHO Press.

ASSESSMENT OF KNOWLEDGE OF FOOD HYGIENE AMONG FOOD HANDLERS IN BOARDING SECONDARY SCHOOLS IN NORTHWEST ZONE, NIGERIA

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Abstract

The study assessed the knowledge of food hygiene among food handlers in boarding secondary schools in North West Zone, Nigeria. To achieve this purpose, the descriptive survey research design was used and the target population for this study was 1112 and also, the sample size was 470 which were drawn from four states in the North West Zone of Nigeria. The participants were selected using multi-stage sampling techniques. A close-ended structured questionnaire based on the modified four (4) point Likert scale was used to obtain responses from the respondents. A pilot study was carried out to test the reliability of the instrument and statistical analysis Cronbach's Alpha correlation coefficient of 0.88 was obtained. The 470 copies of the questionnaire were distributed to the respondents and retrieved. Descriptive statistics of mean and standard deviation was used to answer the research question. The formulated hypothesis was tested at a 0.05 level of significance using inferential statistics of a one-sample t-test. The results revealed that knowledge of food hygiene among food handlers in boarding secondary schools in Northwest Zone, Nigeria was significant ($p = 0.000 < 0.05$). It was concluded that the food handlers in boarding secondary schools in the North West zone, Nigeria have good knowledge of food hygiene. The study recommended that the federal, state, and local governments should implement comprehensive and mandatory workshops, seminars, or training programs for all food handlers in boarding secondary schools in the Northwest Zone of Nigeria, covering essential topics like proper food handling techniques, personal hygiene practices, sanitation procedures, and foodborne illness prevention, to enhance food safety standards and minimize health risks for students and staff.

Keywords: Knowledge, Food Hygiene, Food Handlers, Boarding Secondary Schools

Introduction

Food is a fundamental necessity of life, playing a critical role in stimulating appetites, providing energy through carbohydrates, fats, and dietary fibre, promoting growth via proteins, and preventing diseases through vitamins and minerals (Samuel, Chidiebere, & Ugochi, 2020). However, the diverse sources of food materials and the numerous processes they undergo before consumption increase the likelihood of food becoming a vector for infections (Kamboj, Gupta, Bandral, Gandotra, & Anjum, 2020). Improper handling of food can lead to contamination, resulting in illnesses, poor health, increased medical expenses, and reduced productivity (Aluh & Aluh, 2017). Food hygiene, which encompasses practices that prevent microbial contamination from farm to table, is essential to ensure food safety (Saad, See, Abdullah & Nor, 2015). This concept is closely related to food safety, which ensures that food is free from all contaminants and hazards, though the terms are often used interchangeably (Mendedo, Berhane, & Haile, 2017).

Food hygiene involves measures to prevent contamination at every stage of food production, including handling, preparation, and storage, to avert foodborne illnesses (Sharif, Obaidat, & Al-Dalalah, 2013). Food handlers play a pivotal role in the transmission of foodborne diseases due to their attitudes and practices, often stemming from poor knowledge of safe food handling (Odeyemi & Bamidele, 2016). Foodborne illnesses, which can be infectious or toxic, are caused by pathogens entering the body through contaminated food. These pathogens, such as *Escherichia coli* and non-typhoidal *Salmonella*, can be shed by food handlers during the infectious or recovery phases of gastrointestinal illnesses (Mendedo et al., 2017). Outbreaks of foodborne diseases are often linked to errors by food workers, bacterial proliferation, and survival factors, highlighting the need for stringent hygiene practices (Sharif et al., 2013).

Improper storage, reheating, and cross-contamination are significant contributors to foodborne illnesses (Odeyemi & Bamidele, 2016). For instance, inadequate hand, body, and clothing hygiene among food handlers can lead to cross-contamination, particularly in boarding secondary schools (Okojie & Isah, 2019). Despite the importance of hygiene, many food handlers neglect proper practices, leading to inconsistent raw material quality and outbreaks of food poisoning (Nkhebenyane & Lues, 2020). Unsafe food handling, coupled with poor water supply and environmental sanitation, has been identified as a major cause of foodborne illness outbreaks among secondary school students (Nkhebenyane & Lues, 2020). Globally, unsafe food remains a significant public health issue, with millions falling ill and many dying annually due to

contaminated food and water (WHO, 2017). In developed countries, up to one-third of the population is affected by foodborne illnesses each year (FAO & WHO, 2016).

In Nigeria, the situation is particularly dire, with many cases of foodborne diseases going unreported, making it difficult to gauge the true extent of the problem (WHO, 2017). For example, in 1994, a group of medical students at the University of Lagos fell ill after consuming salad contaminated with *Salmonella* (Otu, 2014). Poor knowledge of food safety, inadequate personal hygiene, and improper storage practices among food handlers in boarding schools are significant concerns (Akorede & Toyin, 2020; Gbolabo et al., 2020). Food hygiene practices, which ensure the cleanliness and safety of food from bacterial contamination, are critical in preventing such outbreaks (Adebowale & Kassim, 2017). Microorganisms, which are ubiquitous in the environment, can contaminate food through various means, including unwashed hands, insects, and improper storage (Isara & Isah, 2016).

The World Health Organization (WHO) emphasizes the importance of understanding the knowledge, attitudes, and practices of food handlers to minimize foodborne diseases (WHO, 2017). Effective food safety practices among food handlers are crucial in ensuring the safe production of food, particularly in large-scale operations like school cafeterias (Aluh et al., 2017). Studies have highlighted the need for training and education of food handlers in hygiene measures, as many lack knowledge of microbiological hazards, proper refrigeration temperatures, and cross-contamination prevention (Oludare et al., 2016). The risk of food contamination is largely dependent on the health status, personal hygiene, and knowledge of food handlers (Akorede & Toyin, 2020; Mortlock et al., 2015).

Training and education are essential in improving food hygiene practices among food handlers. However, studies have shown that while training can increase knowledge, it does not always translate into positive changes in food-handling attitudes (Young et al., 2019). Hofforon et al. (2015) supported this finding, indicating that knowledge alone is insufficient to promote safe behaviours. Therefore, alternative educational strategies, such as motivational health education models, are necessary to foster positive attitudes and practices among food handlers (Tolulope et al., 2015). Identifying the knowledge of food handlers is crucial in ensuring food hygiene and preventing foodborne illnesses in boarding secondary schools (Bas et al., 2016).

Food, being rich in nutrients, is highly susceptible to microbial contamination from various sources, including water, air, dust, equipment, and human handlers (Onyeaka et al., 2021). Changes in food production, handling, and consumption habits have further increased the risk of foodborne illnesses (Coleman & Roberts, 2015). In Nigeria, the lack of proper hygiene practices among food handlers in boarding schools poses a significant public health risk, particularly in the Northwest Zone, where poor sanitation and inadequate water supply are prevalent (Teffo & Tabit, 2020).

The researcher's observations as a former secondary school teacher in Zamfara State revealed that many food handlers in boarding schools have poor hygiene practices, such as unkempt hair, dirty footwear, and the use of contaminated water for washing utensils. These conditions often result in food contamination, leading to infections and diseases among students. Given the critical role of food handlers in ensuring food safety, there is an urgent need to assess their knowledge of food hygiene to identify gaps and implement targeted interventions. This study seeks to evaluate the knowledge of food hygiene among food handlers in boarding secondary schools in the Northwest Zone of Nigeria, to improve food safety practices and reduce the incidence of foodborne illnesses.

Research Question

What is the knowledge of food hygiene among food handlers in boarding secondary schools in the Northwest Zone of Nigeria?

Hypotheses

Knowledge of food hygiene among food handlers in boarding secondary schools in Northwest Zone, Nigeria is not significant.

Methodology

The research design employed in this study was a survey research design, which was deemed appropriate for the study's objectives. According to Anikweze (2013), survey research involves a detailed and critical examination of a topic or situation to ascertain the current state of affairs. The population of the study comprised all food handlers in boarding secondary schools across the North West Zone, which includes states such as Sokoto, Kebbi, Katsina, Zamfara, Kaduna, Jigawa, and Kano. The total number of state boarding secondary schools in this zone is 226, with 1,943 food handlers employed across these schools. The data on the number of schools and food handlers were obtained from the State Ministry of Education (2022).

The sample size for the study was determined to be 470 food handlers, drawn from a population of 1,112. A multistage sampling technique was employed to select the sample, which included simple random sampling, stratified sampling, and proportionate sampling. In the first stage, four states (Katsina, Jigawa, Kebbi, and Sokoto) were randomly selected from the seven states in the North West Zone using a hat-drawn method. In the second stage, the sample size of 470 was determined using the Research Advisor table for determining sample size, which recommended this number based on a population of 1,112, a 0.035% margin of error, and a 95% confidence interval. The third stage involved stratifying each selected state into

three senatorial zones (Northern, Southern, and Central), and in the fourth stage, two senatorial zones were randomly selected from each state. Finally, a proportionate sampling technique was used to select 470 food handlers from the four states, ensuring that the sample was representative of the population. Convenience sampling was then used to distribute the questionnaires to the selected food handlers, as they were sparsely distributed across the schools.

The data collection instrument was a close-ended questionnaire which assessed the knowledge of food hygiene among the food handlers using a 4-point Likert scale. The validity of the instrument was established through vetting by experts in the Department of Human Kinetics and Health Education at Ahmadu Bello University, Zaria. A pilot study was conducted with 50 participants to test the reliability of the instrument, and the data collected were analyzed using Cronbach's alpha, which yielded a reliability index of 0.88, indicating high internal consistency. The data collection involved the researchers administering 470 questionnaires across the selected senatorial zones. Mean and standard deviation was used to answer the research question. The null hypothesis was tested using a one-sample t-test at a 0.05 level of significance.

Results

Research Question: What is the knowledge of food hygiene among food handlers in boarding secondary schools in the Northwest Zone of Nigeria?

Table 1: Respondent Knowledge of Food Hygiene among Food Handlers

S/N	Statement	Mean	SD
1	Food handlers must take their bath first thing in the morning before handling food.	3.50	1.291
2	Food handlers must sanitize the cooking and serving food environment before handling food.	3.52	1.235
3	Food handlers must cover food from flies and other insects to prevent disease transmission.	3.37	1.684
4	Insect and rodent control is an effective way of ensuring food safety.	3.43	1.339
5	Uncooked foods are stored in a dry environment.	3.73	1.292
6	Bacteria are transmitted to food through poorly cleaned equipment such as pots, knives and other cooking utensils.	3.44	1.575
7	Washing vegetables and animal-originated foods such as meat and fish properly under running water before cooking is very important.	2.07	1.197
8	Food poisoning is transmitted through unwashed hands.	3.57	1.579
9	The use of a cap, face mask, protective gloves and adequate protective clothing reduces the risk of food contamination.	3.31	1.493
10	Kitchen workers must go through health checks every 6 months.	2.48	1.262
	Average	**3.242**	

Decision/Criterion mean = 2.50

From Table 1, knowledge of food hygiene among food handlers in boarding secondary schools in the Northwest Zone of Nigeria is relatively high, this is because their average mean response of 3.242 is above 2.500 which is the criterion mean. A deeper examination of this table shows that their mean responses in each of the 8 items were higher than the decision mean. Specifically, the majority of the respondents understand that uncooked foods are stored in a dry environment, as this response attracted the highest mean response of 3.73. Furthermore, knowledge of food poisoning transmission through unwashed hands is important as this response had the second-highest mean of 3.57. Similarly, other items such as food handlers must sanitize the cooking and serving food environment before handling food and must take their bath first thing in the morning before handling food have a mean rating of 3.52 and 3.50 respectively. Similarly, the majority of the respondents agreed that bacteria are transmitted to food through poorly cleaned types of equipment such as pots, knives and other cooking utensils with a mean score of 3.44 and that insect and rodent control is an effective way of ensuring food safety with a mean rating of 3.43. This implies that the kitchen environment and cooking utensils should be kept clean and safe away from insects and rodents. In the same vein, the majority of the respondents agreed that the use of a cap, face mask, protective gloves and adequate protective clothing reduces the risk of food contamination with a mean score of 3.31

However, the majority of the respondents disagreed that washing vegetables and animal-originated foods such as meat and fish properly under running water before cooking is very important and kitchen workers must go through health checks every 6 months with a mean score of 2.07 and 2.48 respectively. In summary, the majority of all the participants are knowledgeable about food hygiene especially as related to storage of uncooked foods, causes and transmission of food poisoning, sanitization of cooking and serving environment, personal hygiene for the food handlers, transmission of bacteria and, food safety through rodents and insects control mechanism. Therefore, it can be concluded that food handlers in boarding secondary schools in the Northwest Zone of Nigeria have adequate knowledge about food hygiene.

Hypothesis: Knowledge of food hygiene among food handlers in boarding secondary schools in Northwest Zone, Nigeria is not significant.

Table 2: One sample t-test statistical analysis results on the significance of Knowledge of food hygiene among food handlers in boarding secondary schools in Northwest Zone, Nigeria.

	N	Mean	SD.	SD. Error Mean	df	t_{Cal}	t_{Cri}	p-value
Knowledge	470	34.623	5.870	.271	469	-19.86	1.965	0.000
Decision Mean	420	2.50						

$t_{Cal.} > t_{Cri}$ at df 469, calculated p-value (0.000) < 0.05, t = |19.86|

The hypothesis posited that knowledge of food hygiene among food handlers in boarding secondary schools in the Northwest Zone of Nigeria is not significant. The results of the one-sample t-test, as presented in Table 4.8, strongly reject this hypothesis. The mean knowledge score is 34.623, and the standard deviation is 5.870. The standard error of the mean is 0.271, calculated based on a sample size of 470 and degrees of freedom (df) of 469. The calculated t-value (t_{Cal}) is -19.86, while the critical t-value (t_{Cri}) at df 469 and a significance level of 0.05 is 1.965. The absolute value of t_{Cal} (|19.86|) is significantly greater than t_{Cri}, indicating a highly significant difference. The p-value, calculated as 0.000, is less than 0.05, providing strong evidence against the null hypothesis.

Therefore, based on the results of the one-sample t-test, it can be concluded that the knowledge of food hygiene among food handlers in the boarding secondary schools in Northwest Zone, Nigeria is indeed significant. The negative t-value indicates that the mean knowledge score is significantly lower than a hypothetical mean, further emphasizing the need for targeted interventions to enhance knowledge levels and, consequently, improve food hygiene practices among the food handlers in the boarding secondary schools in the Northwest Zone of Nigeria.

Discussion of Findings

The findings from this study showed that the knowledge of food hygiene among food handlers in boarding secondary schools in Northwest Zone, Nigeria is significant. Firstly, it is imperative to acknowledge that food hygiene plays a fundamental role in preventing food-borne illnesses and ensuring the safety of consumers, particularly in settings like boarding secondary schools where large numbers of individuals are served meals regularly. The findings of this research shed light on the current state of food hygiene awareness among food handlers within the Northwest Zone, Nigeria providing valuable insights into potential areas of improvement. This finding emphasizes the importance of educational interventions and training programmes aimed at enhancing the knowledge and practices of food handlers regarding food hygiene. By identifying areas of deficiency in food hygiene knowledge, such interventions can be tailored to address specific gaps and equip food handlers with the necessary skills to uphold proper hygiene standards in food preparation and handling processes. These results concur with various studies done on knowledge which entails the ability to acquire, retain and utilize information hence education and training are prerequisites of knowledge (Addo-Tham *et al.,* 2020). According to a study conducted in Ghana, on knowledge of food safety and food-handling practices of street food vendors in primary, it revealed that the level of knowledge on food hygiene and safety practices was satisfactory after intervention treatment (Annor, 2011).

Moreover, the findings underscore the need for stringent regulatory measures and enforcement mechanisms to ensure compliance with food safety standards in boarding secondary schools. This may involve the implementation of regular inspections, monitoring systems, and the establishment of clear guidelines and protocols for food handling practices. By holding food handlers accountable for maintaining high standards of hygiene, such measures can contribute to safeguarding the health of students and reducing the risk of foodborne diseases. Similarly, the findings and observations of this study are similar to some other studies done in Nigeria (Afolaranmi *et al.*, 2015, Bamidele *et al.*, 2015; Zain & Naing, 2002). On the contrary, studies from Ethiopia, Malaysia, Iran, Korea and Thailand observed that a majority of the food vendors had poor level of food hygiene knowledge (Tessema *et al.*, 2014; Rahman *et al.*, 2012; Cuprasittrut *et al.*, 2011; Pirsaheb *et al.*, 2010; Park *et al.*, 2010). It is tempting to say that the level of good knowledge among the majority of food vendors in the present study could be related to the fact that a majority of the respondents had a level of education or training which could have formed the basis for increased comprehension of food hygiene information and therefore improved knowledge.

The potential justification for this finding might be that education might help food handlers get better information regarding food safety as compared to non-educated. Besides, educated food handlers' will also be able to read additional written messages on food safety from different sources of information such as leaflets, posters, or fliers which in turn could positively affect food handlers' knowledge of food safety (Addo-Tham *et al.,* 2020). Therefore, it can be concluded that training could help them to acquire a better knowledge of food safety and hygiene.

Conclusion

The food handlers in boarding secondary schools in Northwest Zone, Nigeria know about some food hygiene.

Recommendations

Since food hygiene knowledge among food handlers in boarding secondary schools in the Northwest Zone of Nigeria is important, federal, state and local governments should implement comprehensive and mandatory workshops, seminars or training programmes for all food handlers. These programmes should cover essential topics such as proper food handling techniques, personal hygiene practices, sanitation procedures, and food-borne illness prevention. By equipping food handlers with the necessary knowledge and skills, schools can significantly enhance food safety standards and minimize the risk of foodborne illnesses among students and staff.

References

Addo-Tham, R., Appiah-Brempong, E., Vampere, H., Acquah-Gyan, E., & Gyimah, A. A. (2020). Knowledge of food safety and food-handling practices of street food vendors in Ejisu-Juaben Municipality of Ghana. *Adv Public Health*, 4579573.

Adebowale, O. & Kassim, I. (2017). Food safety and health: A survey of rural-urban household consumer practices, knowledge of food safety and food.

Afolaranmi, T.O., Hassan, Z.I., Bello, D.A. & Misari, Z. (2015). Knowledge and Practice of Food Safety and Hygiene among Food Vendors in Primary Schools in Jos, Plateau State, North Central Nigeria. *Journal of Medical Research, 4*, 16-22.

Akorede, S. N., & Toyin, A. (2020) Knowledge of Personal Hygiene among Undergraduates. *Journal of Health Education (JHE), 5*(2), 66-71

Aluh, F. O., & Aluh, D. O. (2017). Knowledge, attitudes and practices of food hygiene among mobile food vendors in a Nigerian rural settlement. International *Journal of Community Medicine and Public Health, 4*(11), 4025-4030.

Annor, E. B. (2011). Evaluation of food hygiene knowledge attitudes and practices of food handlers in food businesses in Accra, Ghana. *Food Nutr Sci., 2*(8), 830

Bamidele, J. O., Adebimpe, W. O., Oladele, E. A. and Adeoye, O.A. (2015) Hygiene Practices among Workers in Local Eateries of Orolu Community in South Western Nigeria. *Annals of Medical and Health Sciences Research, 5*, 235-240.

Bas, M., Azmi, S. E., & Gokhan, K. (2016), The evaluation of food hygiene knowledge, attitudes, and practices of food handlers in food businesses in Turkey", *Food Control*, *17*(2016). 317-322.

Coleman, P. & Roberts, A. (2015). Food hygiene training in the UK: A time for change. *Journal of Food Service Technology, 5*, 17-22.

Cuprasittrut, T., Srisorrachatr, S. & Malai, D. (2011). Food Safety Knowledge, Attitude and Practice of Food Handlers and Microbiological and Chemical Food Quality Assessment of the Food for Making Merit for Monks in Ratchathewi District, Bangkok. *Asia Journal of Public Health, 2*, 27-34.

FAO/WHO (2016). *Guidance to Governments on the application of HACCP in small and /or less developed businesses*. FAO London.

Gbolabo, J. K., Adebola, A. A., & Abdul-Hakeem, O. A. (2020). Assessment of Knowledge, Attitude, and Practice of Meat Hygiene among Meat Handlers in Lagos State, Nigeria. *Nigerian Journal of General Practice, 18*, 27-36

Hofforon, P. R., Bradley, C. R., & Ayliffe, G. (2013). *Disinfection in health care.(3rd Ed.).*Oxford: Blackwell Publishing

Isara, A. & Isah, I. (2016). Knowledge and practice of food hygiene and hygiene among food handlers in fast food restaurants in Benin City, Edo State, Nigeria. *Postgraduate Medical Journal*, September, *16*(3), 207-12.

Kamboj, S., Gupta, N., Bandral, J. D., Gandotra, G. & Anjum, N. (2020). Food safety and hygiene: A review. *International Journal of Chemical Studies, 8*(2), 358-365

Mendedo, E. K., Berhane, Y., Haile, B. T. (2017). Factors associated with sanitary conditions of food and drinking establishments in Addis Ababa, Ethiopia: cross-sectional study. *Pan Afr Med J., 28*(1), 237

Mortlock, M. P., Peters, A. C., & Griffith, C. (2015). Food hygiene and HACCP in the UK food industry, practices, perceptions and attitudes. *Journal of Food Protection, 62*, 786-792.

Nkhebenyane, J. S., & Lues, R. (2020). The knowledge, attitude, and practices of food handlers in central South African hospices. *Food Sci*.

Odeyemi, A., & Bamidele, T. (2016). Harnessing the potentials and predictive microbiology in microbe food safety and quality research in Nigeria. *Future Science, 2*(1) 91-93.

Okojie, P. W., & Isah, E. C. (2019). Food hygiene knowledge and practices of street food vendors in Benin City, Nigeria, *International Journal of Consumer Studies, 43*(6), 528-535.

Oludare, A.O., Ogundipe, A., Odunjo, A., Komolafe, J. & Olatunji, I. (2016). Knowledge and food handling practices of nurses in a tertiary health care hospital in Nigeria, *Journal of Environmental Health, 76*(8), 32-39

Onyeaka, H., Osmond, C. E., Ukpai, A. E., Queeneth, I. O., Job, A., Ogueri, N., & Joy, O. C., (2021) Improving Food Safety Culture in Nigeria: A Review of Practical Issues. *Foods 10*(8), 1878.

Otu, S. S. (2014). *Food Hygiene Practices among Food Handlers in Ahmadu Bello University, Zaria*. MPH Thesis Department of Community Medicine, Ahmadu Bello University, Zaria.

Park, S., Kwak, T. and &, H. (2010). Evaluation of the Food Safety Training for Food Handlers in the Restaurant Operation. *Nutrition Research and Practice*, *4*, 58-68.

Pirsaheb, M., Almasi, A. & Rezaee, M. (2010) The Special Education Course Effects on Knowledge, Attitude and Practice of Preparation, Distribution and Sale Centres Food Staff in Kermanshah. *Iranian Journal of Health and Environment*, *3*, 299-308.

Rahman, M. M., Arif, M. T., Bakar, K. & Tambi, Z. (2012). Food Safety Knowledge, Attitude and Hygiene Practices among the Street Food Vendors in Northern Kuching City, Sarawak. *Borneo Science, 31*, 94-103.

Saad, M., See, T. P., Abdullah, M. F. F., &Nor, N. M. (2015). Use of Rapid Microbial Kits for Regular Monitoring of Food-contact Surfaces Towards Hygiene Practices. *Procedia - Social and Behavioral Sciences*, *105*, 273–283.

Samuel, E. O, Chidiebere, F. U, & Ugochi, R. E. (2020). Foodborne Diseases and Intoxication in Nigeria: Prevalence of Escherichia coli 0157:H7

Sharif, L., Obaidat, M. M., & Al-Dalalah, M. R. (2013). Food hygiene knowledge, attitudes and practices of the food handlers in the military hospitals. *Food Nut. Sci., 4*(3), 245–251

Teffo, L. A., & Tabit, F. T. (2020). An assessment of the food safety knowledge and attitudes of food handlers in hospitals. *BMC Public Health, 20*, 1–12.

Tessema, A. G., Gelaye, K. A. & Chercos, D. H. (2014). Factors Affecting Food Handling Practices among Food Handlers of Dangila Town Food and Drink Establishments, North West Ethiopia. BMC Public Health, 14, 571

Tolulope, O.A., Zuwaira, I.H., Danjuma, A.B., Yetunde, O.T., Chundung, A.M., &Ayuba, I.Z. (2013). Training: a vital tool for improving the knowledge and practice of food hygiene and hygiene among food handlers in boarding schools in Plateau state. *J Med Trop* 16(2):87–92.

World Health Organization (2017). Food hygiene [Retrieved 29 September 2017]. Available from: http://www.who.int/foodsafety/areas_work/food-hygiene/en/ (accessed on 29 June 2018).

Young, I., Greig, J., Wilhelm, B. J., & Waddell, L. A. (2019). Effectiveness of food handler training and education interventions: A systematic review and meta-analysis. *Journal of Food Protection, 82*(10), 1714–1728

Zain, M. M. & Naing, N. N. (2002). Socio-demographic Characteristics of Food Handlers and Their Knowledge, Attitude and Practice towards Food Sanitation: A Preliminary Report. Southeast *Asian Journal of Tropical Medicine and Public Health*, 33, 410-417.

ASSESSMENT OF KNOWLEDGE OF TOILET INFECTION PREVENTIVE MEASURES AMONG BOARDING SECONDARY SCHOOL STUDENTS IN NORTH EAST, NIGERIA

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Abstract

The study assessed the knowledge of toilet infection preventive measures among boarding secondary school students in North East, Nigeria. To achieve this purpose, descriptive survey research design was used. The population for this study was twenty-five thousand seven hundred and seventy-three (25,773) female students in boarding secondary schools across North-East Nigeria. The sample size of 378 was selected using multistage sampling procedures which include stratified, simple random, purposive, and proportionate sampling. The instrument for data collection was a structured questionnaire developed by the researcher. The instrument was pilot-tested using Cronbach Alpha and a 0.851 coefficient value was obtained. The Descriptive statistics of frequency and simple percentages were used to analyze the demographic characteristics of the respondents. The research question was answered using mean and standard deviation and inferential statistics of one-sampled t-test was used to test the stated hypothesis at a 0.05 level of significance. The result revealed that the knowledge of toilet infection preventive measures is significant (t = 23.451; p = 0.000). Based on the results, the study concluded that the boarding secondary school students in North East, Nigeria have knowledge of toilet infection preventive measures. Based on the conclusion, the study recommends the need for the school management to implement comprehensive educational programmes to reinforce and maintain the high level of knowledge among boarding secondary school students in North East, Nigeria regarding toilet infection preventive measures.

Keywords: Knowledge, Toilet Infection, Preventive Measures, Boarding School Students

Introduction

Toilet infections, often linked to poor sanitation and hygiene practices, remain a critical public health challenge, particularly in densely populated settings like boarding secondary schools. These infections, which include Urinary Tract Infections (UTIs), gastrointestinal diseases, and skin conditions, are exacerbated by inadequate access to clean water, improper waste management, and limited awareness of preventive measures (World Health Organization (WHO), 2024). In Nigeria, where boarding schools often face infrastructural deficits, the risk of toilet-related infections is heightened, necessitating urgent attention to students' knowledge and practices. This study focuses on boarding secondary school students in North East Nigeria, a region grappling with systemic healthcare and educational challenges, to assess their understanding of toilet infection prevention and its implications for health outcomes.

Globally, poor sanitation accounts for approximately 432,000 diarrheal deaths annually, with low- and middle-income countries bearing the highest burden (WHO, 2024). Healthcare-associated infections (HAIs), many of which originate from contaminated environments, affect millions worldwide, costing health systems billions annually (Puro, Coppola, Frasca, Gentile, Luzzaro, Peghetti & Sganga, 2022). The World Health Organization (WHO) emphasizes that 70% of HAIs can be prevented through basic water, sanitation, and hygiene (WASH) measures (WHO, 2024). In educational settings, shared toilet facilities often become hotspots for pathogen transmission, particularly where hygiene infrastructure is neglected (Abney, Bright, McKinney, Ijaz & Gerba, 2021). For instance, a 2024 WHO report highlighted that 40% of schools in developing nations lack handwashing facilities, directly contributing to the spread of infections (WHO, 2024).

In sub-Saharan Africa, inadequate sanitation affects over 70% of rural and peri-urban populations, with school-aged children disproportionately impacted. A 2023 study in Ghana revealed that 60% of school-based infections were linked to unsanitary toilets (Akanzum & Pienaah, 2023), while in Kenya, 55% of students reported recurrent UTIs due to poor facility maintenance (Sado et al., 2024). Similarly, a survey across six African nations found that only 30% of schools met WHO standards for student-to-toilet ratios, exacerbating cross-contamination risks (Melaku, Mengistie & Addis, 2023; Nlunda, Konde, YambaYamba & Kiyombo, 2023). These figures underscore the regional urgency of addressing toilet hygiene in educational institutions.

Nigeria faces severe sanitation challenges, with 47 million people practising open defecation and 70% of schools lacking functional handwashing stations (Ozibo, 2025). In North East Nigeria, protracted conflicts and underfunded infrastructure have worsened conditions. Federal Ministry of Water Resources (FMWR), Government of Nigeria, National Bureau of Statistics (NBS) and UNICEF (2022) reported that 80% of boarding schools in Borno State had dilapidated toilets, leading to frequent outbreaks of cholera and typhoid. Furthermore, a study in Anambra State revealed that 63% of students attributed recurrent abdominal pain to poor toilet hygiene, while 44% reported skin rashes from unsanitary facilities (Nwabueze, Azuike, Ezenyeaku, Aniagboso, Azuike, Iloghalu & Nwone 2014).

Effective preventive for toilet infection measures include regular cleaning of facilities, access to soap and water, proper waste disposal, and behavioural practices like handwashing after toilet use (Abdulrasaq et al., 2015; Amin et al., 2024; Berihun et al., 2022). Knowledge of preventive measures is often inconsistent. In Delta State, Nigeria, only 32% of rural students could correctly list handwashing steps, despite 75% claiming familiarity with hygiene concepts (Nwosu, Mmerem, Ozougwu, Nlewedim, Ugwa, Ugwunna, Nwosu & Ndu, 2024). Similarly, a study by El-Duah, Harris and Appiah-Brempong (2021) found that 65% of adolescents misunderstood the role of contaminated surfaces in pathogen transmission, conflating toilet infections with sexually transmitted infections (STIs). Prior research in Nigeria highlights disparities in knowledge and practice. For instance, a study by Onyedibe, Shehu, Pires, Isa, Okolo, Gomerep, Ibrahim, Igbanugo, Odesanya, Olayinka, Egah and Pittet (2020) revealed that 80% of students could name handwashing as a preventive measure but only 40% practised it consistently. In contrast, a 2018 survey in Maiduguri demonstrated that peer-led hygiene campaigns increased correct practices by 35% within six months (Habu, Emmanuel & Inuwa, 2018). Internationally, a systematic review of African schools linked structured hygiene education to a 50% reduction in absenteeism due to infections (Ismail et al., 2024).

Despite global and national guidelines, boarding schools in North East Nigeria remain vulnerable to toilet infections due to infrastructural neglect and insufficient health education. Preliminary observations by the researchers revealed that many students in secondary schools cannot describe proper toilet-cleaning protocols, and reported using shared towels, amplifying infection risks. Furthermore, few schools had functional handwashing stations, and health education curricula lacked practical hygiene modules. This study thus assessed the knowledge of toilet infection preventive measures among boarding secondary school students in North East, Nigeria.

Purpose of the Study

The purpose of this study was to assess the knowledge of toilet infection preventive measures among boarding secondary school students in North East, Nigeria.

Research Questions

What is the knowledge of toilet infection preventive measures among boarding secondary school students in North East, Nigeria?

Hypotheses

Knowledge of toilet infection preventive measures among boarding secondary school students in North East, Nigeria is not significant.

Methodology

The study adopted a descriptive survey research design, which enables the researchers to obtain the opinions of a representative sample of the target population—in this case, female students in public boarding secondary schools in North Eastern States, Nigeria. The total population for the study was 25,773 female students across six states: Adamawa, Bauchi, Borno, Gombe, Taraba, and Yobe. A multi-stage sampling technique was used to select a sample size of 378 respondents, following the Research Advisor's (2006) recommendation for a 95% confidence level with a 0.05 margin of error. The sampling process involved stratifying the states, randomly selecting three states, further dividing them into senatorial zones, and selecting schools based on purposive and proportionate sampling methods. A researcher-developed questionnaire titled "Assessment of Knowledge of Toilet Infection Preventive Measures among Boarding Secondary School Students (AKTIPMBSSSQ)" was used for data collection. The questionnaire had two sections: Section A covered demographic information, while Section B contained 15 items on knowledge of toilet infection preventive measures, using a 4-point Likert scale. The instrument's validity was confirmed by experts from Ahmadu Bello University, Zaria, and a pilot study was conducted in Benue State with 30 respondents to test reliability. Using the split-half method and Cronbach's Alpha coefficient, the instrument achieved a reliability score of 0.851, indicating strong internal consistency and reliability.

For data collection, an introductory letter from the Head of the Department of Human Kinetics and Health Education at Ahmadu Bello University, Zaria, facilitated access to schools. The researchers administered the questionnaire systematically, using class registers and an even-number sampling technique to ensure random selection. Data were retrieved immediately to prevent loss. The entire process lasted eight weeks. Data analysis was conducted using the Statistical Package for Social Sciences (SPSS), with descriptive statistics (frequency and percentages) for demographic variables and mean and standard

deviation to address the research question. The inferential statistic of a one-sample t-test was applied to test the hypothesis at a 0.05 level of significance.

Results

All data collected on the demographic characteristics of the respondents were tabulated using frequencies and percentages as indicated in Table 1.

Table 1: Demographic Characteristics of the Respondents

Variables		Frequency	Percentage (%)
Age Range in Years	13 – 15	63	16.7
	16 – 18	179	47.3
	19 – 21	77	20.4
	22 and above	59	15.6
	Total	**378**	**100.0**
Names of Schools	GSS, Mobi	50	13.2
	GSS, Michika	29	7.7
	GSS, Numan	32	8.5
	GGSS, Imburu	26	6.9
	GSS, Jalingo	33	8.7
	GSSSS, Nyabu Kata	25	6.6
	GGSSS, Wukari	25	6.6
	FGC, Wukari	34	9.0
	GSS, Damaturu	33	8.7
	GGC, Damaturu	30	7.9
	GSS, Potiskum	29	7.7
	GGSTC, Potiskum	32	8.5
	Total	**378**	**100.0**

Table 1 shows the demographic characteristics of the respondents. The table shows the age range and school distribution of the 378 respondents who participated in the study. Regarding age, the majority of the respondents 179 (47.3%) were in the 16-18 years age range, followed by 19-21 years 77 (20.4%), 13-15 years 63 (16.7%), and 22 years and above 59 (15.6%). This indicated that the sample was predominantly composed of late adolescent and young adult secondary school boarding students. In terms of the schools represented, the largest proportion of respondents 50 (13.2%) were from GSS, Mobi, followed by FGC, Wukari 34 (9.0%), GSS, Jalingo and GSS, Damaturu 33 (both 8.7%), GSS, Numan and GGSTC, Potiskum 32 (both 8.5%), GGC, Damaturu 30 (7.9%), GSS, Michika and GSS, Potiskum 29 (both 7.7%), GGSS, Imburu 26 (6.9%), and GSSSS, Nyabu Kata and GGSSS, Wukari 25 (both 6.6%). This diverse school representation allows for a more comprehensive understanding of the knowledge, attitudes, and practices related to toilet infection prevention among secondary school boarding students in the North East, Nigeria.

Research Question: What is the knowledge of toilet infection preventive measures among boarding secondary school students in North East, Nigeria?

Table 2: Mean Scores of Responses on Knowledge of Toilet Infection Preventive Measures among Boarding Secondary School Students in North East, Nigeria

S/N	Item	Mean	Std Dev
1.	I am aware that handwashing with soap after using the toilet helps prevent infections	3.63	0.72
2.	I know that it is important to clean the toilet seat before use to prevent infections	3.52	0.76
3.	I understand that using a toilet disinfectant can help reduce the risk of infections	3.23	0.72
4.	I am aware that flushing the toilet with the lid closed helps prevent the spread of germs	3.10	0.74
5.	I know that regular cleaning of the toilet bowl is essential for preventing infections	3.21	0.68
6.	I believe that it is important to use separate cleaning tools for the toilet and other hostel areas.	3.32	0.94
7.	I am aware that sharing towels used in the bathroom can spread infections	3.29	0.75
8.	I know that using toilet paper or wipes effectively helps in maintaining hygiene and preventing infections	3.04	0.80
9.	I understand that disposing of sanitary products properly is crucial for infection prevention	3.20	0.81
10.	I am aware that regular hand sanitizing after using public restrooms helps prevent infections	3.09	0.69
11.	I know that avoiding direct contact with public restroom surfaces can help reduce infection risks	3.22	0.59
12.	I understand the importance of not touching my face after using the toilet until I wash my hands.	3.04	0.69
13.	I am aware that using a toilet seat cover or paper lining can help prevent infections.	3.08	0.74
14.	I know that it is important to regularly clean and disinfect the flush handle or button	2.91	0.76
15.	I believe that educating other students about proper toilet hygiene can help prevent infections	3.30	0.73
	Aggregate	**3.21**	

(Decision Mean – 2.50)

Table 2 revealed the mean scores of responses on the knowledge of toilet infection preventive measures among boarding secondary school students in North East, Nigeria. The decision mean was set at 2.50, which indicated that any mean score

above 2.50 suggests a good level of knowledge among the respondents. The aggregate mean score across all 15 items is 3.21, which is above the decision mean of 2.50. This affirmed that the boarding secondary school students in the North East, Nigeria have a good overall knowledge regarding toilet infection preventive measures. Specifically, the highest mean score is 3.63 for the statement "I am aware that handwashing with soap after using the toilet helps prevent infections." This indicated that the respondents have a strong understanding of the importance of handwashing in preventing toilet-related infections.

Other items with high mean scores include "I know that it is important to clean the toilet seat before use to prevent infections" (3.52), "I believe that it is important to use separate cleaning tools for the toilet and other hostel areas" (3.32), and "I am aware that sharing towels used in the bathroom can spread infections" (3.29). These results suggest that the respondents have a good grasp of various preventive measures, such as cleaning the toilet seat, using dedicated cleaning tools, and avoiding sharing personal items. The items with relatively lower mean scores, but still above the decision mean, include "I know that it is important to regularly clean and disinfect the flush handle or button" (2.91) and "I am aware that using a toilet seat cover or paper lining can help prevent infections" (3.08). This indicated that the respondents' knowledge of these specific preventive measures, while still at an acceptable level, may need further reinforcement.

Hypothesis: Knowledge of toilet infection preventive measures among boarding secondary school students in North East, Nigeria is not significant.

Table 3: One-Sample t-test Analysis of Knowledge of Toilet Infection Preventive Measures among Boarding Secondary School Students in North East, Nigeria

Variable	N	Mean	Std. Dev.	df	t-value	p-value
Knowledge	378	3.21	0.78	377	23.451	0.000
Test Mean	378	2.50	0.00			

Calculated p < 0.05, calculated t-value > 1.972 at df 377

The result of the one-sample t-test statistics in Table 3 revealed that the knowledge of toilet infection preventive measures among boarding secondary school students in North East, Nigeria is significant because the calculated p-value of 0.000 is less than the 0.05 level of significance and the calculated t-value of 23.451 is higher than the 1.972 critical t-value at 377 degrees of freedom (df). Therefore, the null hypothesis which stated that the knowledge of toilet infection preventive measures among boarding secondary school students in North East, Nigeria is not significant is hereby rejected. This means that boarding secondary school students in North East, Nigeria have knowledge of toilet infection preventive measures.

Discussion of Finding

The finding revealed that knowledge of toilet infection preventive measures among boarding secondary school students in North East, Nigeria is significant (t = 23.451; p = 0.000). This finding aligns with several previous studies while also contrasting with others. Ahmed and Ibrahim (2018) conducted a study on the knowledge and practice of toilet hygiene among secondary school students in Bauchi State, Nigeria and found that 75% of secondary school students possessed adequate knowledge of toilet infection prevention, although only half of them consistently practised proper hygiene. This suggests that while knowledge levels may be high, translating that knowledge into practice remains a challenge. Similarly, Musa and Dogo (2019) examined the attitudes towards toilet infection prevention among students from three secondary schools in Maiduguri, Nigeria and reported that 85% of secondary school students acknowledged the importance of hygiene practices in preventing toilet infections, yet there was a gap between knowledge and consistent implementation. This supports the argument that while knowledge levels may be significant, practical adherence to preventive measures requires further intervention.

On the other hand, studies conducted in other Nigerian states and regions present mixed findings. Yusuf and Aminu (2020) examined the practices of toilet hygiene among secondary school students in Yobe State and found that 60% of students demonstrated adequate toilet hygiene practices, with environmental factors and peer behaviour influencing their compliance. This study highlighted that despite relatively high knowledge levels, external factors such as facility availability played a crucial role in determining students' hygiene behaviours. Furthermore, In Adamawa State, Muhammad and Lawal (2017) assessed the knowledge and attitude of toilet infection prevention in secondary schools and found that 80% of students had good knowledge of toilet infection prevention, and 70% had positive attitudes towards these measures. However, like other studies, they emphasized the need for continuous hygiene education to translate knowledge into action.

Contrastingly, studies conducted in different regions of Africa and beyond have shown variations in knowledge levels. Bokolia (2016) in India assessed the knowledge of urinary tract infections among adolescent girls and found that a significant portion (65.79%) did not know about UTIs, highlighting major gaps in awareness compared to the findings in North East Nigeria. Similarly, Sherpa, Rai, Giri, Dhakal, Lepcha, Subba, Bhutia, Timisina, Lama, Thapa, Dey, Chettri, Chettri, Singh, Bhutia and Bhutia (2022) assessed the knowledge, attitude, and hygienic practice towards preventive measures of urinary tract infection among adolescent girls of selected rural areas Sikkim and found that only 12% of adolescent girls had high knowledge of UTI

prevention measures, suggesting that cultural, educational, and healthcare differences may contribute to varying levels of awareness across different populations.

In Saudi Arabia, Almaghlouth, Alkhalaf, Alshamrani, Alibrahim, Alhulibi, Al-Yousef, Alamer, Alsuabie, Almuhanna and Alshehri (2023) examined the awareness, knowledge, and attitude towards urinary tract infections and found that 70.1% of participants were aware of UTIs, but misconceptions about risk factors and prevention strategies were widespread. This suggests that while knowledge might be significant, it does not always translate to accurate understanding or effective prevention. The current study's findings reinforce the notion that knowledge of toilet infection preventive measures among students in North East Nigeria is relatively high, which is in line with findings from other Nigerian studies. However, as observed in previous research, knowledge alone does not always guarantee adherence to preventive practices.

Conclusions

Based on the findings of the study, the study concluded that boarding secondary school students in North East, Nigeria know toilet infection preventive measures.

Recommendations

Based on the conclusions, the study recommended that the school management should implement comprehensive educational programmes to reinforce and maintain the high level of knowledge among boarding secondary school students in North East, Nigeria regarding toilet infection preventive measures.

References

Abdulrasaq, Q. O., Jidda, K. A. & Akorede, S. N. (2015). Perceived Influence of Drainage and Waterways Dumping on the Environment among the People of Ilorin South Local Government Area. *Ilorin Journal of Health Promotion and Environmental Health Education, 1*(1), 104-114.

Abney, S. E., Bright, K. R., McKinney, J., Ijaz, M. K., & Gerba, C. P. (2021). Toilet hygiene review and research needs. *Journal of Applied Microbiology, 131*(6), 2705–2714. https://doi.org/10.1111/jam.15121

Aggarwal, R., & Ranganathan, P. (2019). Study Designs: Part 2 - Descriptive studies. *Perspectives in Clinical Research, 10*(1), 34–36.

Ahmed, S., & Ibrahim, M. (2018). Knowledge and practice of toilet hygiene among secondary school students in Bauchi State, Nigeria. *Journal of Public Health Research and Practice, 12*(3), 45-53.

Akanzum, J., & Pienaah, C. K. A. (2023). Review of the effects of adequate sanitary facilities on the participation and performance of the school girl child in Ghana. *ISABB Journal of Health and Environmental Sciences, 8*(1), 1-14.

Aleineina, I. A., & Sokhn, E. S. (2024). Knowledge and prevalence of urinary tract infection among pregnant women in Lebanon. *Heliyon, 10*(17), e37277. https://doi.org/10.1016/j.heliyon.2024.e37277

Almaghlouth, A. K., Alkhalaf, R. A., Alshamrani, A. A., Alibrahim, J. A., Alhulibi, B. S., Al-Yousef, A. Y., Alamer, A. K., Alsuabie, S. M., Almuhanna, S. M., & Alshehri, A. D. (2023). Awareness, knowledge, and attitude towards urinary tract infections: An appraisal from Saudi Arabia. *Cureus, 15*(11), e49352. https://doi.org/10.7759/cureus.49352

Amin, A., Abdulrauf, A., & Isiaq, A. T. (2024). Strategies for the implementation of environmental protection regulations towards sustainable waste management in Oyo State. *Gusau International Journal of Management and Social Sciences, 7*(2), 83-104. https://doi.org/10.57233/gijmss.v7i2.05

Berihun, G., Adane, M., Walle, Z., Abebe, M., Alemnew, Y., Natnael, T., Andualem, A., Ademe, S., Tegegne, B., Teshome, D., & Berhanu, L. (2022). Access to and challenges in water, sanitation, and hygiene in healthcare facilities during the early phase of the COVID-19 pandemic in Ethiopia: A mixed-methods evaluation. PloS one, 17(5), e0268272. https://doi.org/10.1371/journal.pone.0268272

Bokolia, R. (2016). Assessment of Knowledge of Urinary Tract Infection (UTI) Amongst School-Going Adolescent Girls. *Value in Health, 19*, 1-10.

El-Duah, J., Harris, M. J., & Appiah-Brempong, E. (2021). Knowledge on sexually transmitted infections among school-going adolescents in the Sunyani West District of Ghana. *Ghana Journal of Science, 62*(2), 36-43. https://dx.doi.org/10.4314/gjs.v62i2.4

Federal Ministry of Water Resources (FMWR), Government of Nigeria, National Bureau of Statistics (NBS) and UNICEF (2022). *Water, Sanitation and Hygiene: National Outcome Routine Mapping (WASHNORM) 2021: A Report of Findings.* FCT Abuja. Nigeria

Habu, H., Emmanuel, O. C., & Inuwa, A. (2018). Awareness and practice of prevention of sexually transmitted diseases among demonstration secondary school students, University of Maiduguri, Borno State. *Journal of Health Education Research & Development, 6*(3), 266–272.

Ismail, S. R., Radzi, R., Megat Kamaruddin, P. S. N., Lokman, E. F., Lim, H. Y., Abdul Rahim, N., Yow, H. Y., Arumugam, D., Ngu, A., Low, A. C. Y., Wong, E. H., Patil, S., Madhavan, P., Nordin, R. B., van der Werf, E., & Lai, N. M. (2024).

The effects of school-based hygiene intervention programme: Systematic review and meta-analysis. *PloS one*, *19*(10), e0308390. https://doi.org/10.1371/journal.pone.0308390

Melaku, A., Mengistie, B., & Addis, T. (2023). The Status of School Water, Sanitation, and Hygiene Services in Addis Ababa, Ethiopia: Progress Towards Achieving the SDG 6. *Environmental health insights*, *17*, 11786302231199003. https://doi.org/10.1177/11786302231199003

Muhammad, A., & Lawal, T. (2017). Knowledge and attitude of toilet infection prevention in secondary schools in Adamawa State. *Journal of Public Health Studies*, *10*(1), 55-67.

Musa, A., & Dogo, B. (2019). Attitudes towards toilet infection prevention among students from three secondary schools in Maiduguri, Nigeria: A cross-sectional survey. *Journal of Health Education Research & Development*, *16*(2), 123-132.

Nlunda, J., Konde, J., YambaYamba, M., & Kiyombo, G. (2023). Assessing School-Based Water, Sanitation and Hygiene (WASH) Facilities in Peri-Urban Settings of Kinshasa, DR Congo. *Open Journal of Epidemiology*, *13*, 24-45. doi: 10.4236/ojepi.2023.131003.

Nwosu, N. I., Mmerem, J. I., Ozougwu, J. J., Nlewedim, P. I., Ugwa, O. M., Ugwunna, N. C., Nwosu, E. O., & Ndu, A. C. (2024). Knowledge of hand hygiene and evaluation of hand washing technique among nurses at the University of Nigeria Teaching Hospital. *BMC Nursing*, *23*, 872. https://doi.org/10.1186/s12912-024-02519-2

Onyedibe, K. I., Shehu, N. Y., Pires, D., Isa, S. E., Okolo, M. O., Gomerep, S. S., Ibrahim, C., Igbanugo, S. J., Odesanya, R. U., Olayinka, A., Egah, D. Z., & Pittet, D. (2020). Assessment of hand hygiene facilities and staff compliance in a large tertiary health care facility in northern Nigeria: a cross-sectional study. *Antimicrobial resistance and infection control*, *9*(1), 30. https://doi.org/10.1186/s13756-020-0693-1

Ozibo, R. (2025). 70% of Nigerian schools and 88% of health facilities lack basic sanitation - UNICEF. *Nairametrics*. https://nairametrics.com/2024/11/19/70-of-nigerian-schools-and-88-of-health-facilities-lack-basic-sanitation-unicef/

Puro, V., Coppola, N., Frasca, A., Gentile, I., Luzzaro, F., Peghetti, A., & Sganga, G. (2022). Pillars for prevention and control of healthcare-associated infections: an Italian expert opinion statement. *Antimicrobial resistance and infection control*, *11*(1), 87. https://doi.org/10.1186/s13756-022-01125-8

Sado, K., Keenan, K., Manataki, A., Kesby, M., Mushi, M. F., Mshana, S. E., Mwanga, J. R., Neema, S., Asiimwe, B., Bazira, J., Kiiru, J., Green, D. L., Ke, X., Maldonado-Barragán, A., Abed Al Ahad, M., Fredricks, K. J., Gillespie, S. H., Sabiiti, W., Mmbaga, B. T., & Kibiki, G. (2024). Treatment seeking behaviours, antibiotic use and relationships to multi-drug resistance: A study of urinary tract infection patients in Kenya, Tanzania and Uganda. *PLOS Global Public Health*, *4*(2), e0002709. https://doi.org/10.1371/journal.pgph.0002709

Sherpa, S. Z., Rai, N., Giri, S., Dhakal, K., Lepcha, K. W., Subba, C. H., Bhutia, N. P., Timisina, B., Lama, S., Thapa, R., Dey, A., Chettri, P., Chettri, M., Singh, P., Bhutia, H. P., & Bhutia, D. O. (2022). Knowledge, attitude, and hygienic practice towards preventive measures of urinary tract infection among adolescent girls of selected rural areas Sikkim. *International Journal of Advances in Nursing Management*, *10*(1), 1-5. https://doi.org/10.52711/2454-2652.2022.00001

World Health Organization. (2024). *Global report on infection prevention and control 2024*. World Health Organization. https://iris.who.int/handle/10665/379632

Yusuf, K., & Aminu, L. (2020). Practices of toilet hygiene among secondary school students in Yobe State. *Journal of School Health Research*, *18*(4), 78-88.

ASSESSMENT OF ATTITUDE TOWARD FOOD HYGIENE AMONG FOOD HANDLERS IN BOARDING SECONDARY SCHOOLS IN NORTHWEST ZONE, NIGERIA

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Abstract

The study assessed the attitude toward food hygiene among food handlers in boarding secondary schools in North West Zone, Nigeria. To achieve this purpose, the descriptive survey research design was used and the target population for this study was 1112 and also, the sample size was 470 which were drawn from four states in the North West Zone of Nigeria. The participants were selected using multi-stage sampling techniques. A close-ended structured questionnaire based on the modified four (4) point Likert scale was used to obtain responses from the respondents. A pilot study was carried out to test the reliability of the instrument and a statistical analysis of Cronbach's Alpha correlation coefficient of 0.88 was obtained. The 470 copies of the questionnaire were distributed to the respondents and retrieved. Descriptive statistics of means and standard deviations was used to answer the research question. The formulated hypothesis was tested at a 0.05 level of significance using inferential statistics of a one-sample t-test. The results revealed that attitude toward food hygiene among food handlers in boarding secondary schools in Northwest Zone, Nigeria was significant ($p= 0.000 < 0.05$). It was concluded that the food handlers in the boarding secondary schools in North West zone, Nigeria have a positive attitude towards food hygiene. The study recommended that the school management in boarding secondary schools in the Northwest Zone of Nigeria should implement incentive programs that recognize and reward exemplary food safety practices, fostering a culture of high hygiene standards and motivating food handlers to consistently prioritize food safety, thereby reinforcing positive attitudes and ensuring a safe and hygienic food environment.

Keywords: Attitude, Food Hygiene, Food Handlers, Boarding Secondary Schools

Introduction

Food hygiene is a critical aspect of public health, particularly in settings where large groups of people are served meals, such as boarding secondary schools. The attitude of food handlers towards food hygiene plays a significant role in determining the safety and quality of food served to students. In Nigeria, foodborne illnesses remain a major public health concern, with poor hygiene practices identified as a leading cause of contamination (World Health Organization [WHO], 2021). The Northwest Zone of Nigeria, comprising states such as Kano, Kaduna, Sokoto, and Zamfara, has a high concentration of boarding secondary schools, making it imperative to assess the attitudes of food handlers in these institutions.

The importance of food hygiene cannot be overstated, as it directly impacts the health and well-being of students. Poor food hygiene practices can lead to the spread of pathogens such as Salmonella, E. coli, and Listeria, which are responsible for illnesses like diarrhoea, typhoid fever, and cholera (Centers for Disease Control and Prevention [CDC], 2020). In boarding schools, where students rely on institutional kitchens for their daily meals, the risk of foodborne outbreaks is heightened. Food handlers, including cooks, servers, and kitchen staff, are the first line of defence in ensuring food safety. Their attitudes towards hygiene practices, such as handwashing, proper food storage, and cleanliness of utensils, significantly influence the likelihood of contamination (Aluko et al., 2019).

Despite the critical role of food handlers, studies have shown that their attitudes and practices are often suboptimal in many low- and middle-income countries, including Nigeria. For instance, a study by Okeke et al. (2020) revealed that many food handlers in Nigerian schools lack adequate knowledge of basic food hygiene principles. This knowledge gap is often compounded by poor attitudes, such as negligence and indifference towards hygiene protocols. In the Northwest Zone, cultural and socioeconomic factors may further exacerbate these challenges. For example, limited access to clean water and sanitation facilities in some areas can hinder the ability of food handlers to maintain proper hygiene standards (Abdul-Mumin et al., 2021).

The attitudes of food handlers are influenced by a variety of factors, including their level of education, training, and awareness of food safety regulations. In Nigeria, many food handlers in boarding schools have not received formal training in food hygiene, which contributes to poor attitudes and practices (Akinbode et al., 2018). Additionally, the lack of stringent

enforcement of food safety regulations by school authorities and government agencies further undermines the importance of hygiene. Without proper oversight, food handlers may not feel compelled to adhere to best practices, leading to a higher risk of food contamination (Okojie & Isah, 2019).

The consequences of poor food hygiene in boarding schools extend beyond immediate health risks. Foodborne illnesses can lead to absenteeism among students, negatively affecting their academic performance and overall development. In severe cases, outbreaks can result in school closures, causing disruptions to the educational system (WHO, 2021). Furthermore, the economic burden of treating foodborne diseases places additional strain on families and the healthcare system. In the Northwest Zone, where poverty rates are high, the impact of such illnesses can be particularly devastating (Abdul-Mumin et al., 2021; Nofiu et al., 2018).

Several studies have highlighted the need for targeted interventions to improve food hygiene practices in Nigerian schools. For example, Akinbode et al. (2018) recommended regular training programs for food handlers to enhance their knowledge and attitudes towards hygiene. Similarly, Okeke et al. (2020) emphasized the importance of providing adequate resources, such as clean water and sanitation facilities, to support proper hygiene practices. However, there is a paucity of research specifically focusing on the Northwest Zone, where unique cultural and environmental factors may influence the attitudes of food handlers.

The theoretical framework for this study is based on the Health Belief Model (HBM), which posits that individuals' attitudes and behaviours are influenced by their perceptions of susceptibility, severity, benefits, and barriers (Rosenstock, 1974). In addition to the Health Belief Model, this study draws on the findings of previous research conducted in similar contexts. For example, a study by Aluko et al. (2019) in Southwest Nigeria found that food handlers who received regular training and supervision were more likely to exhibit positive attitudes towards hygiene. Similarly, Okojie and Isah (2019) reported that the provision of adequate resources, such as handwashing stations and cleaning supplies, significantly improved hygiene practices among food handlers. This study seeks to assess the attitudes of food handlers towards food hygiene in boarding secondary schools in the Northwest, Nigeria.

Research Question

What is the attitude of food handlers towards food hygiene in boarding secondary schools in the Northwest Zone of Nigeria?

Hypotheses

Attitude toward food hygiene among food handlers in boarding secondary schools in Northwest Zone, Nigeria is not significant.

Methodology

The research design employed in this study was a survey research design, which was deemed appropriate for the study's objectives. According to Anikweze (2013), survey research involves a detailed and critical examination of a topic or situation to ascertain the current state of affairs. The population of the study comprised all food handlers in boarding secondary schools across the North West Zone, which includes states such as Sokoto, Kebbi, Katsina, Zamfara, Kaduna, Jigawa, and Kano. The total number of state boarding secondary schools in this zone is 226, with 1,943 food handlers employed across these schools. The data on the number of schools and food handlers was obtained from the State Ministry of Education (2022).

The sample size for the study was determined to be 470 food handlers, drawn from a population of 1,112. A multistage sampling technique was employed to select the sample, which included simple random sampling, stratified sampling, and proportionate sampling. In the first stage, four states (Katsina, Jigawa, Kebbi, and Sokoto) were randomly selected from the seven states in the North West Zone using a hat-drawn method. In the second stage, the sample size of 470 was determined using the Research Advisor table for determining sample size, which recommended this number based on a population of 1,112, a 0.035% margin of error, and a 95% confidence interval. The third stage involved stratifying each selected state into three senatorial zones (Northern, Southern, and Central), and in the fourth stage, two senatorial zones were randomly selected from each state. Finally, a proportionate sampling technique was used to select 470 food handlers from the four states, ensuring that the sample was representative of the population. Convenience sampling was then used to distribute the questionnaires to the selected food handlers, as they were sparsely distributed across the schools.

The data collection instrument was a close-ended questionnaire which assessed the attitude towards food hygiene among the food handlers using a 4-point Likert scale. The validity of the instrument was established through vetting by experts in the Department of Human Kinetics and Health Education at Ahmadu Bello University, Zaria. A pilot study was conducted with 50 participants to test the reliability of the instrument, and the data collected were analyzed using Cronbach's alpha, which yielded a reliability index of 0.88, indicating high internal consistency. Mean and standard deviation was used to answer the research question. The null hypothesis was tested using a one-sample t-test at a 0.05 level of significance.

Results

Research Question: What is the attitude of food handlers towards food hygiene in boarding secondary schools in the Northwest Zone of Nigeria?

Table 1: Respondent Attitude of Food Hygiene among Food Handlers

S/N	Statement	Mean	SD
1	I feel that food handlers need to take their bath before starting the day's food preparation.	3.08	1.278
2	I believe food handlers are to sanitize cooking environments before cooking.	3.04	1.152
3	There should be a need for covering food always from flies and other insects.	3.35	1.441
4	I think control of insects and rodents must be regular to ensure food safety.	3.59	1.298
5	I feel storing uncooked food in a clean dry environment helps to keep food safe,	3.72	1.283
6	I believe that cleaning procedures of equipment such as; pots, knives, and other kitchen utensils can lead to transmission of diseases such as bacteria.	1.89	1.415
7	I believe food handlers must wash vegetables and animal-originated foods before cooking.	3.35	1.250
8	I feel that food poisoning is transmitted through unwashed hands.	3.44	1.375
9	I think caps, face masks, gloves and adequate protective clothing must be used to reduce the risk of food contamination.	3.46	1.365
10	I believe food handlers suffering from food-borne diseases must not be allowed to work in the kitchen at all.	1.82	1.475
	Average	**3.074**	

Decision / Criterion Mean = 2.5

Table 1 shows the respondent attitude toward food hygiene among food handlers. The average mean for all statements is 3.074, indicating a moderate overall agreement with the given statements. The few highest means include statement 15, storing uncooked food in a clean dry environment helps to keep food safe with a mean of 3.72, and statement 14, control of insects and rodents must be regular to ensure food safety, with a mean of 3.59. Similarly, statement 19 shows that a cap, face mask, gloves and adequate protective clothing must be used to reduce the risk of food contamination with a mean of 3.46, while item 18 reveals that food poisoning is transmitted through unwashed hands with a mean of 3.44. In the same vein, items 13 and 17 show the need to always cover food and prevent flies and other insects, and food handlers must wash vegetables and animal-originated foods before cooking with a mean of 3.35 respectively. Item 11 shows that the majority of the respondents agreed that food handlers need to take their baths before starting the day's food preparation and item 12 revealed that food handlers are to sanitize cooking environments before cooking with mean scores of 3.08 and 3.04 respectively. These statements suggest a relatively strong agreement with the majority of the items regarding the importance of proper food storage and pest control for food safety. On the other hand, statement 16, cleaning procedures of equipment can lead to transmission of diseases such as bacteria, has the lowest mean of 1.82, indicating an agreement. They also show disagreement with statement 20 which says that food handlers suffering from food-borne diseases must not be allowed to work in the kitchen at all. In summary, the respondents generally express moderate agreement with the importance of attitude towards personal and environmental hygiene in food handling. The key points of consensus include the attitude toward the necessity of covering food to protect it from flies and insects, regular control of insects and rodents to ensure food safety, and the use of clean and dry environments for storing uncooked food. In conclusion, the findings highlight a strong positive attitude of food handlers towards food hygiene in boarding secondary schools in the Northwest Zone of Nigeria.

Hypothesis: Attitude toward food hygiene among food handlers in boarding secondary schools in Northwest Zone, Nigeria is not significant.

Table 2: One sample t-test statistical analysis results on the significance of Attitude toward food hygiene among food handlers in boarding secondary schools in Northwest Zone, Nigeria.

	N	Mean	SD.	SD. Error Mean	Df	t_{Cal}	t_{Cri}	p-value
Attitude	470	33.247	5.788	.267	469	-25.29	1.965	0.000

$t_{Cal.} > t_{Cri}$ at df 469, calculated p-value (0.000) < 0.05, t = |25.29|

Table 2 shows that the attitude toward food hygiene among food handlers in boarding secondary schools in the Northwest Zone of Nigeria is significant. The results of the one-sample t-test, as presented in the table revealed that the mean attitude score is 33.247, with a standard deviation of 5.788. The standard error of the mean is 0.267, calculated based on a sample size

of 470 and degrees of freedom (df) of 469. The calculated t-value (t_{Cal}) is -25.29, while the critical t-value (t_{Cri}) at df 469 and a significance level of 0.05 is 1.965. The absolute value of t_{Cal} (|25.29|) is significantly greater than t_{Cri}, indicating a highly significant difference. The p-value, calculated as 0.000, is less than 0.05, providing strong evidence against the null hypothesis.

Therefore, based on the results of the one-sample t-test, it can be concluded that the attitude toward food hygiene among food handlers in the boarding secondary schools in the Northwest Zone of Nigeria is indeed significant. The negative t-value indicates that the mean attitude score is significantly lower than a hypothetical mean, suggesting a need for targeted interventions to improve attitudes towards food hygiene practices among the food handlers in the Northwest Zone of Nigeria.

Discussion of Findings

The finding of the study reveals that attitude toward food hygiene among food handlers in boarding secondary schools in the Northwest Zone of Nigeria is a significant aspect of ensuring the safety and well-being of students. Attitudes play a pivotal role in shaping behaviours, particularly in the context of food handling practices where adherence to hygiene protocols is crucial for preventing food-borne illnesses. Investigating the attitudes of food handlers provides valuable insights into their perceptions, beliefs, and motivations regarding food hygiene, which can influence their compliance with established standards and protocols. This finding agrees with Chuckwuocha *et al.* (2009) who reported that there was a good attitude of food handlers towards some practices; especially hand washing in food sanitation in South Africa. Similarly, this finding agreed with Iwu *et al.* (2017) who reported a positive attitude toward food hygiene among food vendors in Owerri, Imo State, Nigeria. On the contrary, Dagne *et al.* (2018) reported a poor attitude toward food handlers working in food establishments in Ethiopia. This finding implies that there is a need for the identification of factors that may influence the attitudes of food handlers toward food hygiene practices. These factors could include cultural norms, personal beliefs, level of awareness, and the perceived importance of food safety in the context of their role as food handlers. Afolaranmi *et al.* (2015) posited that through examination of these factors, it is possible to have a deeper understanding of the underlying determinants of attitude formation and explore potential avenues for promoting positive attitudes toward food hygiene among food handlers in boarding secondary schools.

Moreover, Iwu *et al.* (2020) emphasized that the attitudes of food handlers toward food hygiene can have significant implications for the overall effectiveness of food safety interventions and training programs. Several other studies conducted in Pakistan, Ghana, Turkey, Brazil and Malaysia showed poor food safety attitudes and practices for food vendors (Bas *et al.* 2016; Isoni *et al.* 2019). For example, Bas *et al.* (2016) reported that hotel staff in Turkey were unlikely to boil and refrigerate milk, store and refrigerate food leftovers within 2 h, and check the expiration date of food. Mendedo *et al.* (2017) reported that food vendors did not wash their hands before preparing a meal because they believed it was a waste of time, and also because they were unaware of the consequences of dirty hands. Positive attitudes are often associated with greater receptivity to educational initiatives and a willingness to adopt recommended practices. Conversely, negative attitudes or misconceptions may pose barriers to behaviour change and hinder efforts to improve food hygiene standards. Therefore, understanding the attitudes of food handlers toward food hygiene can contribute to the development of targeted strategies for promoting behaviour change and enhancing compliance with hygiene protocols. By addressing underlying attitudes and beliefs through targeted communication strategies, educational materials, and incentives, stakeholders can work toward fostering a supportive environment that prioritizes food safety. Ultimately, by recognizing the significance of attitude formation in shaping behaviour, policymakers, educators, and health professionals can collaborate to implement evidence-based interventions that promote positive attitudes toward food hygiene among food handlers in boarding secondary schools.

Conclusion

The attitude toward food hygiene among food handlers in boarding secondary schools in the Northwest Zone of Nigeria is positive.

Recommendations

Since attitudes toward food hygiene among food handlers in boarding secondary schools in the Northwest Zone of Nigeria is significant, the school management should implement an incentive programme that recognizes and rewards positive behaviours related to food safety. By acknowledging and incentivizing exemplary practices, schools can foster a culture where food handlers are motivated to uphold high standards of hygiene and consistently prioritize food safety. This approach not only reinforces positive attitudes among food handlers but also encourages a collective commitment to maintaining a safe and hygienic food environment within the school community.

References

Abdul-Mumin, A., Agbozo, F., & Abubakari, A. (2021). Water, sanitation, and hygiene (WASH) practices and challenges in Northern Ghana: Implications for public health. *Journal of Environmental and Public Health*, *2021*, 1–10. https://doi.org/10.1155/2021/6634153

Afolaranmi, T.O., Hassan, Z.I., Bello, D.A. & Misari, Z. (2015). Knowledge and Practice of Food Safety and Hygiene among

Food Vendors in Primary Schools in Jos, Plateau State, North Central Nigeria. *Journal of Medical Research*, *4*, 16-22

Akinbode, S. O., Dipeolu, I. O., & Akinbode, A. O. (2018). Food safety knowledge and practices among food handlers in selected secondary schools in Ogun State, Nigeria. *African Journal of Food, Agriculture, Nutrition and Development*, *18*(3), 13623–13637. https://doi.org/10.18697/ajfand.82.17450

Aluko, O. O., Ojeremi, T. T., Olaleke, D. A., & Ajidagba, E. B. (2019). Evaluation of food safety and sanitary practices among food vendors in primary and secondary schools in Ilorin, Nigeria. *Food Control*, *98*, 397–402. https://doi.org/10.1016/j.foodcont.2018.11.045

Bas, M., Azmi, S.E. &Gokhan, K. (2016), The evaluation of food hygiene knowledge, attitudes, and practices of food handlers in food businesses in Turkey", *Food Control*, *17*, 317-322.

Centres for Disease Control and Prevention. (2020). Foodborne germs and illnesses. Retrieved from https://www.cdc.gov/foodsafety/foodborne-germs.html

Chuckwuocha, U. M., Dozie, I. N. S., Amadi, A. N., Nwankwo, B. O., Ukaga, C. N., Aguwa, O. C., ... Nwoke, E. A. (2009). Knowledge, attitude and practices of food handlers in food sanitation in a Metropolis in southeastern Nigeria. *East African Journal of Public Health*, *6*(3), 243-246.

Dagne, H., Raju, R. P., Andualem, Z., Hagos, T., & Addis, K. (2018). Food safety practice and its associated factors among mothers in Debarq Town, Northwest Ethiopia: community-based cross-sectional study. *Biomed Res Int., 1*, 1–9

Isoni, A. L., Cortez, G. V., Stedefeldt, E., Yoshio, N. E., Costa, S. (2019). Food Safety Knowledge, Attitudes, and Practices of Brazilian Food Truck Food Handlers. *Nutrients*, *11*(8), 1784.

Iwu, O., Uwakwe, I., Chukwuma, D. & Ohale, E. (2017). Knowledge, attitude and practices of Food Hygiene among Food Vendors in Owerri, Imo State, Nigeria. *Occupational Diseases and Environmental Medicine*, *5*(1), 11-25.

Mendedo, E. K., Berhane, Y., Haile, B. T. (2017). Factors associated with sanitary conditions of food and drinking establishments in Addis Ababa, Ethiopia: cross-sectional study. *Pan Afr Med J*., *28*(1), 237.

Nofiu, O. D., Abdul, B. S., Akorede, S. N., Enyikwola, R. O., Yunusa, A. S., & Jimoh, M. (2018). Knowledge of water sanitation among boarders in senior secondary schools students in Kaduna State, Nigeria. *African Journal of Educational Assessors*, *6*(1), 87-93.

Okeke, O. C., Nnaji, C. A., & Okeke, C. C. (2020). Food hygiene practices among food handlers in secondary schools in Enugu State, Nigeria. *Journal of Environmental Health Research*, *20*(1), 45–56. https://doi.org/10.1080/09603123.2019.1618798

Okojie, P. W., & Isah, E. C. (2019). Sanitary conditions of food vending sites and food handling practices of street food vendors in Benin City, Nigeria. *African Journal of Food Science*, *13*(4), 88–94. https://doi.org/10.5897/AJFS2018.1767

Rosenstock, I. M. (1974). Historical Origins of the Health Belief Model. *Health Education Monographs*, *2*(4), 328–335. https://doi.org/10.1177/109019817400200403

World Health Organization. (2021). *Food safety*. Retrieved from https://www.who.int/news-room/fact-sheets/detail/food-safety

EFFECTS OF HEALTH EDUCATION INTERVENTION PROGRAMME ON AWARENESS OF PREVENTIVE STRATEGIES AGAINST SEXUAL VIOLENCE AMONG FEMALE ADOLESCENT STUDENTS IN KADUNA STATE

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Abstract

This study examined the effects of health education intervention programmes on awareness of preventive strategies against sexual violence among female adolescent students in Kaduna State. The study employed a Quasi-experimental research design. The population of the study comprised adolescent female students in Sabon Gari local government in Kaduna State which are 19,369. A multi-stage sampling technique comprising stratified, purposive, simple random convenient and proportionate sampling techniques was used in selecting 200 female adolescent students in public secondary schools in Kaduna State, Nigeria. The instrument was validated by 5 experts. Pilot testing was carried out among 20 respondents and a reliability index of 0.655 was obtained. Two hundred (200) copies of the researcher-developed questionnaire were distributed using a convenient sampling technique, of which a 200 or 100% response rate was recorded and the data analysed. Data collected was analysed using the Statistical Package for Social Science (SPSS) IBM version 26. Mean and standard deviations were used to answer the research questions. Inferential statistics of independent sample t-test and paired sample t-test were used to test the formulated hypotheses at 0.05 alpha level. The findings of the study revealed that there is no significant difference in awareness of preventive strategies against sexual violence among female adolescent students in public secondary schools in Control and experimental groups in Sabon Gari Kaduna State, Nigeria before intervention with health education programme ($p = 0.315$). Also, there is a significant difference in awareness of preventive strategies against sexual violence among female adolescent students in experimental public secondary schools in Sabon Gari Kaduna State, Nigeria after exposure to a health education intervention programme ($p = 0.000$). In conclusion, the study showed that female adolescent students in public secondary schools in Sabon Gari, Kaduna State, Nigeria, were not aware of preventive strategies against sexual violence before but became aware after exposure to health education intervention. It was therefore recommended that health educators in collaboration with the Ministry of Education should carry out an awareness campaign on the prevention of sexual violence targeted at school-aged children to sensitize adolescents on sexual violence preventive strategies. Also, health educators in collaboration with media houses through jingles, playlets and drama could incorporate sexual violence prevention messaging to help educate teens on actions to take when they get harassed or abused in any form. This would help in improving the prevention of sexual violence cases.

Keywords: Effects, Health Education, Intervention Programme, Awareness, Preventive Strategies, Sexual Violence, Female Adolescent, Students

Introduction

Africa has the highest prevalence rate of child sexual abuse around 34.4 per cent (Women at Risk International Foundation [WARIF], 2023). Between the years 2012 and 2013, about 30 per cent of women in Nigeria were reported to have experienced one form of domestic violence or another. WARIF (2023) also reported that findings from a national survey carried out in 2014 on violence against children in Nigeria confirmed that one in four females reported experiencing sexual violence in childhood with approximately 70% reporting more than one incident of sexual violence. In the same study, it was found that 24.8% of females ages 18 to 24 years experienced sexual abuse before age 18 of which 5.0% sought help, with only 3.5% receiving any services. In 2018, the average prevalence of sexual abuse in Nigeria was nine (9%) per cent. In Gombe, the incidence was the highest in the country (Nigeria Demographic and Health Survey 2018). According to the survey, 45% of individuals living in the state had experienced sexual violence in their life. Kaduna State ranks among the states with a high prevalence with 13.8%. The National Human Rights Commission in Kaduna recorded 524 complaints of sexual and gender-based violence against women and girls in 2021 (Punch, 2022). Taft, Blyth and Murphy, (2022) reported that the core of much-reported violence perpetrated against women and children in Kaunda from Jan. 2014 to Dec. 2016, as reported by the Nigerian Stability and Reconciliation Programme (NSRP) is sexual assault and abuse by those in positions of power and authority.

Regarding the prevention strategies for sexual violence, efforts to prevent sexual violence before it occurs (primary prevention) are increasingly recognized as a critical and necessary complement to strategies aimed at preventing re-victimization or recidivism and ameliorating the adverse effects of sexual violence on victims. Successful primary prevention efforts, however, require an understanding of what works to prevent sexual violence and implementing effective strategies (McMahon, 2017; Olubiyi et al., 2019). Primary prevention strategies have been defined to include universal interventions directed at the general population as well as selected interventions aimed at those who may be at increased risk for sexual violence perpetration.

Although risk reduction approaches that aim to prevent victimization can be important and valuable pieces of the prevention puzzle, a decrease in the number of actual and potential perpetrators in the population is necessary to achieve measurable reductions in the prevalence of sexual violence (Lenihan, 2020).

Regarding the awareness of preventive strategies against sexual violence, Alzoubi, Ali, Fla, and Alnatour (2018) in their study reported that the majority of mothers were aware of child sexual abuse (CSA) and its prevention practices. Though only 17% of mothers had started practising some of the CSA preventive measures when their children were young (1–4 years of age) and less than half (48.8%) had started when their children were 4–6 years of age. Three-quarters (74%) of the mothers indicated that educating children about CSA can prevent it. Only 37.7% are aware of laws regarding CSA in Jordan and less than half of mothers are aware of social organizations that provide services for children who suffer from sexual abuse. Mothers who had a high income or a high level of education or were employed had a higher awareness of CSA and recognized signs and symptoms of CSA more than other mothers.

Activities that raise awareness of sexual violence (such as a media campaign) can help build support for primary prevention efforts (Akorede, 2021, Olubiyi et al., 2019). However, awareness itself does not create the changes in attitudes or behaviours that lead to this form of violence. Outreach is connected to awareness in that it is geared to help those in the targeted population know where they can find services if they or someone they know is sexually assaulted (West Virginia Foundation for Rape Information and Services [WVFRIS], 2021). Awareness regarding risk reduction will focus on helping potential victims change their behaviours to try to avoid being sexually assaulted or to stop an attack in progress (self-defence classes, campaigns to inform the public about drug-facilitated sexual assault and how to reduce the likelihood of being drugged). Whereas risk reduction programmes assume that sexual violence itself is the issue to be addressed, primary prevention seeks to change a variety of conditions (aggression, lack of empathy) that influence someone's decision to rape (Ogunfowokan & Fajemilehin, 2017).

Looking at the utilization of prevention strategies of sexual violence among female adolescents, Avery-Leaf, Cano and O'Leary (2016) reported that significant decreases in attitudes justifying the utilization of prevention of dating violence were found in a study of a prevention programme in a Long Island, New York High school. There remains a great paucity of data in this area and it is in this light that the research intends to assess the effect of health education intervention programmes on awareness of preventive strategies against sexual violence among female adolescent students in Kaduna State, Nigeria.

Purpose of the Study

1. Awareness of preventive strategies against sexual violence among female adolescent students in public secondary schools in Sabon Gari Kaduna State, Nigeria before exposure to health education intervention programme.
2. Awareness of preventive strategies against sexual violence among female adolescent students in public secondary schools in Sabon Gari Kaduna State, Nigeria after exposure to health education intervention programme.

Research Questions

This study attempted to answer the following questions:

1. Are female adolescent students in public secondary schools in Sabon Gari Kaduna State, Nigeria aware of preventive strategies against sexual violence before exposure to health education intervention programme?
2. Are female adolescent students in experimental public secondary schools in Sabon Gari Kaduna State, Nigeria, aware of preventive strategies against sexual violence after exposure to health education intervention programme?

Hypotheses

Based on the research questions, the following null hypotheses were formulated to guide the study.

1. There is no significant difference in awareness of preventive strategies against sexual violence among female adolescent students in public secondary schools in control and experimental groups in Sabon Gari Kaduna State, Nigeria before intervention with health education programme.
2. There is no significant difference in awareness of preventive strategies against sexual violence among female adolescent students in experimental public secondary schools in Sabon Gari Kaduna State, Nigeria before and after exposure to health education intervention programme.

Methodology

The research design for this study was quasi-experimental with pre-test and post-test experimental and control groups. The treatment groups were exposed to health education intervention programme on awareness of preventive strategies against sexual violence while the control group was not exposed to any treatment but was given a placebo on personal hygiene to engage the group. The two groups of participants were: Group A (Experimental Group) and Group B (Control Group). A

quasi-experimental design like a true experimental design aims at establishing a cause-and-effect relationship between an independent and dependent variable. Although the independent variables are manipulated, participants are not randomly assigned to conditions or orders of conditions (Crook & Campbell, 1979).

Table 1: Quasi-experiment of pre-test-post-test experimental design

	Pre-Test		Post-test
Experimental Group	O^1	X	O^2
Control Group	O^1	—	O^2

Key:

O^1: refers to the pre-test observation (awareness of preventive strategies against sexual violence Questionnaire)

X: refers to the health education intervention programme

—: Placebo on personal hygiene

O^2: refers to the post-test observation (awareness of preventive strategies against sexual violence)

The population for this study consists of all female adolescent students in female-only public secondary schools in Sabon Gari Kaduna State, Nigeria. According to the Kaduna State Ministry of Education (2022), there are 12,369 female adolescent students in Sabon Gari Kaduna state. The sample for this study was (200) respondents. Yamane (1967) stated if the population of the study is greater than six thousand (6, 000), the sample size should be two hundred (200) at 7% precision levels where the confidence level is 95% and Probability =0.05. Therefore, a multistage sampling technique was used to arrive at the sample for this study.

The instrument used for data collection was a researcher-developed questionnaire named Awareness of Preventive Strategies against Sexual Violence Questionnaire (AUPSASVQ). The questionnaire consists of 29 items on awareness of prevention strategies of sexual violence. A four-point modified Likert scale rating of Strongly Agree (SA) =4, Agree (A) =3, Disagree (SD) =2, Strongly Disagree (D) =1; was used. Any mean score below 2.50 was considered as not aware while scores above 2.50 were considered aware.

Intervention Programme; The research instrument was administered in three phases to the participants by the researcher with the help of research assistants. The phases were as follows:

Phase 1: Pre-intervention Assessment: The researcher with the help of four (4) research assistants administered 200 copies of the research instruments. 100 copies of the research instrument were administered to the experimental group on Monday 5th February 2024 between the hours of 2:00 pm-3:20 pm in the school environment as a pre-test and another 100 copies of the research instruments were administered to the control group as a pre-test a week before the treatment session on Wednesday 7th February 2024 between the hours of 2:00-3:30 pm within the school premises.

Phase 2: Intervention Assessment: This phase was for the implementation of the intervention and delivery of the treatment package to participants. The treatment lasted for six weeks. The health education programme was carried out every Friday between the hours of 9:00 am-10:00 am in the school examination hall.

Phase 3: Post-Intervention Assessment: The goal of health education intervention was to instruct the participants who were at risk of sexual violence and may lack awareness of preventive strategies against sexual violence to help them improve the utilization of preventive strategies against sexual violence.

Mean and Standard Deviation was used to answer research questions. Inferential statistics of independent sample t-test and paired sampled t-test was used to test all the hypotheses. All hypotheses was considered significant or not significant using the alpha level of 0.05.

Results

Research Question 1: Are female adolescent students in public secondary schools in Sabon Gari Kaduna State, Nigeria aware of preventive strategies against sexual violence before exposure to health education intervention programme?

Table 2: Mean scores of the two groups on awareness of preventive strategies against sexual violence before intervention

		Control		Experimental		Mean
Sn	**Awareness of preventive strategies against sexual violence**	Mean	Std. Dev.	Mean	Std. Dev.	difference
1	I am aware that staying away from alcohol and drug users is a preventive strategy against sexual violence.	2.89	0.898	2.78	1.124	0.11
2	I am aware that avoiding being delinquent is a preventive strategy against sexual violence.	2.76	0.900	2.84	1.089	-0.08
3	I am aware that showing concern for others is a preventive strategy against sexual violence.	2.64	1.020	2.60	1.082	0.04
4	I am aware that showing aggressive behaviours and acceptance of violent behaviours is a preventive strategy against sexual violence.	2.49	1.087	2.50	1.185	-0.01
5	I am aware that avoidance of early sexual initiation is a preventive strategy against sexual violence	2.46	1.105	2.71	1.149	-0.25
6	I am aware that avoidance of coercive sexual fantasies is a preventive strategy against sexual violence.	2.76	1.164	2.60	1.082	0.16
7	I am aware that staying away from a preference for sexual risk-taking is a preventive strategy against sexual violence.	2.42	0.955	2.71	1.140	-0.29
8	I am aware that staying away from bad groups is a preventive strategy against sexual violence.	2.58	1.182	2.75	1.140	-0.17
9	I am aware that being hostile to women is a preventive strategy against sexual violence	2.62	1.108	2.66	1.174	-0.04
10	I am aware that staying away from exposure to sexually explicit media is a preventive strategy against sexual violence.	2.87	1.125	2.79	1.066	0.08
11	I am aware that avoidance of hyper-masculinity is a preventive strategy against sexual violence.	2.58	1.093	2.75	1.029	-0.17
12	I am aware that staying away from suicidal behaviour is a preventive strategy against sexual violence,	2.63	1.060	2.60	1.223	0.03
13	I am aware that staying away from any form of sexual victimization is a preventive strategy against sexual violence.	2.60	1.172	2.93	1.157	-0.33
14	I am aware that avoidance of a family history of conflict and violence is a preventive strategy against sexual violence.	2.48	1.114	2.50	1.133	-0.02
15	I am aware that avoiding association with a person with a history of physical, sexual, or emotional abuse is a preventive strategy against sexual violence.	2.75	1.114	2.92	1.152	-0.17
16	I am aware that void association with an emotionally unsupportive family environment is a preventive strategy against sexual violence.	2.77	1.024	2.77	1.153	0.00
17	I am aware that staying away from poor parent-child relationships is a preventive strategy against sexual violence.	2.55	1.104	2.60	1.146	-0.05
18	I am aware that avoiding association with sexually aggressive, hyper-masculine, and delinquent peers is a preventive strategy against sexual violence is a preventive strategy against sexual violence.	2.60	1.101	2.81	1.161	-0.21
19	Avoiding involvement in a violent or abusive intimate relationship is a preventive strategy against sexual violence.	2.58	1.075	2.81	1.080	-0.23
20	I am aware that looking for a job to stay away from poverty is a preventive strategy against sexual violence	2.54	1.141	2.64	1.168	-0.10
21	I am aware provision of employment opportunities is a preventive strategy against sexual violence	2.42	1.121	2.80	1.005	-0.38
22	I am aware provision of institutional support from the police and judicial system is a preventive strategy against sexual violence	2.53	1.167	2.62	1.162	-0.09
23	General non-tolerance of sexual violence within the community is a preventive strategy against sexual violence	2.80	1.025	2.65	1.209	0.15
24	I am aware that strong community sanctions against sexual violence perpetrators are a preventive strategy against sexual violence	2.65	1.029	2.69	1.107	-0.04
25	I am aware that the provision of societal norms against sexual violence is a preventive strategy against sexual violence	2.59	1.111	2.57	1.157	0.02
26	I am aware provision of societal norms against male superiority and sexual entitlement is a preventive strategy against sexual violence.	2.66	1.157	2.69	1.253	-0.03
27	I am aware that the provision of societal norms against women's inferiority and sexual submissiveness is a preventive strategy against sexual violence.	2.59	1.074	2.87	1.079	-0.28
28	I am aware strong laws and policies related to sexual violence and gender equity are preventive strategies against sexual violence	2.73	1.053	2.79	1.175	-0.06
29	Minimized high levels of crime and other forms of violence is a preventive strategy against sexual violence	2.54	1.039	2.53	1.201	0.01
	Aggregate mean	2.62	0.411	2.71	0.711	0.09

(Benchmark = 2.50)

The result in Table 2 revealed that the mean scores of the two groups did not reveal major variability in the level of awareness of preventive strategies against sexual violence before intervention. The study participants were aware that staying away from alcohol and drug users, avoiding delinquent behaviours, showing concern for others and showing aggressive behaviours along

with non-acceptance of violent behaviours were some of the preventive strategies against sexual violence. Going by the mean scores, participants in the control group lacked the awareness that avoidance of early sexual initiation could be a preventive strategy against sexual violence compared to those in the experimental group whose level of awareness was relatively high in that dimension. Both groups were aware that avoidance of coercive sexual fantasies was a preventive strategy against sexual violence. The participants in the control group were not aware that staying away from a preference for sexual taking is a preventive strategy against sexual violence compared to their counterparts in the experimental group. Both groups were aware that staying away from bad groups, being hostile, staying away from exposure to sexually explicit media, avoidance of hyper-masculinity, staying away from suicidal behaviours and staying away from any form of sexual victimization were preventive strategies against sexual violence.

The participants were not very aware that avoidance of a family history of conflict and violence was a preventive strategy against sexual violence. But they were all aware that avoiding association with a person with a history of physical, sexual, or emotional abuse, avoiding association with an emotionally unsupportive family environment, staying away from poor parent-child relationships, avoiding association with sexually aggressive, hyper-masculine, and delinquent peers, avoiding involvement in a violent or abusive intimate relationship and look for a job towards staying away from poverty were some of the preventive strategies against sexual violence.

Participants in the control group did not have the awareness that the provision of employment opportunities is a preventive strategy against sexual violence compared to their experimental counterparts who agreed that the provision of employment opportunities is a preventive strategy against sexual violence. Both groups were aware that, the provision of institutional support from the police and judicial system, general non-tolerance of sexual violence within the community, strong community sanctions against sexual violence perpetrators, provision of societal norms against sexual violence, provision of societal norms against male superiority and sexual entitlement, provision of societal norms against women's inferiority and sexual submissiveness, strong laws and policies related to sexual violence along with gender equity were some of the preventive strategies against sexual violence. Participants were aware that low levels of crimes and other forms of violence were some of the preventive strategies against sexual violence. In the overall assessment, participants in both groups could be said to have adequate awareness of preventive strategies against sexual violence as indicated by their respective mean scores of 2.62 with a standard deviation of 0.411 for the control and 2.71 with a standard deviation of 0.711 for the experimental group. The mean difference was 0.09 which did not show high variability in the awareness of the two groups.

Research Question 2: Are female adolescent students in experimental public secondary schools in Sabon Gari Kaduna State, Nigeria, aware of preventive strategies against sexual violence after exposure to health education intervention programme?

Table 3: Mean scores of the experimental group on awareness of preventive strategies against sexual violence before and after the intervention

		Before		After		Mean difference
S/N	Awareness of preventive strategies against sexual violence	Mean	Std. Dev.	Mean	Std. Dev.	
1	I am aware that staying away from alcohol and drug users is a preventive strategy against sexual violence.	2.78	1.124	4.00	0.000	1.220
2	I am aware that avoiding being delinquent is a preventive strategy against sexual violence.	2.84	1.089	3.95	0.330	1.110
3	I am aware that showing concern for others is a preventive strategy against sexual violence.	2.60	1.082	3.06	0.600	0.460
4	I am aware that showing aggressive behaviours and acceptance of violent behaviours is a preventive strategy against sexual violence.	2.50	1.185	3.63	0.950	1.130
5	I am aware that avoidance of early sexual initiation is a preventive strategy against sexual violence	2.71	1.149	4.00	0.000	1.290
6	I am aware that avoidance of coercive sexual fantasies is a preventive strategy against sexual violence.	2.60	1.082	3.97	0.300	1.370
7	I am aware that staying away from a preference for sexual risk-taking is a preventive strategy against sexual violence.	2.71	1.140	3.94	0.422	1.230
8	I am aware that staying away from bad groups is a preventive strategy against sexual violence.	2.75	1.140	3.97	0.300	1.220
9	I am aware that being hostile to women is a preventive strategy against sexual violence	2.66	1.174	3.97	0.300	1.310
10	I am aware that staying away from exposure to sexually explicit media is a preventive strategy against sexual violence.	2.79	1.066	3.96	0.315	1.170
11	I am aware that avoidance of hyper-masculinity is a preventive strategy against sexual violence.	2.75	1.029	3.94	0.422	1.190
12	I am aware that staying away from suicidal behaviour is a preventive strategy against sexual violence,	2.60	1.223	3.93	0.432	1.330
13	I am aware that staying away from any form of sexual victimization is a preventive strategy against sexual violence.	2.93	1.157	3.90	0.522	0.970
14	I am aware that avoidance of a family history of conflict and violence is a preventive strategy against sexual violence.	2.50	1.133	3.96	0.315	1.460
15	I am aware that avoiding association with a person with a history of physical, sexual, or emotional abuse is a preventive strategy against sexual violence.	2.92	1.152	4.00	0.000	1.080
16	I am aware that void association with an emotionally unsupportive family environment is a preventive strategy against sexual violence.	2.77	1.153	4.00	0.000	1.230
17	I am aware that staying away from poor parent-child relationships is a preventive strategy against sexual violence.	2.60	1.146	4.00	0.000	1.400
18	I am aware that avoiding association with sexually aggressive, hyper-masculine, and delinquent peers is a preventive strategy against sexual violence is a preventive strategy against sexual violence.	2.81	1.161	3.97	0.300	1.160
19	Avoiding involvement in a violent or abusive intimate relationship is a preventive strategy against sexual violence.	2.81	1.080	4.00	0.000	1.190
20	I am aware that looking for a job to stay away from poverty is a preventive strategy against sexual violence	2.64	1.168	4.00	0.000	1.360
21	I am aware provision of employment opportunities is a preventive strategy against sexual violence	2.80	1.005	4.00	0.000	1.200
22	I am aware provision of institutional support from the police and judicial system is a preventive strategy against sexual violence	2.62	1.162	3.97	0.300	1.350
23	Not General tolerance of sexual violence within the community is a preventive strategy against sexual violence	2.65	1.209	3.97	0.300	1.320
24	I am aware that strong community sanctions against sexual violence perpetrators are a preventive strategy against sexual violence	2.69	1.107	4.00	0.000	1.310
25	I am aware that the provision of societal norms against sexual violence is a preventive strategy against sexual violence	2.57	1.157	4.00	0.000	1.430
26	I am aware provision of societal norms against male superiority and sexual entitlement is a preventive strategy against sexual violence.	2.69	1.253	3.97	0.300	1.280
27	I am aware that the provision of societal norms against women's inferiority and sexual submissiveness is a preventive strategy against sexual violence.	2.87	1.079	3.97	0.300	1.100
28	I am aware strong laws and policies related to sexual violence and gender equity are preventive strategies against sexual violence	2.79	1.175	3.97	0.300	1.180
29	Minimized high levels of crime and other forms of violence is a preventive strategy against sexual violence	2.53	1.201	3.91	0.514	1.380
	Aggregate mean	2.71	0.711	3.93	0.104	1.22

(Benchmark = 2.50)

Results in Table 3 revealed that the mean scores of the experimental groups differed substantially in their awareness of preventive strategies against sexual violence after their exposure to health education intervention programme. The study

participants were aware that, staying away from alcohol and drug users, avoiding delinquent behaviours, showing concern for others and showing aggressive behaviours along with non-acceptance of violent behaviours were some of the preventive strategies against sexual violence increased greatly after the intervention. The participants' awareness that avoidance of early sexual initiation could be a preventive strategy against sexual violence, that avoidance of coercive sexual fantasies. that staying away from a preference for sexual-risk taking, that staying away from bad groups, being hostile, staying away from exposure to sexually explicit media, avoidance of hyper-masculinity, staying away from suicidal behaviours and staying away from any form of sexual victimization were preventive strategies against sexual violence increased greatly after the intervention programme.

The level of their awareness that avoidance of family history of conflict and violence was a preventive strategy against sexual violence increased greatly after their exposure to the health education intervention programme. There was a major increase in the awareness that, avoiding association with a person with a history of physical, sexual, or emotional abuse, avoiding association with an emotionally unsupportive family environment, staying away from poor parent-child relationships, avoiding association with sexually aggressive, hyper-masculine, and delinquent peers, avoiding involvement in a violent or abusive intimate relationship and look for a job towards staying away from poverty were some of the preventive strategies against sexual violence.

Other areas of improved awareness levels after exposure to the intervention programme were the provision of employment opportunities, provision of institutional support from the police and judicial system, general non-tolerance of sexual violence within the community, strong community sanctions against sexual violence perpetrators, provision of societal norms against sexual violence, provision of societal norms against male superiority and sexual entitlement, provision of societal norms against women's inferiority and sexual submissiveness, strong laws and policies related to sexual violence along with gender equity were some of the preventive strategies against sexual violence. The participants' awareness that low levels of crimes and other forms of violence were some of the preventive strategies against sexual violence increased greatly after their exposure to the intervention programme. In the overall assessment, the level of awareness among the group improved from a mean score of 2.71 with a standard deviation of 0.711 before the intervention to 3.93 with a standard deviation of 0.104. The mean difference was 1.22 which showed a major difference in the level of awareness among the experimental group after the intervention programme.

Hypotheses

Hypothesis I: There is no significant difference in awareness of preventive strategies against sexual violence among female adolescent students in public secondary schools in Control and experimental groups in Kaduna State, Nigeria before intervention with health education programme.

The mean scores in Table 2 were compared with the independent sample t-test here to establish the difference in the awareness of the students on the preventive strategies before the intervention programme. The result of the independent sample t-test is shown in Table 4.

Table 4: Independent sample t-test on awareness of preventive strategies by female adolescent participants in the control and experimental group before intervention.

Groups	N	Mean	Std. Dev.	Std. Error	t-value	df	p-value
Experimental	100	2.71	0.711	0.071	1.008	198	0.315
Control	100	2.62	0.411	0.041			

(t-critical = 1.96, $p < 0.05$)

The result in Table 4 revealed that variability in the mean scores of participants in the experimental group was not significantly higher than that of students in the control group before the health education intervention programme. This is indicated by an observed t-value of 1.008 and p-value of 0.315 ($p > 0.05$) obtained at 198 degree of freedom (df). The result implied that the female students were aware of some of the preventive strategies against sexual violence and were not significantly different in their level of awareness before the commencement of the intervention. These observations implied that the null hypothesis that, there is no significant difference in awareness of preventive strategies against sexual violence among female adolescent students in public secondary schools in Control and experimental groups in Kaduna State, Nigeria before the intervention with health education programme is therefore retained.

Hypothesis II: There is no significant difference in awareness of preventive strategies against sexual violence among female adolescent students in experimental public secondary schools in Kaduna State, Nigeria before and after exposure to health education intervention programme.

The mean scores in Table 3 were compared with the paired sample t-test to determine the impact of the intervention on the awareness of preventive strategies against sexual violence among the female adolescent students involved in the experiment. The result of the test is summarized in Table 5.

Table 5: Paired sample t-test on awareness of preventive strategies against sexual violence among female adolescent students before and after the experimental

Intervention	N	Mean	Std. Dev.	Std. Error	t-value	df	p-value
Before	100	2.7062	0.71086	0.07109	17.006	198	0.000
After	100	3.9279	0.10386	0.01039			

(t-critical = 1.96, p < 0.05)

The result in Table 5 revealed that awareness of preventive strategies against sexual violence among participants improved significantly after their exposure to health educational intervention. The t-value observed was 17.006 with a p-value of 0.000 ($p < 0.05$) obtained at 198 degree of freedom (df). The null hypothesis that there is no significant difference in awareness of preventive strategies against sexual violence among female adolescent students in experimental public secondary schools in Kaduna State, Nigeria before and after exposure to health education intervention programme is therefore rejected. The result implied that the participants' exposure to health education intervention significantly improved their awareness of preventive strategies against sexual violence.

Discussion

Hypothesis one revealed that there is no significant difference in awareness of preventive strategies against sexual violence among female adolescent students in public secondary schools in Control and experimental groups in Sabon Gari Kaduna State, Nigeria before intervention with health education programme ($p = 0.315$). This finding aligns with several previous studies while showing some contrasts with others.

This finding is consistent with Agu et al. (2024) study which found similar levels of awareness between intervention and non-intervention communities regarding sexual and reproductive health knowledge. Their study similarly showed no significant baseline differences between groups before the intervention, suggesting that this pattern of comparable pre-intervention awareness levels is common across Nigerian populations. The finding also aligns with the Onasoga et al. (2019) study which found that while students generally had adequate knowledge of sexual violence, there were consistent gaps in knowledge about reporting mechanisms across their study population. This suggests that baseline awareness levels tend to be similar across student populations before targeted interventions.

However, this finding contrasts somewhat with Mtaita et al. (2021) study in Tanzania, which found varying levels of knowledge about gender-based violence services among their study population, with 77.9% showing moderate to good knowledge. This difference might be attributed to different cultural contexts and existing educational programs between Tanzania and Nigeria.

The finding supports Markus et al. (2021) research in the same region (Sabon Gari, Kaduna State), which reported generally poor awareness levels about sexual and reproductive health information among adolescents. This geographical consistency strengthens the validity of the finding, as it reflects similar baseline conditions in the same cultural and educational context. Daboer et al. (2018)'s study provides indirect support for this finding, as they also found comparable baseline characteristics among their study groups before implementing their health education intervention in Jos, Nigeria. This pattern of similar pre-intervention awareness levels appears to be consistent across different Nigerian regions. The finding also aligns with Esere's (2018) methodological approach, where pre-test measurements showed comparable baseline knowledge levels between control and experimental groups before implementing their sex education program. This methodological similarity adds credibility to the current finding's validity. This pattern of comparable baseline awareness suggests that any post-intervention differences can be more confidently attributed to the intervention itself, rather than pre-existing differences between groups. This is particularly important for evaluating the effectiveness of educational interventions, as demonstrated in studies like Fawole et al. (2017) and Ogunfowokan and Fajemilehin (2021), where significant improvements were observed only after intervention implementation.

Hypothesis two revealed that there is a significant difference in awareness of preventive strategies against sexual violence among female adolescent students in experimental public secondary schools in Sabon Gari Kaduna State, Nigeria after exposure to health education intervention programme ($p = 0.000$). This finding aligns with several previous studies. Most notably, this finding strongly agrees with Ogunfowokan and Fajemilehin's (2021) study, which demonstrated that a school-based sexual abuse prevention education program led to a significant increase in knowledge scores among high school girls in Nigeria. This parallel suggests that educational interventions are consistently effective in improving awareness of sexual violence prevention across different Nigerian contexts.

The result also corresponds with Daboer, Ogbonna and Jamda's (2018) findings, where health education intervention showed positive impacts on students' risk awareness and behaviour. Though their study focused on broader sexual risk behaviour, the effectiveness of educational intervention in raising awareness mirrors the current study's outcomes. Further support comes from Akuiyibo, Anyanti and Pio's (2021) research, which showed improved knowledge and awareness following peer education interventions among young people in Northwestern Nigeria. While their study used a different educational approach (peer education), the positive impact on awareness aligns with the current finding. The effectiveness of the educational intervention is also consistent with Esere's (2018) findings, where sex education programs significantly improved knowledge and reduced at-risk behaviours among school-going adolescents in Ilorin. This reinforces the value of structured educational interventions in raising awareness about sexual health and violence prevention.

However, it's worth noting some contrasting findings from related studies. For instance, Markus, Aliyu and Anyebe (2021) found persistent barriers to sexual and reproductive health information despite interventions, including religious beliefs, cultural acceptance, and stigma. This suggests that while educational interventions can improve awareness, their effectiveness might be moderated by cultural and social factors. Additionally, Winegust's (2015) study in Canada showed mixed results, with significant improvements in some areas but no significant changes in others, highlighting that the effectiveness of interventions may vary across different aspects of sexual violence prevention awareness.

The finding also aligns with Fawole, Ajuwon and Osungbade's (2017) study, which demonstrated improved knowledge of violence types and appreciation of vulnerability following interventions. Their results showed that educational interventions could effectively increase awareness and knowledge about gender-based violence among young women. These comparisons suggest that the current study's finding is well-supported by existing literature, particularly in the Nigerian context, while also acknowledging that the effectiveness of interventions may be influenced by various contextual factors and implementation approaches.

Conclusion

1. Female adolescent students in public secondary schools in Sabon Gari Kaduna State, Nigeria were not aware of preventive strategies against sexual violence before exposure to health education intervention.
2. Female adolescent students in experimental public secondary schools in Sabon Gari Kaduna State, Nigeria became aware of preventive strategies against sexual violence after exposure to health education intervention.

Recommendations

Based on the conclusions drawn, the following recommendations were made:

1. Health educators in collaboration with the Kaduna State Ministry of Education should carry out an awareness campaign on prevention of sexual violence targeted at school-aged children to sensitize adolescents on sexual violence preventive strategies.
2. Health educators in collaboration with media houses through jingles, playlets and drama could incorporate sexual violence prevention messaging to help in educating teens on actions to take when they get harassed or abused in any form. This would help in improving the prevention of sexual violence cases.

References

Agu, C., Akamike, I. C., Agu, I., Agu, O., Eigbiremolen, G. O., Mbachu, C. O., & Onwujekwe, O. (2024). Effects of an intervention to improve sexual and reproductive health on level and predictors of awareness and knowledge of condoms and dual protection amongst adolescents in Nigeria. *Contraception and reproductive medicine*, *9*(1), 9. https://doi.org/10.1186/s40834-024-00270-2

Akorede, S. N. (2021). Covid-19 lockdown and domestic violence among partners in Nigeria. *KIU Interdisciplinary Journal of Humanities and Social Sciences*, *2*(2), 38-47.

Akuiyibo, F., Anyanti, R., & Pio, P. (2021). Impact of peer education on sexual health knowledge among adolescents and young persons in two North Western states of Nigeria, *Journal of Reproductive Health*, 5(3), 35-46.

Avery-Leaf, S., A. Cano, M. C. & O'Leary, K. D. (2016). Assessing Attitude and Behavioural Change after Dating Violence Intervention Programs. Paper presented at the 4th International Family Violence Research Conference, Durham, New Hampshire, July 21-24. Department of Psychology, State University of New York at Stony Brook.

Cook, T. D., & Campbell, D. T. (1979). *Quasi-experimentation: Design & analysis issues in field settings*. Boston, MA: Houghton Mifflin.

Daboer, J. C., Ogbonna, C., & Jamda, M. A. (2018). Impact of health education on sexual risk behaviour of secondary school students in Jos, Nigeria. *Nigerian journal of medicine: journal of the National Association of Resident Doctors of Nigeria, 17*(3), 324–329. https://doi.org/10.4314/njm.v17i3.37403

Esere M. O. (2018). Effect of Sex Education Programme on at-risk sexual behaviour of school-going adolescents in Ilorin, Nigeria. *African Health Sciences, 8*(2), 120–125.

Fawole, A. Ajuwon, O. & Osungbade, K. (2017). Evaluation of interventions to prevent gender-based violence among young female apprentices in Ibadan, Nigeria. *Bio-Medical Journal of Public Health,* 23(4), 25-40

Foshee, V. A. (2015). Assessing the effects of the dating violence prevention program "Safe Dates" using random coefficient regression modelling. *Prevention Science, 6*, 245–257.

Lenihan G. (2020). Gender differences in rape supportive attitudes before and after a date rape education intervention. *Journal of College Student Development, 33*(4), 331–338.

Markus, S., Aliyu, D., & Anyebe, E. E. (2021). Experience of secondary school adolescents towards sexuality and reproductive health needs barriers in Sabon Gari Local Government Area of Kaduna State, Nigeria. *Al-hikmah Journal of Education, 8*(2), 15-22.

McMahon, P. M. (2017). The public health approach to the prevention of sexual violence. Sexual Abuse. *A Journal of Research and Treatment, 12*(1), 27–36.

Morrison, A., Ellsberg, M., & Bott, S. (2017). *Addressing gender-based violence in the Latin American and Caribbean region: a critical review of interventions*. http://wwwwds.worldbank.org/.

Mtaita, C., Likindikoki, S., McGowan, M., Mpembeni, R., Safary, E., & Jahn, A. (2021). Knowledge, experience and perception of gender-based violence health services: A mixed methods study on adolescent girls and young women in Tanzania. *International journal of environmental research and public health*, *18*(16), 8575.

Ogunfowokan, A. & Fajemilehin, R. B. (2017). Sexual Abuse Prevention Education Program on the awareness and Attitude among adolescents. *The Journal of School Nursing, 28*(6), 10-25

Ogunfowokan, D., & Fajemilehin, T. (2021). Impact of a school-based sexual abuse prevention education program on the knowledge and attitude of High School Girls. *Health Education Journal, 4*(12), 15-27.

Olubiyi, S. K., Muraina, K. O., Akorede, S. N., Balogun, R. O., Olubiyi, V. M., & Ayeni, A. R. (2019). Relationship between the use of drugs and violent sexual behavior among married men: A case study of Alimosho Local Government Area, Lagos State. *Achievers Journal of Scientific Research*, *2*(1), 1-5

Onasoga, O. A. & Adeleke, J. (2019). Perceived knowledge of causes and prevention strategies for sexual violence among university students in the Niger Delta region of Nigeria. *ResearchGate, 1*(3), 15-26

Punch Newspaper, (2022). *Gender-based violence: Kaduna recorded 524 cases in 2021 – NHRC coordinator*. Retrieved at https://punchng.com/gender-based-violence-kaduna-recorded-524-cases-in-2021-nhrc-coordinator/

Sarkar, N. N. (2018). The impact of intimate partner violence on women's reproductive health and pregnancy outcome. *Journal of Obstetrics and Gynaecology*, *2*(28), 266–71.

Taft, P., Blyth, H., & Murphy, C. (2022). *Impacts of Violence on Women and Girls in Kaduna*. https://fundforpeace.org/wp-content/uploads/2018/08/303011703-kaduna.pdf

United Nations Population Fund (2020). *Violence against girls and women: a public health priority*. http://www.unfpa.org/intercentre/violence/

West Virginia Foundation for Rape Information and Services [WVFRIS] (2021). *Preventing Sexual Violence*. https://www.fris.org/Prevention/Prevention.html

Winegust, A. K. (2015). *Pass it on: An evaluation of a sexualized violence prevention program for middle school and high school students*. University of Toronto (Canada).

Wolfe, D. (2016). Dating violence prevention with at-risk youth: a controlled outcome evaluation. *Journal of Consulting and Clinical Psychology, 71*(2), 279–291.

ASSESSMENT OF THE EFFECT OF COVID-19 ON ANTENATAL CARE SERVICES UTILIZATION AND PROVISION IN CROSS RIVER STATE, NIGERIA

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Abstract

The effect of the COVID-19 pandemic has disrupted health services worldwide, with associated maternal health care, which includes antenatal care (ANC) services in sub-Saharan Africa. In Nigeria, the maternal mortality ratio has been estimated at 512/100,000 in Nigerian. This study assesses the impact of COVID-19 on the utilization and provision of ANC service in Cross River State, Nigeria. A cross-sectional design was used to collect data from health facilities, pregnant women and healthcare providers via questionnaires, surveys and interviews from one Local Government Area in each Senatorial District in the state. The major areas of interest include service availability, public perception safety during the pandemic, accessibility to the health facilities, patient attendance and healthcare workers preparedness, as well as Traditional Birth Attendants (TBAs). The results obtained in 2019 show that the total number of ANC visits was 26733 as compared to what was obtained in the survey results of 4777 in 2020. This simply indicates a 7.4% reduction in antenatal care attendance. Also institutional birth delivery in 2019 (4679) and 2022 (6015) shows an increase in the number of institutional births of about 1344. This study revealed discrepancies in healthcare service delivery and utilization across the districts as the proportion of births at health facilities were 51.4%, 30.7% and 17.9% in the south, central and north respectively. Conclusively, there was an increasing trend in home deliveries and TBAs due to the negative impact of the COVID-19 pandemic on antenatal services and utilization of healthcare facilities.

Keywords: Antenatal Care, COVID-19, Provision, Services, Utilization.

Introduction

Maternal mortality is a major public health challenge globally and sub-Saharan Africa in particular (Hogan *et al.,* 2020). Despite a considerable decline in the maternal mortality rate worldwide, Nigeria still ranks fourth amongst countries with the highest maternal mortality ratio (MMR) of 512/100,000 after South Sudan, Chad and Sierra Leone (National Population Commission and ICF, 2019; WHO, 2020). According to the International Classification of Diseases (ICD-10), "maternal death is the death of a woman while pregnant or within 42 days of the end of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes" (WHO, 2010).

Probable causes and contributory factors to this unacceptable high maternal mortality rate in Nigeria have become very disturbing as every birth becomes a potential incidence. The challenge may however not be unconnected to the nation's poor maternal healthcare system (Elem & Nyeche, 2016). However, the complex web of identified leading direct and indirect causes of maternal and newborn mortality, under which these deaths occur include; lack of knowledge among women on the importance of antenatal care (ANC), out-of-hospital deliveries by unskilled health workers, absence of certain essential services as well as a weak and unreliable referral system (Ahmed *et al.,* 2021; WHO, 2020). Other notable factors include haemorrhage, hypertensive disorders, sepsis, abortion, embolism, complications of anaesthesia, and peripartum cardiomyopathy (Akorede *et al*., 2022; Kabiru *et al.,* 2024; Say *et al.,* 2014; Tessema *et al.,* 2017).

With an estimated 58, 000 maternal deaths yearly and a maternal mortality ratio of about 512/100,000, a Nigerian woman has a 1 in 22 lifetime risk of dying during pregnancy, childbirth or postpartum/post-abortion as compared to women in the most developed countries where the lifetime risk is 1 in 4, 900 (WHO, 2018; WHO,2020). Sadly enough, available data puts the maternal mortality ratio in Cross River State at 831 per 100,000 live births (Agan *et al.,* 2010) The very poor maternal health indices in the Cross River State have been attributed to poor antenatal, intra-natal and postnatal practices, and to various socio-economic factors which place women at risk of adverse maternal health outcomes (Kingsley *et al.,* 2021).

The advent of the Corona Virus Disease 2019 (COVID-19) on the healthcare system may have further exacerbated the problem of maternal mortality (Akorede et al., 2021). This is relative to the fact that the global pandemic has led to disruption and adjustment in maternity service provision, diversion of resources away from essential pregnancy care due to prioritized COVID-19 response and a potential risk of vertical transmission becoming a major concern (Kingsley *et al.,* 2021). Its epidemiology and clinical characteristics suggest that the disease pathogen primarily targets the human respiratory system with accumulated evidence of person-to-person transmission both in hospital and family settings. Findings from this study will provide several layers of baseline data that cover critical areas of public health, such as infectious disease prevention and surveillance, maternal and child health including psychosocial strategies to addressing contemporary global issues, specifically because this study has the potential to help in estimating the magnitude and patterns of the effect of COVID-19 on antenatal care (ANC) services utilization and provision which stands as the major entry point to neonatal disease prevention and highly pivotal to the survival of children (Cross River State Ministry of Information Report, 2015). This study is justifiable in that it may invariably yield benefits that transcend this generation.

Materials and Methods

Study Area: Cross River State is one of the 36 states in the Federal Republic of Nigeria in the South-South geopolitical zone. It is located between latitude 4o 24', and 6o 53' North and longitude 7o 50' and 9o 28' East. It is bounded in the North by Benue State, South by the Atlantic Ocean, southwest – Akwa Ibom State, West by Ebonyi and Abia State, and East by the Republic of Cameroon Cross River State Ministry of Information Report, 2015). It has a total land mass of 23,000sq km. It has three major languages namely Efik, Bekwarra and Ejagam, and the projected population of the State is estimated to be 3.738 million (2016) (Cross River State Ministry of Information Report, 2015). The state headquarters is in Calabar and has three senatorial districts with 18 Local government areas in total. Cross River State is an agricultural state, its vegetation is made of mangrove and tropical rain forest in the south and central zones, and savannah woodlands in the north and about 75% of the people are engaged in subsistence farming. Health system positioning and ownership of facilities in the state showed that there are about 932 health facilities, classified based on tiered of government levels viz local, state and federal including private facilities and faith-based or profit-oriented. The majority (over 90%) of facilities in Cross River State are publicly owned and most of these are managed by the primary healthcare department of the ministry of the local government. Conversely, most private health facilities are predominantly secondary health services, with the presence of only two tertiary health care facilities in the state (Cross River State Ministry of Information Report, 2015).

Study Design: This study is a multi-centre health facility-based cross-sectional study design, employing both quantitative methods of data collection in assessing the effect of COVID-19 on antenatal care services utilization and provision in Cross River State, Nigeria.

Study Population: Using a random sampling method, one Local Government Area (LGA) was selected in each senatorial district in the state and then simple random sampling was used to select five (5) communities in the selected LGAs, thus making a total of 3 LGAs and 15 communities in the state. The target population included pregnant women, health workers as well as Traditional Birth Attendants (TBAs) in our sample as local auxiliary healthcare providers supporting mainstream healthcare delivery.

Sample Size Determination: The sample size was determined using the snowball formula below as cited in (Ejenot-Nwadiaro, *et al.,* 2020).

n = N

1 + (N) (e) 2

Where; n = sample size desired, N = population size; and

e = desired margin of sampling error Substituting for the above formula:

$$n = \frac{3{,}738{,}000}{1+(3{,}738{,}000)(.03)^2}$$

$$n = \frac{3{,}738{,}000}{3365.2}$$

n = 1111

One thousand one hundred and ten respondents were used to estimate the effect of COVID-19 on Antenatal Care attendees and service provision in the study area, and the study population is 3,738,000 (NPC, 2010) and the margin of error is pegged at 3%. To account for attrition bias, the sample size was increased by 10% to a desired sample size of 1222. Hence 407 respondents were selected in each senatorial district across the state to give a total of 1222 as the desired sample size.

Sampling Procedure: A multi-stage random sampling technique was employed in the selection of study participants and the procedure is described as follows.

Stage 1: Selection of wards: In each of the LGA selected, a simple random sampling technique was used to select 10 wards each making a total of 30 wards that were sampled in the study area

Stage 2: Selection of communities: In each of the selected wards, a simple random sampling technique was used in the selection of one community making a total of 10 communities that were sampled.

Stage 3: Selection of respondents: In each community selected, only consenting pregnant women and health workers were incorporated into the study. Pregnant women resident in the selected communities were selected with the assistance of healthcare workers at the health facility where they attend ANC. This initial step was followed by a snowball sampling approach (thus, pregnant women/ANC attendees referred the researchers to other pregnant women who are friends or relatives residents in the community). However, for healthcare providers, 9 Primary Healthcare Coordinators (3 representing each senatorial district), 20 healthcare providers (2 per community) and 6 TBAs (2 in each senatorial district) were interviewed by the D. Betta Edu.

Instruments for data collection: The study employed three (3) major instruments of data collection viz;

1. ANC utilization/visit questionnaires for the pregnant women
2. ANC services provision questionnaires for healthcare workers
3. Data extraction form to establish baseline and variable trends in the past five years

Pre-testing: The pre-test was carried out with 10 per cent of the total sample size (i.e. 111 respondents). In the pretest, out of the 18 LGAs, 3 were randomly selected from each senatorial district i.e. Southern, Central and Northern senatorial districts of Cross River State to be included in the study. Pre-testing is intended to determine the relevance of questions to variables under measurements, remove ambiguity, improve the sequencing of questions and give an estimate of the maximum time burden for the completion of questions. In testing the reliability of the instrument, it was given to another set of respondents on two separate occasions after a week interval, content relation validity of the instrument was assessed based on the consistent nature of the instrument with the variables defined and measured.

Data Collection Procedure: Five (5) field research assistants with tertiary level of education were trained by the principal researcher a week before the pre-test on research ethics, questionnaires administration and data collection procedures to ensure completion, consistency and accuracy. The questionnaire was interviewer-administered to ANC attendees and health workers after seeking consent. All questionnaires were filled thus representing 100% of the desired sample size.

Method of Data Analysis: All collected data were checked for completeness and reliability before entry into the software. Data entry and cleaning were done using Epi Info version 3.5.3 computer software. Descriptive statistics of SPSS version 20 were used to summarize all the values of the variables. Results were expressed as percentages and presented in tables, charts and graphs. Student's t-test and chi-square were used to test for the hypothesis stated at a 5% level of significance. Pearson's X2 test and binary logistic regression with 95% CI will be used to measure associations. Further tests of statistics using a binary logistic regression model to test relationships between each independent variable and outcomes were investigated using a binary logistic regression model. All variables with a p-value less than 0.2 were included in the multiple logistic regression models, and a p-value of less than 0.05 will be considered statistically significant.

Expected Outcome: Findings from this proposed study will provide several layers of baseline data that cover critical areas of public health, such as infectious disease prevention and surveillance, maternal and child health including psychosocial strategies to address contemporary global issues. Specifically, this study has the potential to help in estimating the magnitude and patterns of the effect of COVID-19 on antenatal care (ANC) services utilization and provision which stands as the major entry point to neonatal disease prevention and is highly Pivotal to the survival of children. This invariably may yield benefits that transcend this generation.

Ethical consideration: Ethical approval was obtained from the Cross River State Research Ethics Committee, Ministry of Health, Calabar. The ethical approval was then used to make entry into the communities in Cross River state. Verbal or written informed consent was obtained from community gatekeepers, heads of households, market leaders and respondents who took part in the study. The objectives, significance and benefits of the study were explained to the respondents and participants. The study was strictly voluntary as the research participants were assured of anonymity and confidentiality of the information that they provided.

Results

All 1222 questionnaires were distributed, filled and retrieved for analysis giving a response rate of 100%. Thus, a total number of 407 respondents represent each Senatorial District in this study.

Socio-Demographic Characteristics of Respondents

The majority of ANC attendees who took part in the study were aged 35-39 years and were residing mostly in the Southern Senatorial District 105(36.8%) of the state. Primary education was attained by most persons in the central senatorial district 154 (35.5%). Further findings indicated that participants who took part in the study were single and from the central senatorial district 168 35.8%). Meanwhile, ANC attendees in the north 214 (34.8%), had a household size of about 4-6 members, as of the period preceding the study. Trading, which was the commonest type of occupation among participants, was majorly among participants in the central senatorial district 135 (36.4%) (Table 1).

Table 1: Socio-demographic characteristics of participants

Characteristics	Senatorial districts (n = 1221)			Total
Age	South (%)	Central (%)	North (%)	
15-24	66 (29.6)	74 (33.2)	83 (37.2)	223 (100.0)
25-34	130 (30.4)	161 (37.7)	136 (31.9)	427 (100.0)
35-44	181 (36.2)	153 (30.6)	166 (33.2)	500 (100.0)
45-49	30 (42.3)	19 (26.8)	22 (30.9)	71 (100.0)
Educational level				
Non-formal	89 (28.6)	98 (31.5)	124 (39.9)	311 (100.0)
Primary	147 (33.9)	154 (35.5)	133 (30.6)	434 (100.0)
Secondary	102 (37.5)	91 (33.5)	79 (29.0)	272 (100.0)
Tertiary	69 (33.8)	64 (31.4)	71 (34.8)	204 (100.0)
Marital status				
Single	159 (33.8)	168 (35.8)	143 (30.4)	470 (100.0)
Married	112 (35.7)	99 (31.5)	103 (32.8)	314 (100.0)
Divorced/separated	29 (47.5)	12 (19.7)	20 (32.8)	61 (100.0)
Widowed	2 (16.7)	4 (33.3)	6 (50.0)	12 (100.0)
Co-habiting	105 (28.9)	124 (34.1)	135 (37.0)	364 (100.0)
Household size				
1-3	128 (37.1)	111 (32.2)	106 (30.7)	345 (100.0)
4-6	195 (31.8)	205 (33.4)	214 (34.8)	614 (100.0)
7-10	80 (37.4)	79 (36.9)	55 (25.7)	214 (100.0)
> 10	4 (8.3)	12 (25.0)	32 (66.7)	48 (100.0)
Occupation				
Trader	114 (30.7)	135 (36.4)	122 (32.9)	371 (100.0)
Farmer	54 (17.4)	149 (47.9)	108 (34.7)	311 (100.0)
Civil/Public servant	161 (63.1)	30 (11.8)	64 (25.1)	255 (100.0)
Unemployed	63 (26.1)	85 (35.3)	93 (38.6)	241 (100.0)
Self-employed	15 (34.9)	8 (18.6)	20 (46.5)	43 (100.0)

**Figures in parenthesis are percentage*

Reproductive Characteristics of Respondents

Over a third of the respondents 247 (37.4%) majorly from the central senatorial district, were accessing ANC for the first time. On the other hand, most ANC attendees who had visited the healthcare centre during periods preceding the study survey were majorly from the southern senatorial district 196 (35.0%). ANC attendees with one or two children were mostly from northern Senatorial District 221 (36.6%). ANC attendees in the northern senatorial district had their last delivery mostly at home 105 (42.7%) and through a TBA 208 (46.4%), while ANC attendees that had their last delivery at the healthcare facility 208 (46.4%) were mostly from the southern senatorial district. The majority of participants did not attend ANC during their last pregnancy and those that attended were mostly from the northern senatorial district 199 (36.4%). Most participants were in the second trimester and mostly of the central senatorial district 220 (44.6%) at the time of this study. Households of these participants had mostly three children and these occurred majorly in the 172 (49.0%) northern senatorial district (Table 2).

Table 2: Reproductive Characteristics of Respondents

Characteristics	Senatorial districts (%), n = 1221			Total (%)
First-time pregnancy	***South (%)***	***Central (%)***	***North (%)***	
Yes	211 (31.9)	247 (37.4)	203 (30.7)	661 (100.0)
No	196 (35.0)	160 (28.6)	204 (36.4)	560 (100.0)
Gravidity				
1-2	289 (34.0)	275 (32.4)	285 (33.6)	849 (100.0)
3-4	86 (29.3)	111(37.9)	96 (32.8)	293 (100.0)
5-6	30 (41.7)	21 (34.7)	25 (23.6)	76 (100.0)
≥ 7	2 (66.7)	0 (00.0)	1 (33.3)	3 (100.0)
Birth parity				
1-2	189 (31.3)	194 (32.1)	221 (36.6)	604 (100.0)
3-4	103 (33.0)	122 (39.1)	87 (27.9)	312 (100.0)
5-6	90 (41.7)	75 (34.7)	51 (23.6)	216 (100.0)
≥ 7	25 (28.1)	16 (18.0)	48 (53.9)	89 (100.0)
Attended ANC during the last delivery				
Yes	190 (34.7)	158 (28.9)	199 (36.4)	547 (100.0)
No	217 (32.2)	249 (36.9)	208 (30.9)	674 (100.0)
Gestational age				
1st trimester	141 (43.4)	85 (26.2)	99 (30.5)	325 (100.0)
2nd trimester	117 (23.7)	220 (44.6)	156 (31.7)	493 (100.0)
3rd trimester	149 (37.0)	102 (25.3)	152 (37.7)	403 (100.0)
Children (U-5 years) in household				
One	105 (44.1)	74 (31.1)	59 (24.8)	238 (100.0)
Two	135 (38.9)	124 (35.7)	88 (25.4)	347 (100.0)
Three	78 (22.2)	101 (28.8)	172 (49.0)	351 (100.0)
Four	89 (31.2)	108 (37.9)	88 (30.9)	285 (100.0)

**Figures in parenthesis are percentage*

Rate of antenatal care attendance in the study area

Results presented in Table 3 show a five-year trend of health indices in the study area from 2016-2020. In this study, the rate of antenatal care attendance indicates an increase in trend from 2016 to 2020 when the disease first entered Africa In 2018 for instance, a total of 21662 women attended ANC as compared to 13788 women who did in 2016, thus translating to about 36.5% increase in ANC service utilization in the study area. The same trend repeated itself in 2018 (26194) as compared to 2019 (21662) and 2019 (26733) to 2020 (26194) showing a 17.3% and 11.9% increase in ANC service utilization respectively. However, trends in this study show a decrease in ANC attendance from the onset of COVID-19 in 2019 (26733) as compared to the survey results in 2020 (24777) which indicate a 7.4% reduction in ANC attendance.

In comparison with the yearly number of institutional births between 2016 (2437), 2017 (4015) and 2018 (4923), a substantial increase of about 39% and 18.4% respectively were recorded following the trend as observed in this study. Although, there was a 5% decrease in institutional birth in 2019(4679) as compared to 2018(4923), however, we observed an exponential increase of about 22.2% of institutional births in the survey results in 2020 (6015) in comparison to when the COVID-19 lockdown was announced in 2019 (4679). We observed in this study a matching decrease in the trend for neonatal mortality in 2016 (Kingley, 2021), 2017 (WHO, 2018) and 2018 (WHO, 2020). However, there was an increase in neonatal mortality in 2019 (Kingley, 2021) during the start of the pandemic as compared to 2018 (6). Results presented in this study show an unacceptably high rate of maternal and neonatal mortality in 2016 (Say, *et al.,* 2014; Kingley, 2021) and nearly the same trend repeated itself in 2019 (WHO, 2018; Kingley, 2021) respectively.

Table 3: Summary Of Trends Of ANC Attendees, Birth Delivery, Maternal Mortality and Neonatal Mortality
**Figures in parenthesis are percentage*

Characteristics	Senatorial districts			Total
ANC Attendance	***South***	***Central***	***North***	
2016	4531	4690	4567	13788
2017	7629	6528	7505	21662
2018	9393	7960	8841	26194
2019	8917	9202	8614	26733
2020	8563	8024	8190	24777
Birth Delivery				
2016	889	753	795	2437
2017	1542	1126	1347	4015
2018	1990	1226	1707	4923
2019	1766	1341	1572	4679
2020	2388	133	2296	6015
Maternal Mortality				
2016	4	1	5	10
2017	2	2	2	6
2018	1	4	1	6
2019	5	3	1	9
2020	1	1	3	5
Neonatal Mortality				
2016	1	5	5	11
2017	4	1	4	9
2018	1	2	3	6
2019	1	9	1	11
2020	0	0	3	3

Compare the Baseline Data of Antenatal Care Attendance with the Survey Results

Comparatively, baseline results obtained in 2019 show that the total number of ANC visits was 26733 as compared to what was obtained in the survey results of 4777 in 2020. This simply indicates a 7.4% drop in antenatal care attendance. Also, baseline data for institutional birth delivery in 2019 (4679) and 2022 (6015) shows an increase in the number of institutional births of about 1344, with institutional maternal and neonatal mortality showing a decrease in their numbers (Table 3).

Determine the Effect of COVID-19 on Antenatal Care Utilization/Visits in the Study Area

In this study, we found out that the majority of the women did their antenatal care follow-up in a healthcare facility. Out of the 1221 respondents, 661(54.1%) said it was their first pregnancy/time to utilize antenatal care services in a healthcare facility, while some 560 (45.9) said it wasn't their first pregnancy/time to utilise the antenatal care services of the health facilities. Data obtained from the demographic characteristics of respondents (Table 2) indicated that, of the 560 mothers who are not first-time mothers, 547 (giving a 98% rate) attended ANC during their last delivery with about 325 (26%) seeking care during their first trimester. This may be due to the importance of ANC and satisfactory service delivery in the study area.

Table 4: Effect on the provision of ANC services

Effect	Senatorial district (%), n=1221			Total (%)
Changes in ANC services	*South*	*Central*	*North*	
Yes	22 (34.9)	20 (31.8)	21 (33.3)	63 (100.0)
No	3 (25.0)	5 (41.7)	4 (33.3)	12 (100.0)
Type of changes				
Decrease in attendees	16 (34.0)	15 (31.9)	16 (34.0)	47 (100.0)
Increase in attendees	4 (57.1)	1 (14.3)	2 (28.6)	7 (100.0)
Unavailability of services	2 (22.2)	4 (44.4)	3 (33.3)	9 (100.0)

**Figures in parenthesis are percentage*

Discussion

This study provides a snapshot of the effect of COVID-19 on antenatal care services utilization and provision in Cross River State, Nigeria. The participants of this study covered three senatorial districts of the state where the majority were women of childbearing age, with primary education being the major educational qualification attained across the districts (33.9%, 35.5%, 30.6%) respectively. Although the majority of the respondents in this study were married, with a moderate household size of about 4-6 persons per household. However, many of them were traders and only about a few of the respondents had tertiary education. These results are similar to the findings of United Kingdom (UK) maternal mortality reports which suggest that women at particular risk of dying during pregnancy are Black, Asian, ethnic minority women, immigrants, victims of domestic violence and women of lower socioeconomic status (Akorede, 2021; Knight, 2019, Olubiyi et al., 2019).

Relative percentage differences of a five-year trend of ANC attendees, birth delivery, maternal mortality and neonatal mortality comparing figures from 2016 to 2020 indicate a clear disruption in ANC services, specifically at the onset of COVID-19 and the lockdown. ANC visits were 7.4% lower in 2020 compared to 2019. The reason for this reduction may be indicative of heightened fear of disease transmission, which might have stopped women from seeking care at health facilities, and some restriction measures set up by the government to curb the spread of the virus. Therefore, the provision of improved ANC service is less likely to bring about better health outcomes if uptake is low as observed in this study during the period of COVID-19. Findings from this study which is similar to those obtained which concluded that accessing healthcare for non-COVID-19 related health issues, including antenatal care services, has been grossly impacted. Again, coupled with the need to ensure global containment measures; health centres are being overstretched with response efforts, limited supply of equipment due to the disrupted supply chain, and shortage of skilled birth attendants as health workers need to respond to COVID-19.

Although in this study, there was a 5% decrease in institutional births between 2018 and 2019, we also observed an exponential increase of about 22.2% of institutional births in the survey results. Institutional delivery service utilization is one of the key and proven interventions to improve maternal health and well-being and to reduce maternal mortality through providing safe delivery and reducing complications that are related to and occur during birth. To reduce the level of maternal mortality, the World Health Organization (WHO) envisions a world where “every pregnant woman and newborn receive quality care throughout pregnancy, childbirth and postnatal period” (Tuncalp, *et al.*, 2015). The Safe Motherhood initiative also highly emphasizes institutional delivery as one element of emergency obstetric care where complicated cases can be safely handled.

More so, the high number of women who did not attend ANC as suggested in this study, may have translated to their choice of place of delivery. This study found that the proportion of mothers who gave birth at a health facility was 51.4%, 30.7% and 17.9% in the South, central and north respectively. Although the findings from the south are similar to the NHIS report of 2018, which pecked health facility delivery to 50.2%, there is still cause for concern across other districts as observed. This proportion is much higher in the urban area (south) and slightly lower in the central than that in the North. The reason for these discrepancies in the proportion of facility delivery could be due to the level of awareness of the population across the district in the study area. Again, the rate of facility delivery in this study was generally lower when compared to study findings from other similar settings, like local studies from Ethiopia (73.2%) and Nigeria (65%) (Woiynshet, *et al.*, 2016; Shehu, *et al.*, 2022). This could be due to the inherent difference socio socio-demographic characteristics, access to health facilities and sociocultural structure. The study agrees that there is a negative increasing trend of home deliveries and the use of TBAs. For instance, as much as 42.7% and 46.4% in the Northern senatorial district still gave birth at home and patronised the services of TBAs respectively.

Findings from this study suggest no infant mortality was recorded in the selected facilities within the period under review. However, in-line graphs which show the trend of health indices in the study area from 2016-2020 are suggestive of an increase in ANC attendees and birth delivery in 2019 and 2020. The clinical implications of potential increases in these years are unclear but with almost a corresponding neonatal mortality at its peak in 2017, 2019 and 2020 across districts could pose challenges for maternal and newborn health. More research is needed to address the impact of COVID-19 on routine pregnancy and delivery care. This finding is not in agreement with a cross-sectional survey conducted in seven countries, which found a

decrease in planned antenatal and delivery care use due to COVID-19 concerns. The discrepancies in the average practices may be due to the period, and countries where studies were conducted.

Conclusion

There are wide varieties of factors that influence the quality of ANC services provision and utilization ranging from age, educational level and socio-economic factors. This study concluded that there is a 7.4% clear disruption of ANC services following the five-year trend compared with the survey results. Although in this study, there was a 5% decrease in institutional births between 2018 and 2019, we also observed an exponential increase of about 22.2% of institutional births in the survey results in 2020. Even though the majority of the women did their antenatal care follow-up in the healthcare facility, we observed in this study an increase in neonatal mortality in 2019 (Kingsley *et al.*, 2021) during the start of the pandemic as compared to 2018(6) with a matching unacceptably high rate of maternal and neonatal mortality in 2019 (WHO, 2018; Kingsley *et al.*, 2021) respectively. This study also found that there are still discrepancies in service delivery and utilization across districts as the proportion of mothers who gave birth at a health facility was 51.4%, 30.7% and 17.9% in the south, central and north respectively. However, the study agrees that there is a negative increasing trend of home deliveries and the use of TBAs. The study indicated that the COVID-19 pandemic imparted ANC services and utilization and identified government restrictions, peer pressure, myths and misconceptions, cost and attitudes of healthcare workers as the five most common reasons for the cancellation of ANC schedules.

Conflict of Interest

The authors have declared that no competing interest exists.

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References

Agan, T. U., Archibong, E. I., Abeshi, S. E., Edentekhe, T. A. and Bassey, E. E. (2010). Trends in maternal mortality at the University of Calabar Teaching Hospital, Nigeria (1999-2009). *InternationalJournal of Women's Health,* 2, 249-254.

Ahmed, M., Suleiman, M. A., Akorede, S. N., Musa, U., & Hassan, A. I. (2021). Assessment of clinical constraints to ending preventable deaths of newborns as perceived by community health workers in North East Zone, Nigeria. *Global Journal of Health Related Researches*, *3*(1), 27-33.

Akorede, S. N. (2021). COVID-19 lockdown and domestic violence among partners in Nigeria. *KIU Interdisciplinary Journal of Humanities and Social Sciences*, *2*(2), 38-47.

Akorede, S. N., Ajayi, A. E., Toyin, A., & Uwadia, G. U. (2021). Influence of COVID-19 on the psychological wellbeing of tertiary institution students in Nigeria. *Tanzania Journal of Science*, *47*(1), 70-79. https://dx.doi.org/10.4314/tjs.v47i1.7

Akorede S. N., Muhammed, A. S., Isiaq, A. T., & Akorede, A. A. (2022). Impact and prospects of maternal health care services on maternal health in Zaria Local Government of Kaduna State. *International Journal of Advanced Research in Multidisciplinary Studies*, *2*(1), 60-66.

Cross River State Ministry of Information Special Report (2015). Food and nutrition in focus. Available at http//www.keketripod.com.

Ejemot-Nwadiaro R. I., Ehiri J. E., Arikpo D., Meremikwu, M. M. and Critchley, J. A. (2021). Hand washing promotion for preventing diarrhoea. *Cochrane Database Systemic Review*, *12*(1), CD004265 Doi: 10.1002/14651858.CD004265.pub3. PMID: 26346329; PMCID: PMC4563982.

Elem, M. and Nyeche, S. (2016). Health Inequality and the Empowerment of Reproductive Age of Women for Development in Rivers State Primary Health Care Strategy in the Reduction of MaternalMortality (2007-2015). *International Journal of Advanced Academic Research Social and Management Sciences*, *20*(11), 3-8.

Hogan, M. C., Foreman, K. C. and Naghavi, M., (2010). Maternal mortality for 181 countries, 1980–2008: a systematic analysis of progress towards Millennium Development Goal 5. *The Lancet*, *375*(9726), 1609–1623.

Kabiru, A., Akorede, S. N., Aminu, Y., Yusuf, B., Shehu, S., & Sani, M. A. (2024). Assessment of awareness, attitude and practice of non-pharmaceutical protocols in prevention of severe acute respiratory tract infections among non-civil servants in Northern Nigeria. *Global Journal of Health Related Researches*, *6*(1), 57-62.

Kingsley, A., Edu, C. B., Edakabasi, A., Essien O. and Bibia G. P. (2021). Successful Management of Sickle Cell Disease Patient with Covid-19 Infection in a Low Resource Setting: Case Study. *International Journal of General Medicine, 16,* 3503-3515. DOI: 10.9734/JPRI/2021.

Knight, M. (2019). The findings of the MBRRACE-UK confidential enquiry into maternal deaths and morbidity. *Obstetrics,*

Gynaecology and Reproductive Medicine, *29*(1): 21-23. Doi:10.1016/S0140-6736(20)30311-1 7.

National Population Commission and ICF, (2019). Nigeria Demographic and Health Survey 2018. Abuja, Nigeria, and Rockville, Maryland, USA: NPC and ICF.

Okereke, M., Ukor, N. A. Adebisi, Y. A. Ogunkola, I. O. Favour Iyagbaye, E., Adiela Owhor, G., and Lucero-Prisno D.E. (2020). Impact of COVID-19 on access to healthcare in low and middle-income countries: current evidence and future recommendations. *International Journal of Health Planning and Management*, *36*(1), 13-17.

Olubiyi, S. K., Muraina, K. O., Akorede, S. N., Balogun, R. O., Olubiyi, V. M., & Ayeni, A. R. (2019). Relationship between the use of drugs and violent sexual behavior among married men: A case study of Alimosho Local Government Area, Lagos State. *Achievers Journal of Scientific Research*, *2*(1), 1-5.

Say, L., Chou, D., Gemmill, A., Tunçalp, Ö., Moller, A., Daniels, J. and Gülmezoglu, A. M. (2014). Temmerman M, Alkema L. Global causes of maternal death: a WHO systematic analysis. *Lancet Glob Health,* 2:323–33.

Seemab, N., Sarah, S., Farnaz, N., Masum, B., Eleanor, N., Elizabeth, F., Nalini, P., Lester, F., Manolo, M., Ana, L. G., Archana, P., Prabir, D., Avinash, K., Shivaprasad, S., Goudar, F. E., Elwyn, C., Adrien, L., Antoinette, T., Rashidul, H., Shahjahan, S., Sana, Y., Melissa, B., Edward, A., Liechty, N. F., Krebs, R. J., Derman, W. A., Carlo, W. A., Petri, Jr., Patricia, L., Hibberd, M. Koso-Thomas, V., Thorsten, E. M., and McClure, R. L., (2022). Knowledge, attitudes, and practices of pregnant women regarding COVID-19 vaccination in pregnancy in 7 low- and middle-income countries: An observational trial from the Global Network for Women and Children's Health Research. *International Journal of Obstetrics & Gynaecology*, 00:1-8. Doi.org/10.1111/1471-0528.17226

Shehu, C. E., Ibrahim, M. T. O., Oche, M. O., and Nwobodo, E. I. (2016). Determinants of place of delivery: A comparison between an urban and a rural community in Nigeria. J*ournal of Public Health and Epidemiology*, *8*(6): 91-101.

Tessema, G. A., Laurence, C. O, Melaku, Y. A, Misganaw, A., Woldie, S. A, Hiruye, A., Amare, A. T, Lakew, Y., Zeleke, B. M. and Deribew, A. (2017). Trends and causes of maternal mortality in Ethiopia during 1990–2013: findings from the global burden of diseases study 2013. *BMC Public Health*, 17:160. Doi.org/10.1186/s12889-017-4071-8.

Tunçalp Ö, Were W. M., MacLennan C., Oladapo, O. T., Gülmezoglu, A. M., and Bahl, R. (2015). Quality of care for pregnant women and newborns-the WHO vision. BJOG.;*122*(8):1045–1049.

WHO, UNICEF, United Nations Population Fund, World Bank Group & United Nations Population Division, (2020). Trends in maternal mortality: 1990 to 2015. *Geneva*: World Health Organization, 2015.

Woiynshet G/tsadik Kelebore, Aschalech Asefa, Asefa Tunje, Shitaye Shibiru, Simret Hassen, Dinkalem Getahun, and Mesfine Mamo (2016). Assessment of factors affecting institutional delivery service utilization among mother who gave birth in last two years, Arbaminch Town, Gamo Gofa Zone, SNNPR, Ethiopia. *Science Journal of Public Health*, *4*(6):457-461. Doi: 10.11648/j.sjph.20160406.17.

World Health Organization, (2010. ICD-10: International Classification of Diseases and Related Health Problems. 2010. 10th Revision, Vol. 2, Instruction Manual. *Geneva*: WHO.

World Health Organization, (2020). Application of maternal near-miss approach to audits of severematernal complications in a low-resource country. Guest Editor: João Paulo Souza. The Nigeria Near-miss and Maternal Death Survey was financially supported by the UNDP/UNFPA/UNICEF/WHO/World Bank Special Programme of Research, Development and Research Training in Human Reproduction (HRP), a co-sponsored programme executed by the World Health Organization.

World Health Organization. (2018). Estimates generated by the WHO and Maternal and Child Epidemiology Estimation Group (MCEE). http://data.unicef.org.

ASSESSMENT OF THE EFFECT OF SELECTED STRETCHING EXERCISES ON MAGNITUDE OF DISABILITY AMONG YOUNG ADULTS WITH LOW BACK PAIN IN SAMARU ZARIA, KADUNA STATE, NIGERIA.

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Abstract

Stretching is one of the exercise interventions widely used in low back pain management in developed nations. It encompasses a heterogeneous group of interventions ranging from general physical fitness or aerobic exercise to muscle strengthening and various types of flexibility. The study assessed the effect of selected exercises among young adults with low back pain in Samaru Zaria, Kaduna State. Twenty-five (25) young male adults met the inclusion criteria for the study. Only one group was used as an experimental and control group. Each participant participated in a structured training programme, 3 sessions a week for eight (8) weeks with each session lasting for a maximum of 60 minutes with rest intervals. Data was collected at baseline, at the 4th and 8th week into the training programme for all participants magnitude of disability was measured using the Oswestry Disability Index (ODI) of the participants, Physical characteristics measurement of age, weight, height and body mass index were taken before administering exercise training using International Society for Advancement of Kinanthropometry (ISAK) protocol. Out of twenty-five (25) participants that started the training programme, only twenty-two (22) participants completed the training measuring and therefore, only their data was analyzed using repeated measure ANOVA. The results showed that the eight (8) weeks training programme had a significant effect on the magnitude of disability ($F(2,42) = 42.412$, $P=0.000$) of the participants. The study recommended that stretching exercise should be incorporated in the management of low back pain among Yung Adults with low back pain in Samaru Zaria, Kaduna state, Nigeria.

Keywords: Resistance exercise, Low back, Yung Adults, Magnitude of pain.

Introduction

Low back pain is a global health issue with a high prevalence rate; it is one of the most frequently reported health problems affecting the adult population and is the most prevalent musculoskeletal condition in orthopaedics practice in Nigeria. A change in lifestyle from a physically active population to a sedentary lifestyle in Nigeria has led to the emergence of new disease conditions including low back pain, and also excessive farm labour and lifting of heavy loads, poor physical condition, poor sleeping position and stress may also contribute to low back pain (Eyichukwu & Ogugua, 2012).

Low back pain is regarded as one of the most common musculoskeletal complaints, with many people experiencing back pain during their lifetime (Walker, 2012). Low back pain has been classified by duration of symptoms as acute, sub-acute and chronic. Within these classifications, there is no agreement across medical health and fitness organisations for a specific duration of symptoms but generally, pain lasting less than six weeks is classified as acute, pain lasting 6 to 12 weeks is classified as sub-acute and low back pain lasting more than 12 weeks is described as chronic (Koes et al., 2010). Low back pain is related to disability and work absence and accounts for high economic costs Dayo, et al., 2015. In the majority of cases of LBP the aetiology is not clear, and the term “nonspecific” is thus Sarahiotto, et al., 2016 One possible factor in the genesis and persistence of LBP is mobility, stability and control of the lumbopelvic region (Saragiotto et al., 2016).

Exercise rehabilitation programs commonly used for patients with LBP are based on strengthening exercises or trunk stabilization Shamsi, et al., 2016. Resistance training as observed by Juan, Sánchez and Salvador (2017), had a significant effect on fitness and quality of Life in females with low-back pain. Exercise is consistently recommended in modern treatment guidelines for low back pain defining return to work as the primary treatment goal (Akhtar, Karimi, & Gilani, 2017; Miyamoto, Moura, Franco, de Oliveira, Amaral, Branco, da Silva, Lin, & Cabral, 2016) no evidence was found for the effectiveness of specific exercises in the management of chronic low back pain. Tam, Mohamed, Puteh, and Ismail (2019), stated: “It appears that the key to success is the physical activity itself, i.e. activity of any form, rather than any specific activity”.

Foster, Anema, Cherkin, Chou, Cohen, Gross, Ferreira, Fritz, Koes, and Peul (2018) reported that physical exercise can be associated with improvement in functional ability where patients reported a reduction in disability from severe to moderate,

and these changes were similar to those reported in drugs trials studies which have a significant impact on patient's personal independent and quality of life, and can delay or even avoid the need for surgical intervention.

Resistance exercise is one of the few proven treatments for low back pain; however, its effect is often small, and no form is clearly better than another physical activity in general is considered important for health, depression, and pain experience, and exercise is recommended and widely used in low back pain management in many developed countries of the world (Alzahrani, Mackey, Stamatakis, Pinheiro, Wicks, & Shirley, 2019).

However, low back pain is one of the health problems in Samaru Zaria Kaduna state, Nigeria where young adults who are mostly self-employed, farmers and students often complain of pain, tiredness, discomfort, and difficulty in bending, carrying, standing and walking.

Purpose of the Study

The main purpose of the study was to assess the effect of selected stretching exercises on magnitude disability among young adults with low back pain in Samaru Zaria, Kaduna State, Nigeria. The following hypothesis was formulated to guide the study:

There is no significant effect of stretching exercises on the magnitude of disability of adults with low back pain in Samaru Zaria, Kaduna state Nigeria.

Materials and Methods

Repeated measures of experimental research design was used in this study. A total of twenty-five (25) participants were selected as a sample size for this study, the participants were drawn from the clinic record through a purposive sampling technique. This is because only young male adults, who complained of low back and met the inclusion criteria for this study, were used as participants. Three (3) participants were dropped during the cause of the training as a result of inconsistency. According to Dikmen and Tuncer (2018), a minimum of twenty (20) and a maximum of thirty (30) participants for experimental research would produce desirable effects. Therefore, for this study, only twenty-two (22) participants were used, who were identified with low back pain through the use of a self-administered questionnaire that sought information on the respondents' demographic profile, history and pattern of back pain, perceived risk factors and mode of treatment. The measurement of the magnitude of disability was taken by the Oswestry disability index (ODI).

The training programme was conducted three times a week at Ahmadu Bello University Gymnasium Zaria on alternate days (Tuesdays, Thursdays and Saturdays) for 8 weeks. According to Boucher, Preuss, Henry, Dumas, and Larivière (2016), stated that both short-term and long-term exercises, offer numerous health benefits, after one session, an individual may notice some physical and psychological changes within four weeks.

The exercise instructor demonstrated the exercises to the subjects on their first day while they watched and joined later. The exercises were carried out in groups to make it more interesting. Each exercise session began with a 10-minute warm-up comprising brisk walking and jogging. The main exercise workout includes exercise to the back muscles, muscles of the lower extremities and abdominal muscles. Stretches to exercised muscles were done as warm-down exercises. Each exercise session lasted for 60 minutes with 5 minutes rest after every 20 minutes of workout.

Each participant, participated in warm-up for 5 to 10 minutes, using brisk walking, jogging, single knee pull, double knee pull and seated pike stretch with a training intensity of 50% – 60% low maximum heart rate determined by placing a hand on the radial artery and was taken for sixty (60) seconds using the manual or direct method. The aim was to prepare the subjects physically for the main exercises and allow blood to pump to all the muscles needed for the main workout. The intensity will gradually increase to 50% - 60% from week 5 (Heyward & Gibson, 2012).

The resistance training was taken using body weight for stretching and strengthening of the muscles of the spine (erector spinea) and abdomen (rectus abdominis, oblique absominiis, transverse abdominis) including the hip extensors (gluteal maximus) and flexors (Iliopsoas), and the quadriceps femoris. These exercises included prone trunk raises, prone alternate arm/leg lifts, double knee pulls and seated pike stretches.

The data collected for this research was analysed using Statistical Package for Social Science (SPSS) version 21. The descriptive statistics of mean, standard deviation and range of scores were used to calculate the average range of pain for each participant. A repeated measure analysis of variance (ANOVA) was used to evaluate whether a significant change occurred between the pre-test, 4^{th} week and 8^{th} week on the magnitude of disability of the participants. Where the result of the repeated measure analysis of variance (ANOVA) gave a significant result, the Bonfer roni pairwise comparison *post hoc test* was used to determine which time pair(s) gave results that were significantly different. An alpha level was set at 0.05 for all statistical analyses.

Results

Table 1: Demographic Information of Participants

Demography	Frequency	Percentage (%)	Mean	Std. Dev.
Age			28.9	3.8
20 - 25 years	4	18.2		
26 - 30 years	10	45.5		
31 - 35 years	8	36.4		
Occupation			NA	NA
Farmer	8	36.4		
Self-employed	14	63.6		
Weight			49.16	4.71
40 - 45kg	5	22.7		
46 - 50kg	9	40.9		
51 - 55kg	6	27.3		
56 - 60kg	2	9.1		
Height			1.64	0.08
1.50 - 1.60m	7	31.8		
1.61 - 1.70m	10	45.5		
1.71 - 1.80m	5	22.7		
BMI			26.79	4.30
<18.5 BMI	2	9.1		
18.5 - 24.9 BMI	2	9.1		
25.0 - 29.9 BMI	15	68.2		
30.0 - 34.9 BMI	3	13.6		
Total	**22**	**100.0**	**NA**	**NA**

Key: Std. Dev. = Standard Deviation, NA = Not Applicable

Table 1 shows the demographic characteristics of the participants. The demographic information collected from the participants included: age, occupation, height, weight, and body mass index of the participants.

Table 2 Mean and Standard Deviation of Weekly Average Magnitude Disability of Respondents

Magnitude of disability	Mean	Std. Deviation
Week 0	3.09	0.811
Week 4	2.41	0.666
Week 8	1.68	0.716

The variables were tested for all participants at baseline, at 4th week and 8th week of the exercise programme. The results of the tests were analysed using descriptive statistics of mean and standard deviation. The descriptive statistics of the variable are presented in Table 2.

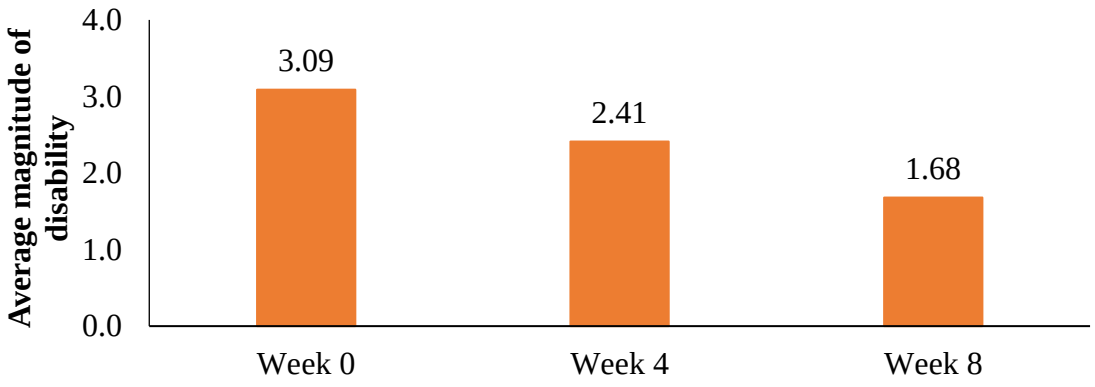

Figure 1: Average magnitude of disability of participants

- A repeated measures analysis of variance was carried out at a 95% confidence level to test the null hypothesis which states that resistance training has no significant effect on the magnitude of disability of the participants. The result (Table 3), $F(2, 42) = 42.412$, $p < 0.001$ shows that resistance training does have a significant effect on the magnitude of disability of the participants, table 2.

Table 3: ANOVA Table for Participants' Magnitude of Disability Output

Source		Type III Sum of Squares	df	Mean Square	F	Sig.
Disability	Sphericity Assumed	21.848	2	10.924	42.412	0.000
	Greenhouse-Geisser	21.848	1.752	12.469	42.412	0.000
	Huynh-Feldt	21.848	1.899	11.506	42.412	0.000
	Lower-bound	21.848	1.000	21.848	42.412	0.000
Error(Disability)	Sphericity Assumed	10.818	42	0.258		
	Greenhouse-Geisser	10.818	36.797	0.294		
	Huynh-Feldt	10.818	39.877	0.271		
	Lower-bound	10.818	21.000	0.515		

A Bonferroni post hoc test was carried out to determine the periods in which the participants' magnitude of disability significantly changed. The result (table 4) revealed that the average magnitude of disability of 3.09 ± 0.811 at week 0 significantly reduced to 2.41 ± 0.666 (p = 0.001) by week 4. The magnitude of disability then further decreased to 1.68 ± 0.716 (p < 0.001) by week 8. It is therefore concluded that resistance training does have a significant on reducing the magnitude of disability of the participants over eight weeks.

Table 4. Bonferroni post hoc pairwise comparisons test for the magnitude of disability

(I) Disability	(J) Disability	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b]	
					Lower Bound	Upper Bound
Week 0	Week 4	0.682*	0.153	0.001	0.285	1.079
	Week 8	1.409*	0.126	0.000	1.082	1.736
Week 4	Week 0	-0.682*	0.153	0.001	-1.079	-0.285
	Week 8	0.727*	0.176	0.001	0.269	1.186
Week 8	Week 0	-1.409*	0.126	0.000	-1.736	-1.082
	Week 4	-0.727*	0.176	0.001	-1.186	-0.269

Based on estimated marginal means
*. The mean difference is significant at the .05 level.
b Adjustment for multiple comparisons: Bonferroni

Discussion

Low back pain is related to disability and work absence and accounts for high economic costs. Exercise rehabilitation programmes were used for patients with LBP, and the exercises were based on stretching exercises or trunk stabilization (Shamsi et al., 2016). The results of this study showed that eight (8) weeks of stretching exercises had a significant effect on the magnitude of disability among young adults with low back pain in Samaru Zaria, Kaduna State, Oswetry disability index was used to measure the disability of the participants at baseline, within and after training. The result revealed that stretching exercises had a significant effect on the magnitude of disability of the participants (p ¬= 0.001). Juan, Sánchez and Salvador (2017), in experimental research on the effects of functional resistance training on fitness and quality of Life in females with low-back pain, observed a significant effect on fitness and quality of Life in females with low back pain after 12 weeks of resistance training. Chan, Adnan, and Azmi (2019) assessed the effect of stretching exercises on the pain and disability of individuals with chronic low back pain, and the result revealed that there was a significant reduction in pain and disability, and 89% of participants considered their pain intensity and functional disability acceptable after six (6) weeks programme of resistance exercises. Foster et al. (2018) reported that physical exercise can be associated with improvement in functional ability where patients reported a reduction in disability from severe to moderate, and these changes were similar to those reported in drug trials studies which have a significant impact on patients' personal independent and quality of life, and can delay or even avoid need for surgical intervention. Tam et al. (2019), revealed that individually designed stretching or resistance exercises delivered with supervision may reduce pain and disability of low back pain after eight weeks of resistance exercise.

Conclusion

Based on the findings of the study, it was concluded that eight (8) weeks of stretching exercise reduce the magnitude of disability among young adults with low back pain.

Recommendations

Based on this conclusion, it is, therefore, recommended that Resistance training should be incorporated in the management of low back pain among Young Adults with low back pain in Samaru Zaria, Kaduna state, Nigeria.

References

Akhtar, M. W., Karimi, H., & Gilani, S. A. (2017). Effectiveness of core stabilization exercises and routine exercise therapy in management of pain in chronic non-specific low back pain: A randomized controlled clinical trial. *Pakistan journal of medical sciences*, *33*(4), 1002.

Alzahrani, H., Mackey, M., Stamatakis, E., Pinheiro, M. B., Wicks, M., & Shirley, D. (2019). The effectiveness of incidental physical activity interventions compared to other interventions in the management of people with low back pain: A systematic review and meta-analysis of randomised controlled trials. *Physical Therapy in Sport*, *36*, 34-42.

Boucher, J.-A., Preuss, R., Henry, S. M., Dumas, J.-P., & Larivière, C. (2016). The effects of an 8-week stabilization exercise program on lumbar movement sense in patients with low back pain. *BMC musculoskeletal disorders*, *17*(1), 23. doi: 10.1186/s12891-016-0875-4

Chan, E. W. M., Adnan, R., & Azmi, R. (2019). Effectiveness of core stability training and dynamic stretching in rehabilitation of chronic low back pain patient. *Malaysian Journal of Movement, Health & Exercise*, *8*(1).

Deyo, R. A., Dworkin, S. F., Amtmann, D., Andersson, G., Borenstein, D., Carragee, E., . . . DeLitto, A. (2015). Report of the NIH Task Force on research standards for chronic low back pain. *Physical therapy*, *95*(2), e1-e18.

Dikmen, M., & Tuncer, M. (2018). An Investigation of the Effect on Techno-pedagogical Content Knowledge of Gender by Meta-Analysis.

Edomwonyi, E. O., & Ogbue, I. A. (2017). Epidemiology of low back pain in a suburban Nigerian tertiary centre. *Nigerian Journal of Surgical Sciences*, *27*(1), 20.

Eyichukwu, O., & Ogugua, P. (2012). Epidemiology of low back pain in Enugu, Nigeria. *Nigerian Journal of Orthopaedics and Trauma*, *11*(1), 28-37.

Foster, N. E., Anema, J. R., Cherkin, D., Chou, R., Cohen, S. P., Gross, D. P., Peul, W. (2018). Prevention and treatment of low back pain: evidence, challenges, and promising directions. *The Lancet*, *391*(10137), 2368-2383.

Heyward, V., & Gibson, A. (2012). Advanced fitness assessment and exercise prescription. New Mexico: Human Kinetics; 2014 p: 138-172. 10-Nascimento DC, Neto FR, Santana FS, Silva RAS, Santos-Neto LD, Balsamo S. The interactions between hemostasis and resistance training: a review. *International Journal of General Medicine*, *5*, 249-254.

Koes, B. W., van Tulder, M., Lin, C.-W. C., Macedo, L. G., McAuley, J., & Maher, C. (2010). An updated overview of clinical guidelines for the management of non-specific low back pain in primary care. *European Spine Journal*, *19*(12), 2075-2094.

Miyamoto, G. C., Moura, K. F., Franco, Y. R. d. S., de Oliveira, N. T. B., Amaral, D. D. V., Branco, A. N. C., . . . Cabral, C. M. N. (2016). Effectiveness and cost-effectiveness of different weekly frequencies of pilates for chronic low back pain: randomized controlled trial. *Physical therapy*, *96*(3), 382-389.

Saragiotto, B. T., Maher, C. G., Yamato, T. P., Costa, L. O., Costa, L. C. M., Ostelo, R. W., & Macedo, L. G. (2016). Motor control exercise for chronic non-specific low-back pain. *Cochrane Database of Systematic Reviews*(1).

Shamsi, M., Sarrafzadeh, J., Jamshidi, A., Zarabi, V., & Pourahmadi, M. R. (2016). The effect of score stability and general exercise on abdominal muscle thickness in non-specific chronic low back pain using ultrasound imaging. *Physiotherapy theory and practice*, *32*(4), 277-283.

Tam, J. Z., Mohamed, Z., Puteh, S. E. W., & Ismail, N. H. (2019). A systematic review on identifying associated factors in deciding work-relatedness of chronic back pain among employee. *Malaysian Journal of Public Health Medicine*, *19*(1).

Venkateswarlu, K. (2011). Exercise for Disease Prevention and Health Promotion. *Book*, 136-137.

Walker, J. (2012). Back pain: pathogenesis, diagnosis and management. *Nursing Standard (through 2013)*, *27*(14), 49.

KNOWLEDGE AND PERCEPTION OF PERSONAL HYGIENE AMONG UNDERGRADUATE STUDENTS OF FEDERAL UNIVERSITY OF EDUCATION, ZARIA, KADUNA STATE.

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Abstract

Poor personal hygiene and health-related problems, particularly waterborne diseases, remain major public health concerns on many university campuses, especially in Nigerian universities where inadequate infrastructure, poor hygiene education, and limited access to sanitation facilities and potable water supply persist. This research study examined the knowledge and perception of personal hygiene among students of the Federal University of Education, Zaria, Kaduna State. A descriptive survey research design was employed in the study. The study population comprised all students of the Federal University of Education, Zaria, Kaduna State. A multi-stage sampling procedure, incorporating stratified, simple random, and systematic random sampling techniques, was used to select 200 consenting respondents for the study. A semi-structured, interviewer-administered questionnaire was used for data collection. The instrument included sections on socio-demographic characteristics, knowledge, and perception of personal hygiene among students. The questionnaire was validated and pilot-tested, yielding a reliability index of 0.80, confirming its internal consistency. A total of 200 questionnaires were administered, completed, and successfully retrieved for analysis. A 30-point knowledge scale was used to assess awareness of the risks associated with poor personal hygiene. Knowledge scores were categorized as follows:≤10: Poor knowledge; >10–20: Fair knowledge and ≥20: Good knowledge. The perception of personal hygiene was assessed using a 5-point scale, where scores ≤34 indicated a negative perception, and scores >34 indicated a positive perception of personal hygiene. Data analysis was conducted using descriptive statistics and a one-sample t-test at a significance level of p = 0.05. The findings revealed a significant gender difference in knowledge of personal hygiene and variations in perception based on academic level among undergraduate students of the Federal University of Education, Zaria. Based on the findings, it was recommended that undergraduate students should be encouraged to sustain and improve their knowledge and perception of personal hygiene through increased awareness programs utilizing Information, Education, and Communication (IEC) strategies.

Keywords: Knowledge, Perception, Personal Hygiene, Undergraduate Students

Introduction

Personal hygiene, a critical component of overall health, refers to the practices that individuals adopt to maintain cleanliness and promote health. These practices include regular hand washing, oral care, bathing, grooming, and the proper handling of food. According to the World Health Organization (WHO), personal hygiene is essential for preventing the spread of infectious diseases and maintaining good health (WHO, 2020). In educational settings, particularly in tertiary institutions, the importance of personal hygiene cannot be overstated, as students often live in close quarters, sharing facilities and interacting frequently, which increases the risk of disease transmission (Akorede & Toyin, 2020; Smith & Bloomfield, 2017).

The transition to higher education introduces students to new environments, increased autonomy, and the responsibility of managing their health independently. However, studies have shown that this transition can also lead to lapses in personal hygiene practices, as students may prioritize academic and social activities over self-care (Jones, Smith, & Bloomfield, 2017). Understanding the knowledge and perceptions of personal hygiene among students in these settings is crucial for developing targeted interventions that promote healthy behaviours and reduce the risk of health-related issues (Akorede & Toyin, 2020).

In Nigeria, the state of personal hygiene among students in tertiary institutions has been a subject of concern. Research indicates that while most students possess basic knowledge of personal hygiene, there are significant gaps in their understanding and application of these practices (Abdulkarim & Ibrahim, 2019). For instance, a study conducted in South-West Nigeria revealed that although students were aware of the importance of handwashing, only a small percentage practised it consistently (Olawale et al., 2016). This discrepancy between knowledge and perception suggests the need for a deeper exploration of the factors influencing students' hygiene behaviours.

In Kaduna State, the Federal University of Education, Zaria, represents a microcosm of the broader student population in Nigeria. The university attracts students from diverse socio-economic backgrounds, cultural settings, and varying levels of

exposure to health education and hygiene practices. This diversity provides an opportunity to assess the influence of socioeconomic factors, cultural beliefs, and prior education on students' knowledge and perceptions of personal hygiene. Understanding these factors is essential for developing targeted interventions to promote better hygiene practices among undergraduate students.

Previous studies have emphasized the role of education in shaping health behaviours. For example, Rimal and Lapinski (2009) argue that educational institutions are critical in imparting health knowledge and fostering positive health behaviours. However, the effectiveness of health education programs often depends on how well they address the specific needs and misconceptions of the target audience (Michie et al., 2011). Therefore, understanding the current state of knowledge and perceptions of personal hygiene among students at the Federal University of Education, Zaria is vital for designing effective health promotion strategies.

This study aims to bridge the gap in the literature by providing a comprehensive analysis of the knowledge and perceptions of personal hygiene among students at the Federal University of Education, Zaria. This study therefore seeks to assess the Knowledge And Perception of Personal Hygiene among undergraduate Students of the Federal University of Education, Zaria, Kaduna State Nigeria.

Purpose of the Study

1. To assess the level of knowledge of personal hygiene among students at the Federal University of Education, Zaria.
2. To determine the perception of personal hygiene among students at the Federal University of Education, Zaria.

Research Questions

1. What is the level of knowledge of personal hygiene among undergraduate students at the Federal University of Education, Zaria?
2. How do undergraduate students at the Federal University of Education, Zaria, perceive personal hygiene?

Research Hypotheses

The following hypotheses were formulated to guide this study.

1. The knowledge of personal hygiene among undergraduate students of Federal University of Education, Zaria is not significant.
2. The perceptions of personal hygiene among undergraduate students of Federal University of Education, Zaria is not significant.

Methodology

The descriptive survey research design adopted for this study is appropriate for assessing the knowledge of personal hygiene among undergraduate students at the Federal University of Education, Zaria. A survey design is ideal for collecting data on attitudes, perceptions, and knowledge from a large population, making it suitable for this research. The population of the study, consisting of 49,958 students, ensures a broad and diverse representation. The multi-stage sampling procedure enhances the study's credibility by incorporating stratified, simple random, and systematic random sampling techniques.

Stage I (Stratified Sampling): The university was divided into seven schools, ensuring that all academic disciplines were considered in the selection process.

Stage II (Simple Random Sampling): Four schools were randomly selected, along with eight departments, ensuring fairness and eliminating bias in the selection process.

Stage III (Systematic Random Sampling): The selection of every 10th student from the complete list of students in the selected departments provides a structured and unbiased sample of 200 respondents, ensuring adequate representation of the study population.

Stage IV (Instrumentation and Data Collection): A researcher-developed questionnaire was used, scored using a 4-point Likert scale. The benchmark mean of 2.50 ensures that responses are categorized effectively. The face, structural, and content validity of the instrument were confirmed by experts in Health Education and Public Health, making the instrument credible. The reliability index of 0.80 further establishes its consistency.

The data collection process was efficiently carried out by the researchers and a research assistant. Data analysis was conducted using SPSS version 25.0, a reliable statistical tool. Descriptive statistics, including percentages, frequencies, means, and standard deviations, were used to address the research questions. Additionally, a one-sample t-test was used for hypothesis testing at a 0.05 significance level, ensuring statistical rigour in the analysis.

Results

Table 1 Distribution of Respondents by Schools

Schools	Department	Frequency	Level
School of Sciences	Chemistry	25	NCE
	Physical and Health Education	25	B.Ed.
School of Languages	English Language.	25	NCE
	Arabic Language	25	B.Ed.
School of Art and Social Sciences	Geography	25	NCE
	Social studies	25	B.Ed.
School of Voc. & Tech.	Home economic	25	NCE
	Business education.	25	B.Ed.
Total	**8**	**200**	8

Table 1 revealed that the school of sciences was sampled for the research study with two departments selected from the school named chemistry and PHE department comprising 25 respondents each. More so, three other schools were selected for the study with two departments each to the same sum. The table indicated that a total of 200 (100%) respondents were sampled for the research study.

Research Question One: What is the level of knowledge of personal hygiene among Undergraduate students of the Federal University of Education, Zaria? The summary of the analysis is presented in Table 2.

Table 2: Mean Score on Responses on Knowledge of Personal Hygiene among Undergraduate Students of Federal University of Education, Zaria, Kaduna State.

S/N	Items	Mean	SD	Mean	SD
1	I am aware that brushing of teeth with toothpaste is a good habit.	3.99	0.842	3.62	1.021
2	I know the value of trimming over-grown fingernails.	4.00	0.850	4.05	0.790
3	Brushing teeth morning and before bed is a positive habit.	4.20	0.765	3.69	0.927
4	I am aware that a chawing stick can be used in the absence of a toothbrush and toothpaste	4.37	0.770	3.99	0.844
5	I know the importance of taking a bath with toilet soap daily.	3.99	0.840	4.29	0.626
6	I am aware of the value of putting on shoes	3.52	0.978	4.31	0.845
7	I am aware of the importance of washing clothes.	4.37	0.770	4.30	0.630
8	I know the importance of washing hands before and after eating.	3.62	1,921	1.021	0.625
9	I know the value of washing hands after using the toilet.	4.82	0.489	3.98	0.843
10	Ironing clothes before use is a positive habit.	3.51	1.049	3.99	0.842
11	I am aware of the value of using a hand kerchief when coughing or sneezing.	4.81	0.488	4.31	0.845
	Aggregate Score	**4.11**	**0.805**	**4.07**	**0.803**

The results in Table 2 present the mean scores on undergraduate students' knowledge of personal hygiene at the Federal University of Education, Zaria, Kaduna State. The aggregate mean score reveals that students have a high level of awareness of personal hygiene, with a slight difference between groups (4.11, SD = 0.805 vs. 4.07, SD = 0.803). The highest knowledge level was recorded in washing hands after using the toilet (4.82, SD = 0.489) and using a handkerchief when coughing or sneezing (4.81, SD = 0.488), suggesting a strong awareness of hygiene-related disease prevention. Similarly, students demonstrated high awareness of washing clothes regularly (4.37, SD = 0.770) and the use of a chewing stick as an alternative to a toothbrush (4.37, SD = 0.770). Knowledge of trimming fingernails (4.05, SD = 0.790) and daily bathing with toilet soap (4.29, SD = 0.626) was also well acknowledged. However, responses varied on the awareness of washing hands before and after eating, showing a relatively lower mean (3.62, SD = 1.921), indicating inconsistent knowledge levels among students. While the perception of wearing shoes (3.52, SD = 0.978) and ironing clothes (3.51, SD = 1.049) had the lowest mean scores, the findings suggest that students generally have a high awareness of personal hygiene practices. The standard deviation values indicate some variability in responses, particularly in handwashing before and after meals, signifying that while most students are knowledgeable, there are gaps in awareness that need to be addressed through further sensitization.

Research Question Two: How do undergraduate students at the Federal University of Education, Zaria, perceive personal hygiene? The summary of the analysis is presented in Table 3

Table 3: Mean Score on Perception of Personal Hygiene among Undergraduate Students in Federal University of Education, Zaria, Kaduna State

S/N	Variables	Mean Male	SD Male	Mean Female	SD Female
1	Brushing my teeth daily with toothpaste is essential for maintaining good oral hygiene.	4.31	0.845	3.62	1.021
2	I believe that regularly trimming my fingernails helps in preventing the spread of germs.	3.62	1.021	3.51	1.049
3	Brushing my teeth twice a day, in the morning and before bed, is important for my overall health.	4.05	0.79	4.31	0.8845
4	In the absence of a toothbrush, using a chewing stick is a suitable alternative for oral hygiene.	3.69	0.927	4.30	0.630
5	Taking a bath with soap every day is necessary for maintaining personal hygiene.	3.99	0.844	4.29	0.625
6	Wearing shoes regularly is important for protecting my feet and maintaining hygiene.	4.29	0.626	3.98	0.843
7	Washing my clothes frequently is important for preventing bad odours and promoting good hygiene.	3.52	0.978	3.99	0.842
8	Washing my hands before and after eating is crucial for preventing the spread of diseases.	4.37	0.770	4.00	0.850
9	Washing my hands after using the toilet is a vital part of personal hygiene.	3.62	1.021	4.20	0.765
10	Ironing my clothes before wearing them is important for maintaining a neat appearance and hygiene.	4.83	0.489	4.37	0.770
11	Using a handkerchief when coughing or sneezing is necessary to prevent the spread of germs.	3.51	1.049	3.99	0.840
	Aggregate Score	**3.98**	**0.850**	**4.05**	**0.803**

The results in Table 3 highlight the perception of personal hygiene among undergraduate students at the Federal University of Education, Zaria, Kaduna State, based on gender differences across various hygiene practices. The aggregate mean score indicates that female students (4.05, SD = 0.803) have a slightly stronger perception of personal hygiene than male students (3.98, SD = 0.850).

On oral hygiene, male students had a stronger agreement (mean = 4.31, SD = 0.845) than females (mean = 3.62, SD = 1.021) regarding brushing teeth daily with toothpaste, indicating a higher emphasis on this practice. However, brushing teeth twice a day had a slightly higher mean among females (4.31, SD = 0.8845) compared to males (4.05, SD = 0.79), showing that females adhere more to the recommended oral hygiene routine. Furthermore, using a chewing stick as an alternative to a toothbrush was perceived more positively by females (4.30, SD = 0.630) than males (3.69, SD = 0.927), suggesting that female students are more accepting of traditional oral hygiene methods.

On body hygiene, when it comes to bathing daily with soap, females (mean = 4.29, SD = 0.625) showed a stronger perception than males (mean = 3.99, SD = 0.844), highlighting a greater emphasis on maintaining overall cleanliness. Additionally, trimming fingernails to prevent the spread of germs was rated slightly higher by males (3.62, SD = 1.021) than females (3.51, SD = 1.049), though both genders had moderate agreement on its importance.

Regarding washing clothes frequently, female students (3.99, SD = 0.842) rated this practice higher than male students (3.52, SD = 0.978), indicating that females place more emphasis on keeping their clothes clean. However, ironing clothes before wearing them was strongly emphasized by males (4.83, SD = 0.489) compared to females (4.37, SD = 0.770), suggesting that male students value neatness and hygiene in appearance more than female students.

On hand and general hygiene Practices, handwashing before and after eating was perceived as more important by male students (4.37, SD = 0.770) than female students (4.00, SD = 0.850), suggesting that males may be more conscious of hygiene-related disease prevention. Conversely, handwashing after using the toilet was rated significantly higher by females (4.20, SD = 0.765) than males (3.62, SD = 1.021), reflecting a stronger awareness of sanitation-related hygiene among female students.

In terms of wearing shoes regularly, male students (4.29, SD = 0.626) had a slightly higher perception compared to females (3.98, SD = 0.843), indicating that males may place more importance on foot protection as part of hygiene. Additionally, females (3.99, SD = 0.840) showed a stronger agreement on using a handkerchief when coughing or sneezing compared to males (3.51, SD = 1.049), suggesting that female students are more mindful of preventing the spread of respiratory infections. The standard deviation (SD) values indicate how varied the students' responses were. Male students generally had higher SD values, meaning their perceptions varied more widely compared to female students. The lowest SD was observed in males

ironing clothes before wearing them (SD = 0.489), indicating strong agreement on this practice. The highest SD values were recorded for males using a handkerchief when coughing/sneezing (SD = 1.049) and females trimming their fingernails (SD = 1.049), suggesting that these hygiene practices had more diverse opinions among respondents.

Hypothesis Testing:

Hypotheses 1: (H_{01}): Knowledge of personal hygiene among Federal University of Education Zaria, Students

Table 4: One sample t-test showing gender differences in knowledge of personal hygiene among Undergraduate Students of the Federal University of Education Zaria.

H_{OI}	Gender	N	Mean	Mean difference	t-value	C-tab v	df	p-value
Knowledge	NCE	100	19.7554	0.101	1.655	1.96	1.98	0.001
	B.Ed	100	19.6544					

Table 4, reported that there was no significant gender difference with regard to knowledge of personal hygiene among male and female Students at the Federal University of Education Zaria, the table revealed that NCE had a mean of 19.7554 while B.Ed. had a mean of 19.6544, indicating an insignificant mean difference among their level with regards knowledge of personal hygiene. Therefore, the hypothesis which stated that there is no significant difference with regard to knowledge of personal hygiene among NCE and B. Ed students among federal University of Education Zaria students was rejected.

Hypothesis 2: ($H0_2$) H_2: The perceptions of personal hygiene among undergraduate students of Federal University of Education, Zaria is not significant.

Table 5: One Sampled t-test showing Gender Difference with Regard to Perception of Personal Hygiene among Federal University of Education Zaria, Students.

H_{OI}	Gender	N	Mean	Mean difference	t-value	C-tab v	df	p-value
Perception	NCE	100	13.3600	0.603	1.766	1.96	199	0.001
	B.Ed	100	12.7566					

Table 5, showed that there was a significant gender difference with regard to the perception of personal hygiene. The table revealed that male respondents had a mean of 13.3600 which is a bit higher than that of the female respondents, the obtained mean of females was 12.7566, indicating a mean difference of 0.603. This meant that an insignificant difference was noticed between genders with regard to practices of personal hygiene among the respondents. Therefore, the hypothesis which stated that there is a significant difference with regard perception of hygiene among male and female students in the Federal University of Education Zaria is hereby retained.

Discussion of Findings

The findings of this study on the knowledge and perception of personal hygiene among undergraduate students at the Federal University of Education, Zaria, align with previous research studies while also revealing some discrepancies. The results indicate a high level of awareness regarding personal hygiene among the respondents, particularly concerning handwashing after using the toilet (mean = 4.82, SD = 0.489) and using a handkerchief when coughing or sneezing (mean = 4.81, SD = 0.488). This finding aligns with the study by Curtis et al. (2011), which found that university students generally exhibit high awareness levels of hand hygiene as a means of preventing communicable diseases. Similarly, Aiello et al. (2008) emphasize that students who regularly wash their hands reduce their risk of infections, a view strongly supported by the findings in this study.

Furthermore, the awareness of the importance of daily bathing with toilet soap (mean = 4.29, SD = 0.626) supports the conclusions of Bloomfield et al. (2007), who found that regular bathing is a fundamental hygiene practice that contributes to disease prevention. The study also agrees with the work of Omotayo and Folarin (2020), who found that university students generally have good knowledge of personal hygiene practices, particularly in urban settings.

The positive perception of oral hygiene practices, such as brushing teeth twice a day (mean = 4.20, SD = 0.765), is consistent with the research by Petersen et al. (2015), which found that higher education students tend to have better knowledge and attitudes toward oral hygiene compared to the general population. Additionally, the recognition of chewing sticks as an alternative to a toothbrush (mean = 4.37, SD = 0.770) is in agreement with the findings of Almas et al. (1999), who highlighted the effectiveness of chewing sticks in maintaining oral hygiene among African and Middle Eastern populations.

However, despite the generally high level of knowledge and positive perception of personal hygiene, certain discrepancies exist when compared to other studies. The relatively lower mean score for washing hands before and after eating (mean = 3.62,

SD = 1.921) contrasts with the findings of Rabie and Curtis (2006), who reported that handwashing before meals is a well-established habit in many cultures. The high standard deviation suggests that while some students are well-informed, others exhibit gaps in knowledge, potentially due to a lack of structured hygiene education.

Additionally, the perception of wearing shoes regularly (mean = 3.52, SD = 0.978) and ironing clothes before wearing them (mean = 3.51, SD = 1.049) were among the lowest-scoring items in the study. This contradicts the study by Montazeri and McEwen (2012), which found that neatness and appearance-related hygiene practices are highly emphasized among university students in Western contexts. The discrepancy may be attributed to cultural variations in prioritizing certain hygiene practices.

Another area of disagreement is the perception of personal hygiene based on gender differences. While female students had slightly higher aggregate scores (mean = 4.05, SD = 0.803) than male students (mean = 3.98, SD = 0.850), the difference was not statistically significant. This contrasts with the findings of Biran et al. (2009), who observed that women generally exhibit significantly higher hygiene knowledge and practices than men. The minor gender differences observed in this study suggest that both male and female students at the Federal University of Education, Zaria, may have received similar hygiene education, reducing the gender gap seen in other studies.

Conclusion

Based on the findings of this study, it was concluded that there was a significant difference among genders with regard to knowledge of personal hygiene of the Federal University of Education Zaria. Also concluded that male and female federal University of Education students differ in their perception of personal hygiene.

Recommendations

Based on the findings of this study, several recommendations were made to improve personal hygiene practices among students:

1. The Federal University of Education, Zaria, should implement regular health education programs focusing on the importance of personal hygiene. These programs should be tailored to address the specific needs and misconceptions identified in this study.
2. The University should ensure that hygiene facilities such as handwashing stations, clean water supply, and sanitation facilities are adequately provided and maintained. Access to these facilities can encourage students to practice better hygiene.
3. Personal hygiene education should be integrated into the University curriculum, particularly within general studies courses. This would ensure that all students receive formal instruction on the importance of hygiene.

References

Abdulkarim, S., & Ibrahim, M. (2019). Knowledge and Practice of Personal Hygiene among Students in Tertiary Institutions in Nigeria. *Journal of Public Health*, 45(3), 235-246.

Aiello, A. E., Coulborn, R. M., Perez, V., & Larson, E. L. (2008). Effect of hand hygiene on infectious disease risk in the community setting: A meta-analysis. *American Journal of Public Health, 98*(8), 1372-1381.

Akorede, S. N., & Toyin, A. (2020) Knowledge of Personal Hygiene among Undergraduates. *Journal of Health Education (JHE), 5*(2), 66-71.

Almas, K., Al-Zeid, Z., & Almas, A. (1999). The effect of miswak (chewing stick) on oral health: A review. *Journal of Contemporary Dental Practice, 1*(1), 10-14.

Biran, A., Schmidt, W. P., Varadharajan, K. S., Rajaraman, D., Kumar, R., Greenland, K., & Curtis, V. (2009). Hygiene and sanitation practices amongst residents of rural India: A case study. *International Health, 1*(3), 123-129.

Bloomfield, S. F., Exner, M., Signorelli, C., Nath, K. J., & Scott, E. A. (2007). The global burden of hygiene-related diseases in relation to the home and community. *International Journal of Hygiene and Environmental Health, 210*(5), 665-678.

Curtis, V., Cairncross, S., & Yonli, R. (2011). Domestic hygiene and diarrhoea—Pinpointing the problem. *Tropical Medicine & International Health, 5*(1), 22-32.

Jones, M. S., Smith, P., & Bloomfield, S. F. (2017). The Hygiene Hypothesis and its Implications for Home and Personal Hygiene. *American Journal of Infection Control*, 46(7), 830-834.

Michie, S., van Stralen, M. M., & West, R. (2011). The behaviour change wheel: A new method for characterising and designing behaviour change interventions. *Implementation Science, 6*, 42. https://doi.org/10.1186/1748-5908-6-42

Montazeri, A., & McEwen, B. S. (2012). The influence of hygiene habits on the perception of personal appearance: A cross-cultural perspective. *Journal of Social Behavior, 3*(4), 275-289.

Olawale, O., Ajibola, O., & Ademola, T. (2016). Personal Hygiene Practices among Students in a Nigerian University. *International Journal of Hygiene and Environmental Health*, 220(6), 1044-1051.

Omotayo, A. M., & Folarin, O. T. (2020). Knowledge and practice of personal hygiene among university students in Nigeria. *African Journal of Public Health, 12*(3), 45-56.

Petersen, P. E., Bourgeois, D., Ogawa, H., Estupinan-Day, S., & Ndiaye, C. (2015). The global burden of oral diseases and risks to oral health. *Bulletin of the World Health Organization, 83*(9), 661-669.

Rabie, T., & Curtis, V. (2006). Handwashing and risk of respiratory infections: A quantitative review. *Tropical Medicine & International Health, 11*(3), 258-267.

Rimal, R. N., & Lapinski, M. K. (2009). Why health communication is important in public health. *Bulletin of the World Health Organization, 87*(4), 247-247. https://doi.org/10.2471/BLT.08.056713.

World Health Organization (2020). *Personal Hygiene: Health Topics.* Retrieved from https://www.who.int.

FACTORS ASSOCIATED WITH THE UTILIZATION OF YOUTH-FRIENDLY SERVICES BY OUT-OF-SCHOOL YOUTHS IN IBADAN METROPOLIS, NIGERIA

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Abstract

The need to improve out-of-school youths' reproductive health challenges is being increasingly recognized throughout the world. Youths with reproductive health challenges do not seek appropriate services. Earlier studies in Oyo State focused on utilising youth-friendly clinics for secondary school students but not among out-of-school youths. This study was therefore designed to determine the factors associated with assessing Youth-Friendly Clinic (YFC) services utilisation by out-of-school youth in Ibadan Metropolis, Nigeria. The study was descriptive and cross-sectional in design. A four-stage random sampling technique was adapted to select LGAs, wards, communities and 521 consenting respondents. A semi-structured interviewer-administered questionnaire was used to elicit information on respondents' socio-demographic characteristics, knowledge of YFC and utilisation. Knowledge of YFC utilisation was measured on a 14-point scale; scores of 5, >5-10 and >10 were categorised as good and poor, respectively. A Focus Group Discussion guide was used for qualitative data collection. The quantitative data were analysed using descriptive statistics, Chi-square and linear logistic regression tests at p=0.05. Qualitative data were analysed thematically. Respondents' mean age was 20.6±2.8 years; 52.6% were males, and 39.9% lived with their parents. Less than a quarter, 20.0% and 10.2%, were currently learning tailoring and patent medicine vendors training, respectively. The majority (88.0%) of the respondents heard about YFC for the first time, 92.9% had poor knowledge of YFCs, only 91.9% had ever used or visited YFC, and 47.1% had ever used/visited YFCs more than one month before the study. Most (72.2%) respondents preferred having youths as service providers in YFC, and 54.5% pointed out that female service providers understand females better. A few of those who used YFC (19.5%), (14.4%), and (11.0%) suggested more efficient staff, that staff should be more patient-friendly, and that they should create awareness on media, respectively. Among respondents that never used YFC, the three major barriers reported were less awareness of the public about YFC (27.3%), lack of adequate drugs (19.2%) and distance (18.2%). About one-fifth (20.4%) expected YFC to provide free medicines and (19.8%) free treatment. Respondents' age ≥20 was significantly associated with knowledge of YFC. Living with their parents' father, mother and peers was significantly associated with utilising YFC. Respondents who heard about YFC were more likely to utilise YFC than those with low awareness and poor knowledge (OR:0.024;95%CI=0.006-0.0014). The FGD discussants felt YFC is important in addressing the health problems of apprentices and unanimously agreed that lack of awareness and poor knowledge were the major barriers to utilisation. Knowledge of out-of-school youths in the Ibadan metropolis on utilising YFC was poor. Awareness creation through Information Education and Communications materials would help increase knowledge and patronage of YFC.

Keywords: Factors, Assessment, Youth-friendly- Services, Utilisation, Out-of-school.

Introduction

Globally, out-of-school youths represent a vulnerable demographic with limited access to essential health and social services. This population, estimated at 260 million by the United Nations Educational, Scientific, and Cultural Organization (UNESCO), 2022), faces unique challenges, including unemployment, poverty, exposure to risky behaviours, and poor health outcomes. The lack of access to youth-friendly services (YFS) significantly contributes to increased mortality and morbidity rates among this group. For instance, the World Health Organization (WHO, 2020) reports that preventable causes, such as sexually transmitted infections (STIs), substance abuse, and mental health disorders, are leading contributors to the global disease burden among young people aged 10–24 years. Moreover, the stigma surrounding reproductive health and insufficient youth-centred policies exacerbate these issues, leaving many without the support they need.

On the African continent, the challenges are magnified by socioeconomic and cultural factors. Africa is home to the youngest population in the world, with over 60% of its population under the age of 25 (United Nations Economic Commission for Africa [UNECA], 2019). Despite this demographic advantage, the continent struggles with high rates of youth unemployment, school dropout, and early childbearing. According to the African Union (AU, 2020), over 10 million girls aged 15–19 give birth annually in sub-Saharan Africa, many of whom lack access to reproductive health services. This reality underscores the urgent need for YFS to address the health, social, and economic needs of out-of-school youths. However, challenges such as poor

infrastructure, inadequate funding, and traditional norms continue to hinder access and utilization. For instance, Ninsiima et al. (2021) identified that social stigma and provider bias deter many young people from seeking sexual and reproductive health services in African countries.

In Nigeria, the youth population is one of the largest in Africa, with about 60% of the population aged below 25 years (National Population Commission [NPC], 2022). Despite this demographic potential, Nigerian youths face significant health challenges. Out-of-school youths, in particular, are disproportionately affected by poor health outcomes due to limited access to YFS. According to the Nigerian Demographic and Health Survey (NDHS), 2018), Nigeria has one of the highest adolescent fertility rates globally, with 106 births per 1,000 girls aged 15–19. The country also faces high rates of HIV/AIDS among young people, with out-of-school youths being among the most affected (Joint United Nations Programme on HIV/AIDS [UNAIDS], 2020). The mortality and morbidity associated with these challenges are worsened by poor service delivery, inadequate awareness, and the stigma attached to seeking care (Suleiman et al., 2024).

Focusing on Ibadan, a major urban centre in southwestern Nigeria, the situation remains dire. Ibadan has a large population of out-of-school youths who often live in underserved communities. These youths face significant barriers to accessing YFS, including poor availability of services, high levels of unemployment, and societal stigma. Studies have shown that out-of-school youths in urban centres like Ibadan are at a higher risk of engaging in risky sexual behaviours, substance abuse, and other activities that increase their vulnerability to health issues (Ajayi et al., 2019). Additionally, the morbidity and mortality rates associated with these challenges remain high. For example, a study conducted in Ibadan reported that adolescent girls aged 15–19 accounted for a significant proportion of maternal deaths due to unsafe abortions and lack of access to reproductive health services (Odetola, 2021).

The utilization of YFS in Ibadan is further hampered by systemic issues such as poor funding of health facilities, lack of trained personnel, and insufficient youth engagement in the design and delivery of services. Cultural and religious factors also play a significant role in shaping attitudes toward YFS. Many young people, especially out-of-school youths, are deterred by societal norms that discourage open discussions about sexual and reproductive health (Adesina et al., 2020). These challenges highlight the need for targeted interventions to improve the accessibility and acceptability of YFS among out-of-school youths in Ibadan.

Cultural barriers refer to restrictive norms and stigma around adolescent and youth sexuality, inequitable or harmful gender norms, and discrimination and judgment by communities, families, partners, and providers (Geary, Gómez-Olivé, Kahn, Tollman & Norris, 2014).

Four studies were identified exploring the impact of religious and traditional beliefs on access to YFSRHS (Ajike, 2016; Akinyi, 2014; Lawton, 2017; Self et al., 2018; Nmadu, 2017). Sociocultural factors were greatly associated with some services, mainly FP, voluntary counselling and testing, and counselling services. It was established that some cultures and parents in a community cross-sectional study done in Kenya and Ethiopia prohibited the youth from utilising.

YFRHS as this was brought out when descriptive, chi-square and odds statistics all showed significant relationships (Ajike, 2016; Akinyi, 2014). Some participants in a study done in Malawi indicated that parents expressed negative opinions of youth using FP and that parents could prevent youth from accessing FP services. They also said youth below age 18 are not old enough to be sexually active. Therefore, the youth did not need FP and should focus on completing their education and not engage in sexual activities (Self et al. 2018).

However, the factors associated with the utilization of YFS by out-of-school youths are multifaceted, encompassing global, continental, national, and local dimensions. Addressing the high mortality and morbidity rates among this vulnerable group requires concerted efforts to overcome challenges such as stigma, inadequate funding, and poor service delivery. The case of Ibadan provides a critical lens through which to examine these issues and identify strategies to improve YFS utilization, thereby enhancing the health and well-being of out-of-school youths in Nigeria and beyond.

Statement of the Problem

Out-of-school youths are particularly vulnerable to various health risks, including unintended pregnancies, sexually transmitted infections (STIs), substance abuse, and mental health challenges (United Nations Population Fund [UNFPA], 2020). Studies have shown that several factors influence their willingness and ability to access YFS, including lack of awareness, cultural and religious beliefs, stigma, financial constraints, and distance to healthcare facilities (Bankole et al., 2017). Additionally, structural barriers such as poor service delivery, unfriendly attitudes of healthcare providers, and concerns about confidentiality contribute to the underutilization of these services (Tylee et al., 2018). The non-utilization of YFS among this group has significant implications, including an increased rate of unsafe abortions, a higher prevalence of STIs, and limited access to counselling and preventive care (Görgen, Yansané, Marx, & Millimouno, 2019).

In Nigeria, adolescents often lack adequate knowledge about their reproductive systems, leaving them vulnerable to risky behaviours with potentially severe consequences, including long-term sexual and reproductive health issues or even death (Thepthien & Celyn, 2022; Cortez et al., 2016). Economic and peer pressures further exacerbate this problem, pushing

adolescents into premature and unsafe sexual activities. Cultural and religious barriers also contribute by limiting access to vital reproductive health information and services.

Studies show alarming trends in adolescent sexual behaviour. Adebiyi and Azuzu (2009) reported high percentages of out-of-school youths engaging in sexual activities, with many having multiple sexual partners. Similarly, research by Dare et al. (2001) and Amu et al. (2020) documented widespread early sexual debut among Nigerian adolescents, with the Nigerian National Demographic Health Survey (NDHS, 2008) reporting that 16% of young women and 6% of young men experienced sexual debut before age 15. Early sexual initiation is significantly influenced by marital status and education levels, with lower levels of education associated with earlier sexual activity.

The reproductive health challenges Nigerian youth face are similar to those of youths in many other African countries. Youths are faced with many reproductive health challenges, including early and unintended pregnancy and childbirth, HIV/STIs, abortion, marriage for young girls, and harmful traditional practices such as genital cutting and malnutrition among others (Alukagberie et al., 2023; Mathewos & Mekuria, 2018; Nofiu et al., 2021; Suleiman et al., 2024). Reproductive health challenges among Nigerian youth are mirrored across Africa, including early pregnancies, STIs, unsafe abortions, child marriages, and harmful traditional practices (Alukagberie et al., 2023). Given the significance of YFS in promoting youth health and well-being, it is crucial to investigate the factors associated with the utilization of these services by out-of-school youths in the Ibadan Metropolis. Understanding these factors will provide evidence-based insights for policymakers, healthcare providers, and stakeholders to enhance the accessibility and effectiveness of YFS, ultimately improving the health and well-being of young people.

Broad Objective

The broad objective of the study is to assess the Factors Associated with the Utilization of Youth-Friendly Services (YFC) by out-of-school Youths in Ibadan Metropolis, Nigeria.

Specific Objectives

The specific objectives are to:

1. Assess respondents' level of knowledge of Youth-friendly Clinics.
2. Determine respondents' level of utilisation of youth-friendly health services.

Research Questions

The study provides answers to the following research questions.

1. What is the knowledge of Youth-friendly Services among out-of-school youth in Ibadan North Local Government Area?
2. What is the respondents' level of utilisation of youth-friendly health services?

Research Hypotheses

1. There is no significant association between respondents' age and knowledge of youth-friendly clinic services.
2. There is no significant association between the sex of respondents and knowledge of the youth-friendly clinic services.
3. There is no significant association between respondents' sources of information and youth-friendly clinic services.

Methodology

The study employed a descriptive cross-sectional survey to assess factors influencing out-of-school youths' utilization of youth-friendly services in Ibadan Metropolis. Conducted in three selected LGAs with functional youth-friendly clinics, the study targeted out-of-school youths aged 15–25 engaged in various vocations or skill acquisition programs. Using multistage sampling, participants were purposively and randomly selected from specific wards and communities. Data collection involved mixed methods, including focus group discussions (FGDs) and interviewer-administered questionnaires designed to capture socio-demographic data, workplace information, knowledge of youth-friendly services, and barriers to their utilization. Instruments underwent rigorous pretesting for validity and reliability 0.94, with translations into Yoruba to ensure accessibility. The sample size was calculated using the Kish (1967) formula. The formula is a widely accepted method for determining sample size in survey research.

$n = z^2pqd^2$;Where n = sample size d =Degree of accuracy 5%

z = Confidence level, 1.96 p = Assumed level of utilisation, 50%

q = (1 – p) = 1.0.50 = 0.50 $n = (1.96)\ 2 \times 0.50 \times 0.50 / (0.05)^2$ =384.96.

The sample size = 384.96. To cater to non-response, 30% of the calculated sample size was added to give a minimum sample of 501.

Results

Table 1: Socio-demographic characteristics of respondents (N=521)

Variable	Options	Frequency	%
Sex	Male	274	52.6
	Female	247	47.4
Age in years	(Mean age = 20.6±2.8)		
	<20	176	33.8
	≥20	345	66.2
Marital status	Single	484	92.9
	Cohabiting	12	2.3
	Married	25	4.8
Religion	Christianity	238	45.7
	Islam	273	52.4
	Traditional	10	1.9
Total income per month	<₦20,000	435	83.5
	₦ 20,000-₦ 49,000	78	15.0
	> ₦ 50,000	8	1.5
Ethnic group	Yoruba	497	95.4
	Hausa	9	1.7
	Igbo	15	2.9
Enrolment in school	Currently enrol	110	21.1
	Not currently enrol	411	78.9
Level of education currently enrol into (n=110)	JSS	10	9.1
	SSS	56	50.9
	Higher institution	44	40.0
Living with	Alone	44	8.4
	Father alone	70	13.4
	Mother alone	86	16.5
	Father and mother	208	39.9
	Grandparent	19	3.6
	Friend	61	11.7
	Husband	8	1.5
	Sister	24	4.6
	Wife and children	1	0.2

The above table revealed the distribution of respondents according to social demographic characteristics. The respondents' age was 20.6±2.8 years, ranging between 15 and 25 years, and more than half (52.6%) were male. Those who were 20 and above were 66.2%. Most (92.9%) of respondents were single. More than half of the respondents (52.4%) were Muslims, and 95.4% were of the Yoruba ethnic extraction. The top educational qualification of respondents was secondary education (72.6%) (Figure 1). Among these respondents, 78.9% were not currently enrolled in school, while 50.9% of 110 respondents who were currently in school were in senior secondary school at the time of data collection. Respondents who earned <₦20,000 monthly were the majority (83.5%), and 39.9% of the respondents were living with their father and mother. Respondents who were tailoring apprentices (20.0%) top the list of respondents undergoing apprentice training, followed by those who were learning patent medicine vendors (PMV/chemist) (Figure 2). The highest from the list of respondents' parents' educational qualifications was a secondary school (48.0% and 45.0%) of both father and mother, respectively (Figure 3).

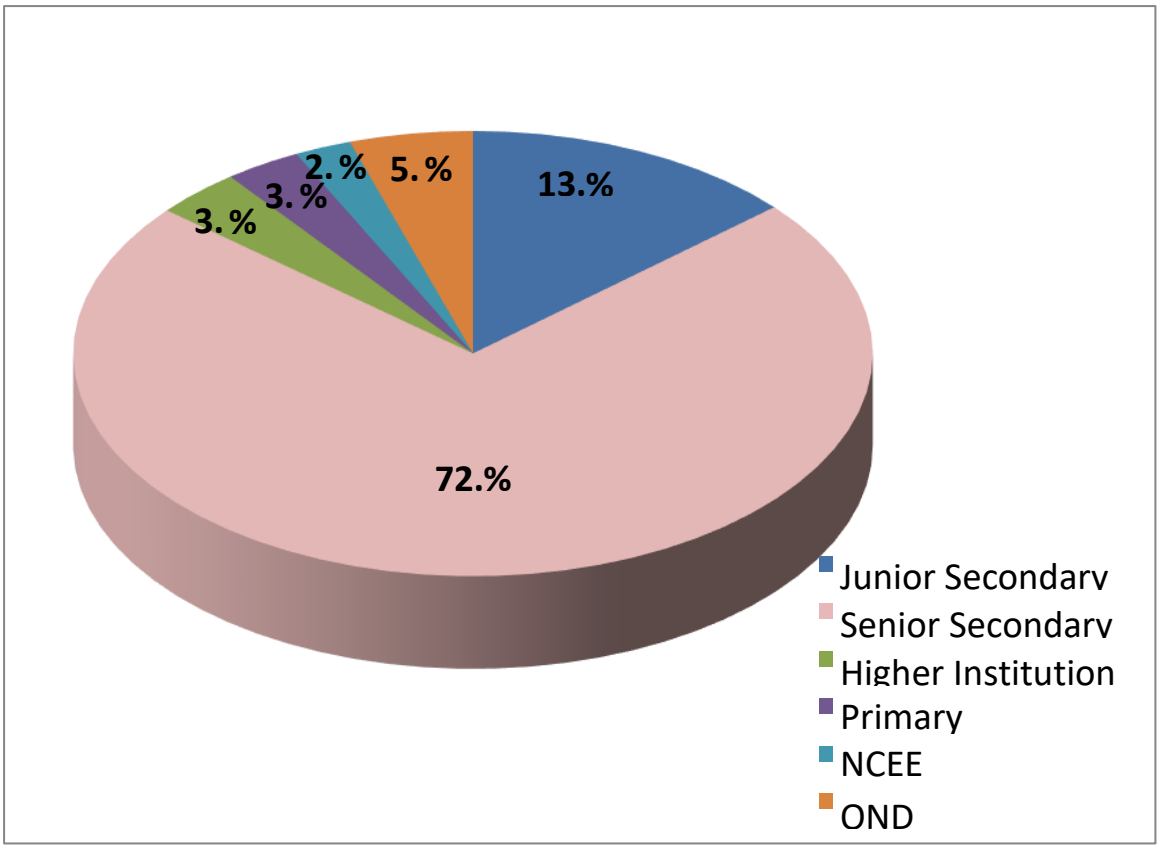

Figure 1: Respondents' Level of Education

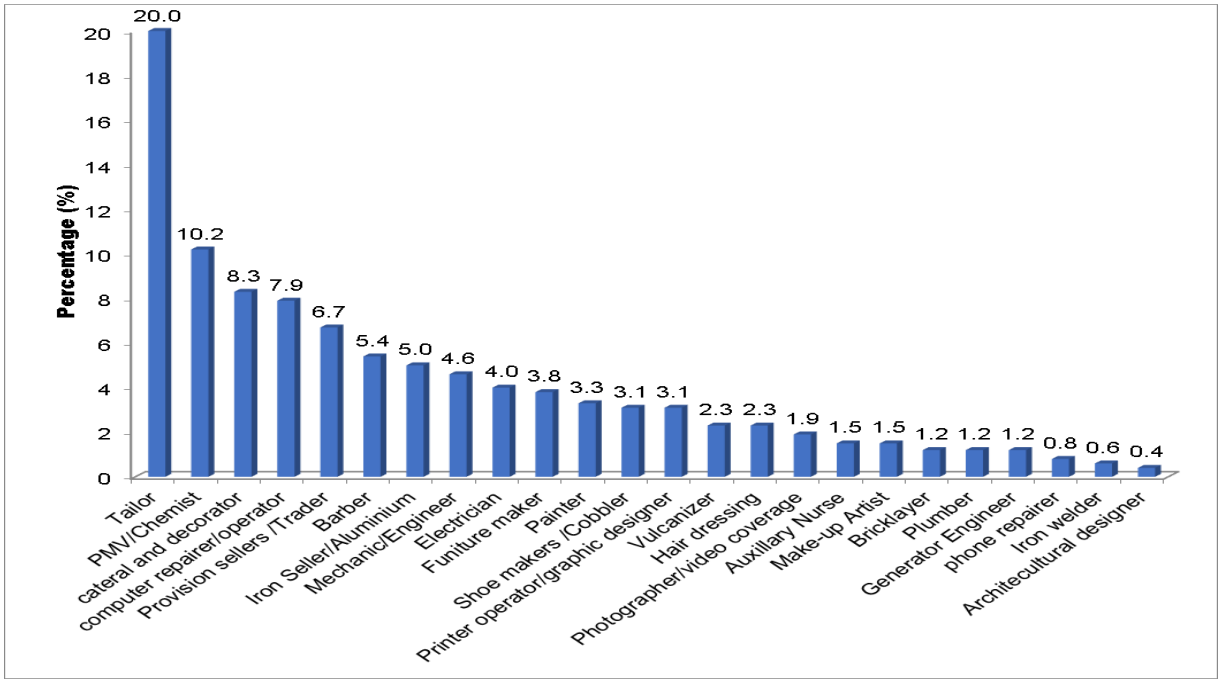

Figure 2: Respondents undergoing training

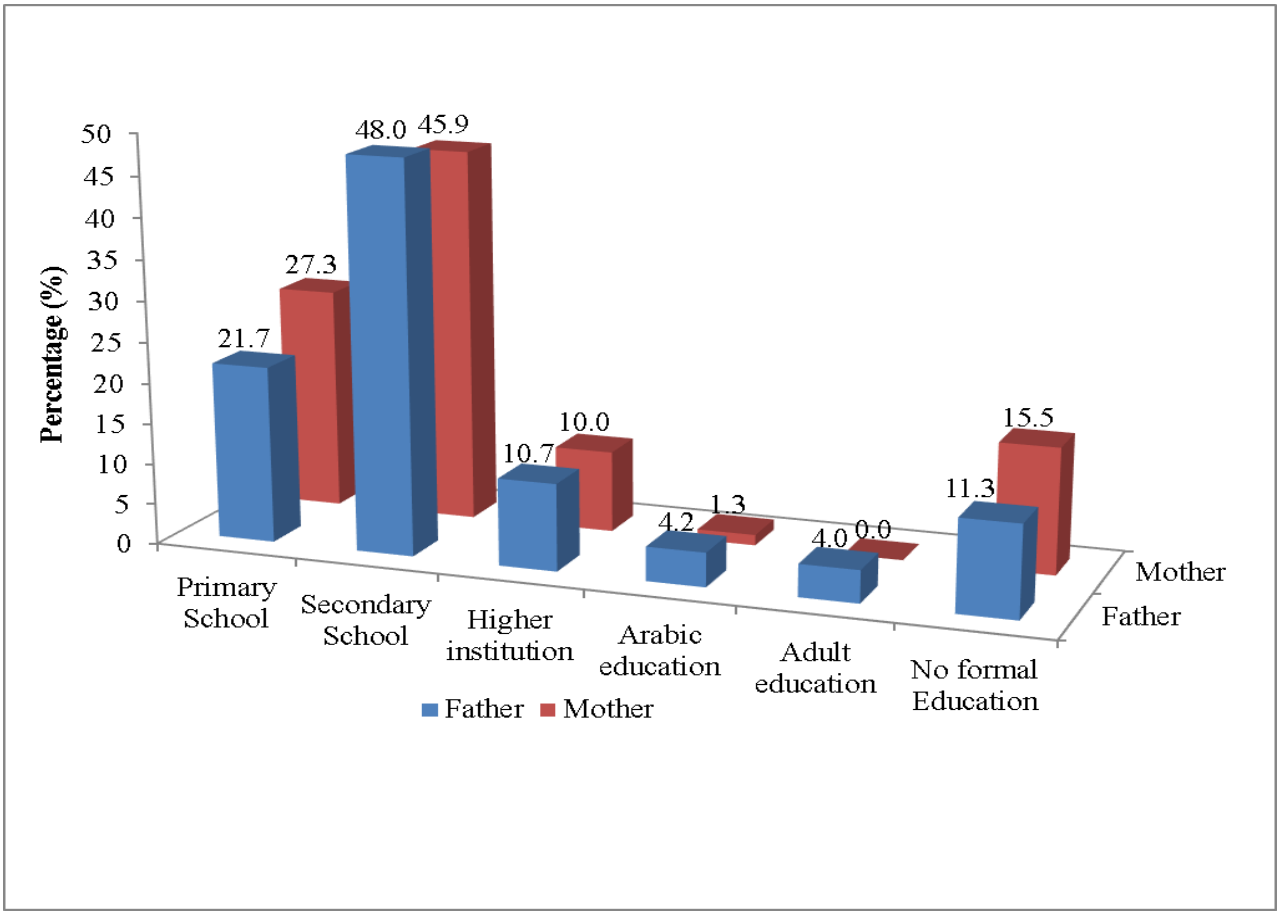

Figure 3: Respondents' parents' level of education

Table 2: Respondents' knowledge of Youth-Friendly clinic (N=521)

Variable	Freq.	%
Ever heard of a Youth-Friendly Clinic?		
Yes	125	24.0
No	396	76.0
Total	521	100.0
Services expected to be provided in YFC		
Counsel the youth on sexual and reproductive health matters/family planning.	103	34.9
Free treatment/ check-up	50	16.9
Education on childbearing	31	10.5
Free drugs	22	7.5
Enlightening the youth on the consequences of drug abuse	18	6.1
To encourage the youth to donate blood	15	5.1
provision of quality health workers	14	4.7
To provide referral service to the hospital	14	4.7
Provision of indoor game and recreational facilities within the clinic	12	4.1
To provide internet and health movies on HIV/AIDS for the youth in the centre	10	3.4
Educate the youth and advice on carrier in early age	6	2.0
Total[+]	295	100.0
Knowledge about any Youth-Friendly Clinic/Centre (YFC)		
Yes	37	7.1
No	484	92.9
Total	521	100.0
Names of the YFC mentioned (n=37)		
YFC, Yemetu	9	24.3
Apata maternity and child centre	9	24.3
UCH	2	5.4
Idi-Ogungun	2	5.4
MCH	2	5.4
Maternal and Child Health, Awotunde Olopometa	4	10.8
YFC, Moor plantation	2	5.4
Ago-Tapa PHC	4	10.8
Jericho Men's Hub Clinic	1	2.7
Mokola PHC	1	2.7
Ibadan Centre Hospital	1	2.7
Sources of information (n=37)		
Peers	19	51.4
Health workers	8	21.6
Radio	4	10.8
Parent or Guardian	4	10.8
Corper/peer education teacher	2	5.4

[+] **All totals are not equal to 521 because not applicable and have been deleted**

Less than one-quarter (24.0%) of respondents had heard about youths-friendly clinics or centres (YFC), and among mentioned services expected to be provided in YFC included counselling the youth on sexual and reproductive health matters/family planning (34.9%), free treatment/checkup (16.9%), education on childbearing (10.5%), free drugs (7.5%) and enlightening the youth on the consequences of drug abuse (6.1%). Similarly, 7.1% of respondents knew any Youth-Friendly Clinic/Centre (YFC). Among mentioned names of YFC known to the respondents were YFC, Yemetu (24.3%), Apata Maternity and Child Centre (24.3%), Maternal and Child Health, Awotunde Olopometa (10.8%) and Ago-Tapa PHC (10.8%). Above Half (51.4%) of respondents heard information about YFC through their peers, followed by those who got information from health workers (21.6%) (Table 4.2).

Table 3: Respondents' Utilisation of Youth-Friendly Centre/clinic

Variable	N	%
Ever used or visited a Youth-Friendly Clinic Service Centre (n=37)		
Yes	34	91.9
No	3	8.1
Name of the Youth-Friendly Clinic/Centre that you have ever used (n=34)		
Child and Maternity Centre, Apata	13	38.2
Adeoyo	5	14.7
UCH	4	11.8
Awotunde Maternal and Child Health Centre	2	5.9
YFC, Moor plantation	2	5.9
Idi Ogungun	2	5.9
Group Medical	2	5.9
UI	1	2.9
Ibadan centre	1	2.9
Jerich Men's Hub Clinic	1	2.9
Mokola PHC	1	2.9
Name of the Youth-Friendly Clinic Service Centre that you used last before this interview (n=30)		
child and maternity centre, Apata	13	43.3
Adeoyo	4	13.3
UCH	4	13.3
YFC, Moor plantation	2	6.7
Idi Ogungun	2	6.7
Group Medical	2	6.7
Awotunde Maternal and Child Health Centre	1	3.3
UI	1	3.3
Jerich Men's Hub Clinic	1	3.3
Last time visitation to the YFC clinic (n=34)		
within the last month	1	2.9
more than one month ago	16	47.1
5 years and above	16	47.1
4 years ago	1	2.9
Owner of the YFC (n=34)		
Government	29	85.3
Private	5	14.7
Experience when visited YFC service centre (n=31)		
Satisfied	23	74.2
Educative	3	9.7
Not satisfied	5	16.1

The table above shows the respondents' utilisation of YFC. Of the 37 respondents who knew YFC in their area, 91.9% of respondents had ever used or visited a YFC Service Centre. Among mentioned names of YFC visited included Child and Maternity Centre in Apata (38.2%), Adeoyo (14.7%) and YFC in the University of Ibadan (11.8%). In the same vein, the name of the Youth-Friendly Clinic Service Centre recently used or visited by respondents included Child and Maternity Centre in Apata (43.3%), Adeoyo (13.3%) and UCH (13.3%). Many (47.1%) of respondents reported that the last time they visited the YFC was more than one month ago, and those who had visited the location for about five years and above were 47.1%, respectively (Table 4.6). Respondents' reasons for visitation to YFC included treatment (34.1%), HIV education (26.8%) and visitation's sake (12.2%). Available types of services in the YFC visited by respondents included counselling (29.5%), medical advice and treatment (22.9%) and free drugs (28.8%) (Figure 4). Out of 37 respondents who admitted receiving all the required

services, most (74.2%) declared their satisfaction with the services received. Most respondents (85.3%) reported that the YFC locations patronized were government-owned.

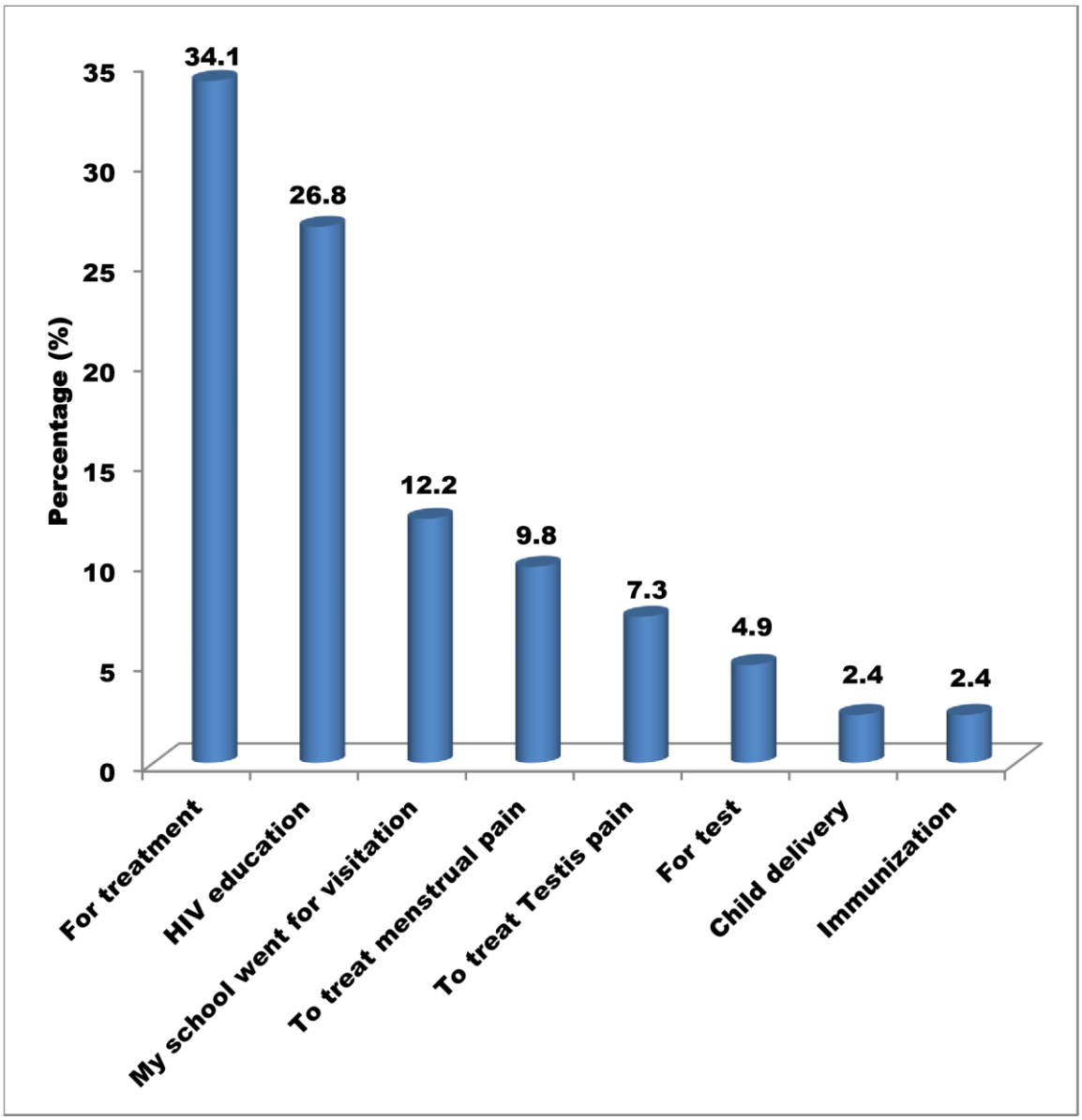

Figure 4 above shows that 34. 1% of the respondents go for treatment, 26.8% of the respondents go for HIV education, 12.2% of the respondents believed that their school went for visitation only, 9.8% of the respondents went to treat their menstrual pain, 7.3% of the respondents went to test testis pain, 4.9% of the respondents went for test and 2.4% of the respondents went for child delivery while 2.4% of the respondents went for immunization.

Figure 4.4: Respondents' reasons for visiting YFC (n=41)+

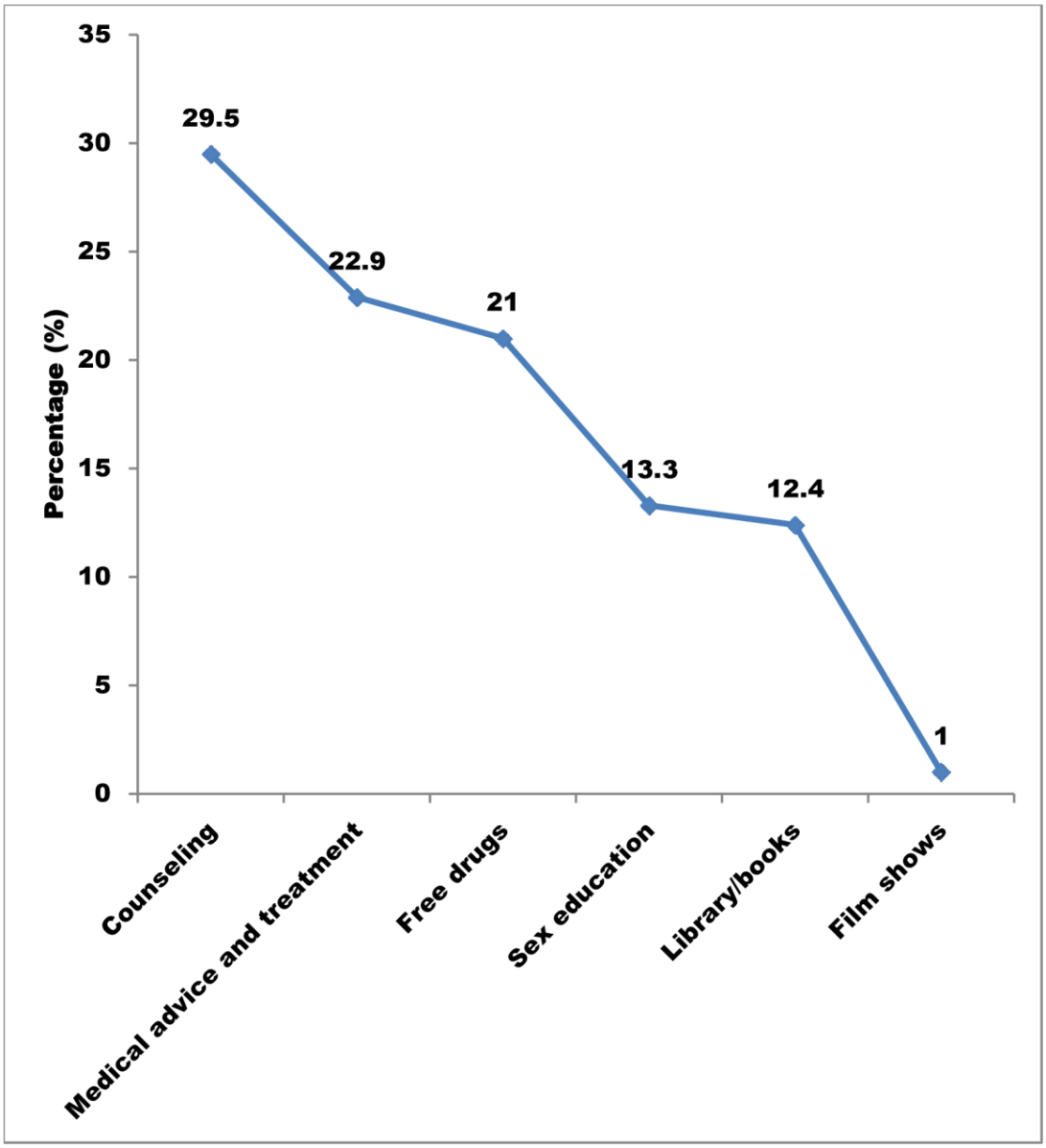

Figure 5: Available services in YFC visited (n=105)+

Findings from the Focus Group Discussions

Findings from the Focus Group Discussion revealed the utilisation of a Youth-Friendly Centre/clinic**.** The following quotes reflect some of their comment. One discussant took time to explain the factors that support the Utilisation of a Youth-Friendly Centre/clinic among the youth. He declared:

> *"I like the one in Ikolaba Ibadan because the place is quiet, and they have counselling units, treatment units, a library, a book shop and internet service for the youths. The staff are very friendly and always call you on the phone when you are sick. I am a member as of three years ago when I was still in school, but I have no time now to patronize the clinics. The workers are very competent, and the centres were structured so you can go straight to the units you have business with.*"

A discussant from the same group added that,

> *"I will be very glad if they can establish a Youth-Friendly service in our community. Most of the youths are not aware and do not like to go to the hospital for medical advice or treatment because they are not aware of the Youth-Friendly*

service and some Local Government Areas do not have the service but if this friendly service could be established, it will ginger individual youth to patronize."

Another discussant supported him by saying,

"I don't think if any apprentices here in Agbowo area have heard of it not talking about going there for treatment. You know, people look at us as if we don't have a brighter future because we are under training; they taught us that school is everything. I like the hospital and the workers are vey ok. I think the Government should create more awareness about it and make it free and convenient for the apprentice because most of us are not educated."

"I don't think apprentices are aware of YFC because we are not recognized like school students. In countries like China, I even heard that phones are manufactured by apprentices and their government cares for apprentices. You are on your own if you rely on government for treatment."

Test of Hypotheses

Hypotheses One

H_{01}: There was no relationship between respondents' socio-demographic characteristics (like age, gender, marital status, education) and their knowledge of utilisation of YFC

Table 4: Relationship between the socio-demographic variables of respondents and knowledge of Youths-Friendly Clinic/Centre

Socio-demographic variable	Knowledge of YFC			Chi-square (χ^2)
	Good (n=37)	Poor (n=484)	Total (N=521)	Fisher's Exact
	Freq. (%)	Freq. (%)	Freq. (%)	Test (*f*)
Age in year				
<20	5(13.5)	171(35.3)	176(33.8)	χ^2 = 7.314
≥20	32(86.5)	313(64.7)	345(66.2)	*p* = 0.007*
Gender				
Male	21(56.8)	253(52.3)	274(52.6)	χ^2 = 0.277
Female	16(43.2)	231(47.7)	247(47.4)	*p* = 0.599
Marital status				
Single	32(86.5)	452(93.4)	484(92.9)	*f* = 3.474
Cohabiting	2(5.4)	10(2.1)	12(2.3)	*p* = 0.132
Married	3(8.1)	22(4.5)	25(4.8)	
Religion				
Christianity	19(51.4)	219(45.2)	238(45.7)	*f* = 0.483
Islam	18(48.6)	255(52.7)	273(52.4)	*p* = 0.814
Traditional	0(0.0)	10(2.1)	10(1.9)	
Education				
Primary	0(0.0)	16(3.3)	16(3.1)	*f* = 3.111
Secondary	30(81.1)	419(86.6)	449(86.2)	*p* = 0.200
Post-secondary	7(18.9)	49(10.1)	56(10.7)	

*** - Significant at 0.05; *f* - Fisher's Exact Test**

N.B: Fisher's exact test was used in all Chi-square tables below because of those variables with cell counts of less than 5. Therefore, this information applies to many socio-demographic factors and other tested variables because some cells are counted under 5.

Relationship between the socio-demographic variables of respondents and knowledge about utilisation of YFC

The relationship between socio-demographic variables and their knowledge of the utilisation of YFC is shown in Table 4. The results revealed that good knowledge of YFC services utilisation was more prevalent among older youths ≥20 (86.5%) than other ages. However, this same age bracket recorded a high percentage among those who had poor knowledge of YFC (age ≥20 (64.7%) (p=0.007). However, other tested socio-demographic characteristics like gender (p=0.599), marital status (p=0.132), Religion (p=0.814) and education (p=0.200) of respondents were not found statistically significant to knowledge about utilisation of YFC. Although good knowledge about YFC utilisation was more pronounced among males (56.8%), single respondents (86.5%), those who practised Christianity (51.4%) and respondents who had secondary education (81.1%). Based

on the result shown in Table 4, the null hypothesis, which stated that there is no significant relationship between respondents' socio-demographic characteristics like sex, level of education, marital status, education and youths' knowledge about YFC utilisation, is not therefore rejected (p>0.05) but not applicable to the age of respondents which made the hypothesis to be rejected (p<0.05).

Hypotheses Two

$H_0$2: There is no significant relationship between respondents' personality living with and knowledge of utilisation of YFC

Table 5: Respondents' personality living with and their knowledge of the Utilisation of YFC Personality living with Knowledge of YFC Chi-square (χ^2)

	Good (n=37) Freq. (%)	Good (n=37) Freq. (%)	Good (n=37) Freq. (%)	Fisher's Exact Test (f)
Alone	6(16.2)	38(7.9)	44(8.4)	f= 18.933
Father alone	4(10.8)	66(13.6)	70(13.4)	p = 0.009*
Mother alone	1(2.7)	85(17.6)	86(16.5)	
Father and mother	13(35.1)	195(40.3)	208(39.9)	
Grandparent	3(8.1)	16(3.3)	19(3.6)	
Friend	9(24.3)	52(10.7)	61(11.7)	
Husband	1(2.7)	7(1.4)	8(1.5)	
Sister	0(0.0)	24(5.0)	24(4.6)	
Wife and children	0(0.0)	1(0.2)	1(0.2)	

*** - Significant at 0.05; f - Fisher's Exact Test**

The second null hypothesis was tested, which stated that there is no significant relationship between respondents' personality living with and knowledge of utilisation of YFC service. Table 5 shows that respondents living with their parents (father and mother) (35.1%) have more exposure to utilisation of YFC (p=0.009) compared to other personalities in that category. Based on the result in Table 5, the null hypothesis, which stated that no significant relationship exists between respondents' personality living with and youths' knowledge about YFC, is therefore rejected (p<0.05).

Hypotheses Three

$H_0$3: There is no relationship between sources of information and their knowledge of the utilisation of YFC

Respondents' sources of information and their knowledge of the utilisation of YFC were cross-tabulated to determine if they influenced their knowledge of the utilisation of YFC. The level of significance was set at 0.05. Table 6 reported a significant relationship between respondents' sources of information and their knowledge of utilising YFC (p=0.000). Respondents who had information about YFC through their peers had a greater percentage (51.4%), followed by information from health workers (21.6%) compared with others in the same category. This means that respondents' sources of information have a significant role in knowledge about utilising YFC. Based on the result shown in Table 6, the null hypothesis, which stated that there is no significant relationship between respondents' sources of information and youths' knowledge about YFC, is therefore rejected (p<0.05).

Table 7: Respondents' Sources of Information and their Knowledge of Utilisation of YFC Sources of Information Knowledge of YFC Chi-square (χ^2)

	Good (n=37) Freq. (%)	Good (n=37) Freq. (%)	Good (n=37) Freq. (%)	Fisher's Exact Test (f)
Radio	4(10.8)	0(0.0)	4(0.8)	f= 257.633
Peers	19(51.4)	0(0.0)	19(3.6)	p = 0.000*
Parent or Guardian	4(10.8)	0(0.0)	4(0.8)	
Health workers	8(21.6)	0(0.0)	8(1.5)	
Corper/peer education teacher	2(5.4)	0(0.0)	2(0.4)	
No knowledge	0(0.0)	484(100.0)	484(92.9)	

*** - Significant at 0.05; f - Fisher's Exact Test**

Hypotheses Four

$H_0$4: There is no relationship between respondents' usage of YFC and their knowledge of utilisation of YFC

Table 8: Respondents' Usage of YFC and their Knowledge of Utilisation of YFC

Variable Knowledge of YFC	Chi-square (χ^2) usage of YFC			
	Good (n=37) Freq. (%)	Good (n=37) Freq. (%)	Good (n=37) Freq. (%)	Fisher's Exact Test (*f*)
Usage of YFC				*f*
Yes	34(91.9)	0(0.0)	34(6.5)	=
				-
No	3(8.1)	484(100.0)	487(93.5)	*p* = 0.000*
Recent usage				
Within the last month	1(2.7)	0(0.0)	1(0.2)	*f*= 226.157
More than one month ago	16(43.2)	0(0.0)	16(3.1)	*p* = 0.000*
Five years and above	16(43.2)	0(0.0)	16(3.1)	
Four years ago	1(2.7)	0(0.0)	1(0.2)	
NR	3(8.1)	484(100.0)	487(93.5)	

*** - Significant at 0.05; *f* - Fisher's Exact Test; NR – Not applicable**

Respondents' usage of YFC and their knowledge of utilisation of YFC were used to determine if their previous utilisation influenced their knowledge of YFC. Table 8 showed a significant relationship between respondents' usage of YFC and their knowledge of utilisation of YFC (p=0.000). Knowledge about utilisation of YFC was more pronounced among respondents who had ever used YFC (91.9%) and visited the place more than one month ago (43.2%) or five years ago (43.2%), respectively, compared with others in the same category. This means that respondents' utilisation has a significant role in knowledge about the utilisation of YFC. Based on the result shown in Table 8, the null hypothesis, which stated that there is no significant relationship between respondents' usage of YFC and youths' knowledge about YFC, is therefore rejected (p<0.05).

Logistic Regression Analysis

Logistic regression analysis for knowledge about utilisation of youths-friendly clinic/centre (YFC) against various predictors. From all the predictive factors used to establish the knowledge about YFC utilisation, ever heard of YFC (OR = 0.024, p = 0.024), sources of information (OR = 0.515, p = 0.000), and currently using YFC (OR = 0.479, p = 0.000) were found to be predictive factors in that category. Respondents' sources of information were five times more predictive of knowledge about YFC utilisation than other factors (OR = 0.515, p = 0.000) (Table 9).

Table 9: Linear logistic regression analysis for knowledge about utilisation of youths friendly clinic/centre against various predictors

Variable	β	S.E.	Odds Ratio (OR)	T	Sig. p=value
Constance	0.551	0.021		26.760	
Age	-0.004	0.005	-0.007	-0.855	0.393
Personality living with	0.001	0.001	0.006	0.757	0.449
Ever heard of YFC	0.014	0.006	0.024	2.462	0.014*
Sources of information	0.113	0.004	0.515	26.011	0.000*
Currently using YFC	0.005	0.000	0.479	24.240	0.000*

S.E. = Standard Error; * = Significant at p<0.05

Table 10: Linear logistic regression analysis for knowledge about utilisation of youths friendly clinic/centre against various predictors

Variable	β	S.E.	Odds Ratio (OR)	T	Sig.p=value
Constance	0.551	0.021		26.760	
Age	-0.004	0.005	-0.007	-0.855	0.393
Personality living with	0.001	0.001	0.006	0.757	0.449
Ever heard of YFC	0.014	0.006	0.024	2.462	0.014*
Sources of information	0.113	0.004	0.515	26.011	0.000*
Currently using YFC	0.005	0.000	0.479	24.240	0.000*

S.E. = Standard Error; * = Significant at p<0.05

From all the predictive factors used to establish the knowledge about YFC utilisation, ever heard of YFC (OR = 0.024, p = 0.024), sources of information (OR = 0.515, p = 0.000), and currently using YFC (OR = 0.479, p = 0.000) were found to be predictive factors in that category. Respondents' sources of information were five times more predictive of knowledge about YFC utilisation than other factors (OR = 0.515, p = 0.000).

Conclusion

This study aimed to document the utilization of Youth-Friendly Clinics (YFC) among out-of-school youths within the Ibadan Metropolis. The findings revealed a very low level of knowledge about YFCs and a moderate level of utilization of these services. The establishment and promotion of youth-friendly clinics are critical to ensuring that adolescents have access to comprehensive healthcare services in a supportive and non-judgmental environment. These clinics address unique adolescent needs, including sexual and reproductive health education, mental health support, behavioural change, unwanted pregnancy prevention, unsafe abortion care, and substance abuse intervention.

Recommendation

1. Implement targeted awareness campaigns to educate youths about the existence and services of YFCs, emphasizing their benefits. Schools, community leaders, and peer education programs should be involved to reach a broader audience.
2. Government and stakeholders should ensure YFCs are more accessible, particularly for those aged under 20 years, who showed lower levels of awareness and usage. This can involve setting up clinics in underserved areas and providing transportation support where needed.
3. Leverage diverse platforms like social media, radio, and school programs to disseminate information about YFCs, as peers and health workers were the main sources of information in the study.
4. Include information on YFC services and sexual and reproductive health education in school curricula to improve students' knowledge and utilization, especially among secondary school students.

References

Adebiyi, A. O., & Azuzu, M. C. (2009). Out-of-school youths and their sexual behaviour. *African Journal of Medicine and Medical Sciences*, 38(2), 121–129.

Adesina, O. A., Babatunde, O. I., & Yusuf, A. B. (2020). Exploring the role of culture in access to reproductive health services: Evidence from Ibadan metropolis. *African Journal of Health Studies*, 14(2), 134-145.

Ajayi, A. I., Odunga, S. A., & Akpan, W. (2019). Barriers to utilization of youth-friendly services in urban centres: Perspectives from adolescents in south-western Nigeria. *BMC Public Health*, 19(1), 789. https://doi.org/10.1186/s12889-019-7164-3.

Ajike SO. (2016). Adolescent/youth utilisation of reproductive health services: knowledge still a barrier. *J Fam Med Heal Care*.;2(3):17.

Ajuwon, A. J., Olley, B. O., & Akintola, O. (2006). Experiences of forced sexual intercourse among young persons in Ibadan, Nigeria. International Family Planning Perspectives, 32(3), 150–154.

Akinyi OP. (2014). Determinants of utilisation of youth-friendly reproductive health services among school and college youth in Thika West District, Kiambu County, Kenya. *Afr J Reprod Health*.;11(3):99–110.

Alukagberie, M. E., Elmusharaf, K., Ibrahim, N., & Poix, S. (2023). Factors associated with adolescent pregnancy and public health interventions to address in Nigeria: *a scoping review. Reproductive health,* 20(1), 95. https://doi.org/10.1186/s12978-023-01629-5

Amu, E. O., Akinyemi, O. O., & Nwozor, C. (2020). Early sexual debut among Nigerian adolescents: Implications for health and behaviour. *African Health Sciences*, 20(4), 1901–1910.

Babatunde, I. O., Olanrewaju, A. T., & Adedoyin, A. F. (2014). Abortion practices and its determinants among Nigerian youth. *Journal of Public Health and Epidemiology*, 6(1), 1–7.

Bankole, A., Adewole, I. F., Hussain, R., Awolude, O., Singh, S., & Akinyemi, J. O. (2017). The incidence of abortion in Nigeria. *International Perspectives on Sexual and Reproductive Health, 43*(4), 197-209.

Cortez, R., Saadat, S., Marinda, E., & Odeku, M. (2016). Adolescent sexual and reproductive health in Nigeria. *World Bank Group.*

Dare, O. O., Cleland, J. G., & Stephen, O. (2001). Reproductive health care for adolescents in Nigeria. *African Journal of Reproductive Health, 5*(2), 100–110.

Geary, R.S, Gómez-Olivé F.X, Kahn, K, Tollman S & Norris, S.A. (2014). Barriers to and facilitators of the provision of a youth-friendly health services programme in rural South Africa. *BMC Health Serv* Res.;14(1):1–8.

Görgen, R., Yansané, M. L., Marx, M., & Millimouno, D. (2019). Improving adolescent reproductive health in West Africa: The case of Guinea. *Reproductive Health Matters, 27*(54), 131-142.

Kish, L. (1967). *Survey Sampling*. New York: John Wiley & Sons.

Lawton, K. (2017). Contraception continuation rates in the under 18s. Reprod Syst

Mathewos, S., & Mekuria, A. (2018). Teenage Pregnancy and Its Associated Factors among School Adolescents of Arba Minch Town, Southern Ethiopia. *Ethiopian journal of health sciences,* 28(3), 287–298. https://doi.org/10.4314/ejhs.v28i3.6

Mcharo, L. S., Kinyanjui, K., & Ndege, A. M. (2021). Risky behaviours among adolescents: *A growing concern. Journal of Adolescent Health,* 68(1), 25–32.

Nofiu, O. D., Akorede, S. N., Abubakar, B. S., & Hussaini, I. M. (2021). Influence of mass media in solving nutritional problems among junior secondary school students in Ilorin South Local Government Area, Kwara State. *Global Journal of Health Related Researches*, *3*(1), 42-49.

National Population Commission (NPC). (2022). Nigeria population and demographic statistics. Abuja: *NPC.*

Nigerian Demographic and Health Survey (NDHS). (2018). Key Indicators Report. *Abuja: National Population Commission.*

Ninsiima, A. B., Godia, P., & Nyagero, J. (2021). Social stigma and youth-friendly health services: Evidence from sub-Saharan Africa. Journal of Adolescent Health, 68(4), 576-582.

Nmadu AG. (2017). Access and utilisation of reproductive health services among youth-friendly service quality and associated factors at public health facilities in southern Ethiopia: a facility-based cross-sectional study. Biomed Res Int.; :1–11

Odetola, T. D. (2021). Adolescent health outcomes in urban Nigeria: The role of youth-friendly *Journal of Health and Social Behavior* health services. Journal of Reproductive Health Research, 25(3), 210-224.

Samuel, O. A., & Sanusi, A. R. (2019). Adolescent reproductive health challenges in Nigeria., 60(2), 142–152.

Self, A., Chipokosa, S., Misomali, A., Aung, T., Harvey, S. A., Chimchere, M., & Marx, M. A. (2018). Youth accessing reproductive health services in Malawi: drivers, barriers, and suggestions from the perspectives of youth and parents. *Reproductive health*, *15*, 1-10.

Suleiman, H. A., Suleiman, S., Dashe, V., & Akorede, S. N. (2024). Assessment of practice HIV/AIDS prevention strategies among commercial sex workers in Kano Metropolis, Kano State, Nigeria. *Zaria Journal of Studies in Education*, *6*(1), 174-181.

Thepthien, B. O., & Celyn, S. A. (2022). Adolescent reproductive health education in developing countries. *Asia-Pacific Journal of Public Health,* 34(1), 3–10.

Tylee, A., Haller, D. M., Graham, T., Churchill, R., & Sanci, L. A. (2018). Youth-friendly primary-care services: How are we doing and what more needs to be done? *The Lancet, 369*(9572), 1565-1573.

United Nations Economic Commission for Africa (UNECA). (2019). African youth report: Unlocking potential through access to services. Addis Ababa: *UNECA.*

United Nations Educational, Scientific and Cultural Organization (UNESCO). (2022). Out-of-school youth statistics. *Paris: UNESCO.*

United Nations Population Fund (UNFPA). (2020). *State of World Population 2020: Defying the practices that harm women and girls and undermine equality.* UNFPA.

United Nations Population Fund (UNFPA). (2021). Youth and health: Addressing the needs of the global adolescent population. New York: *UNFPA.*

World Health Organization (WHO). (2018). *Global standards for quality health care services for adolescents.* Geneva: WHO.

World Health Organization (WHO). (2020). Adolescent health and development: Global trends and challenges. Geneva: WHO.

AWARENESS AND PRACTICE OF EXAMINATION OF HEALTH PRODUCT LABELS OF CONSUMERS AMONG SENIOR SECONDARY SCHOOL STUDENTS OF SABON GARI LGA, KADUNA STATE NIGERIA

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Abstract

The study assessed the awareness and practice of examination of health product labels of consumers among Senior Secondary School Students of Sabon Gari Local Government Area, Kaduna State. 300 Senior Secondary School Students Volunteered to respond to the questionnaire across public and private Secondary Schools. The instrument for data collection was a self-developed questionnaire which was validated and pilot-tested with a reliability index of 0.79 and tagged as a questionnaire on awareness of health product labels of consumers "QAHPLS". The other segment with a reliability index of 0.77 for the practice of examination of health products labels, which was tagged as Practice of Examination of Health Products Labels of Consumers "OPEHPLS". The research instrument was correctly filled and returned for coding and analysis with the use of Frequencies and Percentages, Infrential statistics statistics of independent sample t-test was used to test the Hypotheses at 0.05 alpha level. Based on the findings of the study, the findings revealed that a significant difference exists in awareness of the examination of health product labels of consumers among Senior Secondary School Students in Sabon Gari LGA ($p=.003 < 0.05$). Also, the study revealed that there was no significant difference in practices of examination of health product labels of consumers among Senior Secondary School Students in Sabon Gari. It was recommended among others that improvement is needed with regards to practices of examination of health product labels of Consumers among Senior Secondary School Students in Sabon Gari L.G.A.

Keywords: Awareness and Practice, Health Products, Labels, Consumers

Introduction

As a consumer of health products and services, you need to know how to evaluate advertisements, since many people are in the business of supplying goods and services to consumers, competition is keen for their money, and advertising is used to convince consumers of the superiority of one product over the other. Thus consumers rather than falling prey to the enticements of advertising, must learn to evaluate the various items which provide value received (Umar, Shehu, Akorede, Sa'ad, Suleiman & Umaru, 2024). Kajang and Jatau (2012) stated that government at different levels provide supervisory and regulatory food and drug services for consumer protection, these services are concerned with four possible dangers to health as follows:

1. It would be possible for infectious organisms to reach the consumer in or on food or beverages.
2. It would be possible for food or drugs to contain toxic substances.
3. It would be possible for some of these products to be adulterated with less expensive and less desirable material so that the consumer would not get what paid for.
4. It would be possible for some of the used to contain habitual farming or injurious substances without the consumer knowing.

Femi, Oluleye, and Ajayi (2010) stated that consumer health education is a formal educational program designed primarily to help consumers acquire the relevant knowledge and skills to protect themselves from or avoid inferior products. Also, Washi (2012) stated that examining labels information of health products is extremely useful for people who are on a special diet or with nutrition-related health problems and diseases such as obesity, diabetes, cardiovascular diseases and various types of cancers, as it helps them to make informed choices of food.

On the other hand, a study by Susannah (2011) reported that examination of product labels is an important way to get people to make healthy choices, and to educate them to read and use food and other product labels. Internationally, food labelling has effectively achieved healthier consumer consumption behaviour and product development which transcends into improved

health outcomes. Moreso, Rani (2003) conducted a study titled, knowledge level of Nigeria College Girls about Consumer Rights and reported that a significant level of utilization of consumer rights by consumers during the purchase of health products was noticed. Also, a 2022 research by Abugu and Orogun examined the influence of food labelling on consumers' buying choices among academic staff and students at Enugu State University of Science and Technology and the University of Nigeria, Enugu Campus. The findings revealed that certain label characteristics, such as information on food ingredients, nutrition values, label colour, and health and safety information, significantly and positively influenced consumers' buying choices.

In addition, Osei (2021) conducted a study on consumers' use and understanding of food label information and its effect on their purchasing decision in Kumasi Ghana and reported that 80% of the respondents accessed food label information before purchase, about 90% of the respondents reported they understood the nutritional information they read, respectively. Ndubisi, Anyanwo and Nwanko (2016) conducted a study on protecting Nigerian consumers. An expository examination of the role of the Consumer Protection Council reported that on label checking among consumers at Imo State University, Nigeria, the results showed that the majority of the respondents do not take time to study the labels on products before purchase and as a result, they do not have full information about the products that would help them to protect their rights as consumers.

The study conducted by Harande (2021) on knowledge and practices of consumer health education among the students of the Federal College of Education Zaria, Nigeria demonstrated that that both male and female students at the Federal College of Education Zaria had little or little knowledge of regards to consumer health education. Also reported that male and female respondents develop negative practices with regard to consumer health education. Another study by Yusuf (2022) on students' adherence to consumer rights and examination labels of health products in tertiary institutions in Kano State, Nigeria, reported that tertiary institutions in Kano State are examining the labels of health products which offer them room for selecting good products and promote their healthful living.

Problem Statement

Consumers have the power to control the producers, the producers depend on the demands of the consumers for goods and services, the producers produce what consumers buy, and the products that consumers do not buy will no longer be produced. However, Ijiwere (2000) stated that consumer education is the process of exposing people to the knowledge and skills needed by individuals, groups, families and corporate bodies to become competent consumers in a world that is constantly changing. One of the ways through which the Nigerian consumer can be protected against the activities of quacks is consumer education. This is because the individual will be equipped with the critical skills to be an intelligent buyer and user of health products.

Given the aforementioned, the researchers were motivated to conduct a study to Unearth information that will be helpful to the students, parents and governments with regards to awareness and practice of examination of health products labels of consumers among Senior Secondary School Students in Sabon Gari Local Government area of Kaduna State.

Research Hypothesis

The following hypotheses were formulated to guide the conduct of this study.

Hypothesis: (Ho_1) There is no significant gender difference with regard to awareness of the examination of health product labels of consumers among Senior Secondary school students of Sabon Gari LGA, Kaduna.

Hypothesis: (Ho_2). There is no significant gender difference with regard to the practice of examination of health product labels of consumers among Senior Secondary School Students of Sabon Gari LGA, Kaduna.

Methodology

The descriptive survey research design was used for the study. The study was carried out in Sabon Gari Local Government Area of Kaduna State among Senior Secondary School Students. The instrument for data collection was a self-developed questionnaire which was validated and standardized with the reliability index of 0.79 for the awareness of examination of health products labels, which was tagged as Questionnaire on Awareness of Health Products Labels of Consumer "QAHPLC. The other segment was validated and standardized with a reliability index of 0.77 for the practice of examination of health products labels, which was tagged Questionnaire on Practice of Examination of Health Products Labels of Consumers "OPENHPLC". Simple and systematic random sampling techniques were used to select public and private secondary schools and three hundred (300) consenting respondents. The copies of the questionnaire were administered across the schools with the help of seven research assistants using the method of distribution and collection on the spot. The administration of the questionnaire lasts for five weeks. The research instrument was correctly filled and returned for coding and analysis with the use of frequencies and percentages. Hypotheses were tested using inferential statistics of independent and one sample t-test at 0.05 alpha level to find out the significant difference among the respondents with regards to awareness and practice of examination of health products labels of consumers among Senior Secondary School Students of Sabon Gari Local Government Area.

Results

Three hundred (300) copies of the questionnaire were distributed among Senior Secondary School Students within the local government area of study and the return rate was hundred (100%) per cent.

Table 1: Demographics of Respondents

S/N	Characteristics of Respondents	Frequency (F)	Percentage (100%)
1.	**Age**		
	14-16 Years	201	67.0
	17-19 Years	94	31.3
	20 Years and above	05	1.7
	Total	**300**	**100%**
2.	**Gender**		
	Male	155	51.7
	Female	145	48.3
	Total	**300**	**100%**
3.	SS III	100	33.3
	SS II	110	36.7
	SS 1	090	30.0
	Total	**300**	**100%**

Table 1 shows that the majority of the respondents (67.0%) were within the age range of 14-16 years, while another significant number of the respondents (31.3%) fell within the age range of 17-19 years. The results also reported that the majority of the respondents (51.7%) were male, while 48.33% of the respondents were female respectively. The results further revealed that most of the respondents (36.7%) fall in the category of Senior Secondary Class II (SS-II), followed by 33.3% of the respondents in the category of Senior Secondary Class III (SS III), then 30.0% of the respondents in the category of Senior Secondary class I (SSI), respectively.

Hypotheses Testing

Hypothesis: (Ho_1) There is no significant gender difference with regard to awareness of the examination of health product labels of consumers among Senior Secondary school students of Sabon Gari LGA, Kaduna.

Table 2: Independent sample t-test showing gender difference in awareness of examination of health products labels of consumers among Senior Secondary school students.

	Sex	N	Mean	Mean diff.	t. Value	df	P. Value	Decision
Awareness	Male	155	3.7300	0.23	10.73	298	.003	Rejected
	Female	145	3.5000					

Table 2 clearly shows that the mean score of male respondents on awareness of the examination of health product labels is 3.73, while female respondents had a mean score of 3.50. The mean difference is 0.23. The independent sample t-test results indicate t=10.73t = 10.73 t=10.73, df=298 df = 298 df =298, and p=0.003 p = 0.003 p=0.003. Since the p-value is less than 0.05, this indicates a statistically significant difference exists in awareness of health product label examination between male and female students. Therefore, the null hypothesis, which stated that there is no significant difference in awareness of health product label examination among Senior Secondary School students in Sabon Gari Local Government Area, is hereby rejected**.**

Hypothesis: (Ho_2) There is no significant gender difference with regard to the practice of examination of health product labels of consumers among Senior Secondary school students of Sabon Gari LGA, Kaduna.

Table 3: Independents sample t-test summary showing gender difference with regards to the practice of examination of health product labels of consumers among Senior Secondary school students.

	Sex	N	Mean	Mean diff.	t. Value	df	P. Value	Decision
Practice	Male	155	4.9176	0.35	1.852	298	.331	Retain
	Female	145	4.5701					

Table 3 reported that the mean score of male respondents on the practice of examining health product labels is 4.92**,** while female respondents had a mean score of 4.57**.** The mean difference is **0.35**. The independent sample t-test results indicated that (t=1.852 t = 1.852 t=1.852, df=298df = 298 df=298, and p=0.331p = 0.331p=0.331). Since the p-value is greater than 0.05, this indicates that there is no statistically significant difference in the practice of examining health product labels between male and female students. Therefore, the null hypothesis, which states that there is no significant gender difference in the practice

of examining health product labels among Senior Secondary School students in Sabon Gari LGA, Kaduna State**,** is hereby retained.

Discussion of Findings

The finding of the study clearly showed that there was a significant gender difference with regard to awareness of the examination of health product labels of consumers among Senior Secondary School Students with a minor factor of 0.23 which is a negligible mean difference. The finding corroborates a 2022 study by Abugu and Orogun examining the influence of food labelling on consumers' buying choices among academic staff and students at Enugu State University of Science and Technology and the University of Nigeria, Enugu Campus. The findings revealed that certain label characteristics, such as information on food ingredients, nutrition values, label colour, and health and safety information, significantly and positively influenced consumers' buying choices. Credence also goes to Osei (2012) who discovered that about 90% of the respondents reported having understood the nutritional information labelled during their purchase of health products. Similarly, the study was in agreement with a 2022 study by Adesina et al. assessed consumers' knowledge and use of nutritional labelling information in Lagos, Nigeria. The study found that 57.9% of consumers had a positive attitude towards using food labels, and 58% of the respondents' buying decisions were influenced by food labels.

The findings of the study further showed that there was no significant gender difference in the practice of examination of health product labels of consumers among Senior Secondary School Students with a minor factor (0.35) of mean difference with a value of .31 which is less than 0.05 alpha level (P = < 0.05) of significance. This outcome agrees with Osei (2012) who reported that 80% of respondents in Kumasi access food label information before purchasing their health products. The findings also agree with Mirsa (2007) who reported that a higher percentage of the respondents among College Students in Nigeria develop a positive attitude toward food label reading behaviour while purchasing their health products. On the other hand, Harande (2021) reported that male and female respondents develop negative practices with regard to consumer health education. In addition to the findings, credence goes to Yusuf (2022) who reported that students of tertiary institutions in Kano State, Nigeria, are examining the labels of health products which offer them room for selecting good products and promoting their healthful living.

Conclusion

Based on the findings of this study, it was concluded that there was a significant difference in awareness of the examination of health product labels of consumers among Senior Secondary School Students in Sabon Gari Local Government Area. It was also concluded that there was no significant difference in practices of examination of health product labels of consumers among Senior Secondary School Students in Sabon Gari Local Government Area.

Recommendations

Based on the findings and conclusion of the study, the researcher made these recommendations:

1. Improvement is needed with regard to awareness of the examination of health product labels of consumers among Senior Secondary School Students in Sabon Gari Local Government Area, Kaduna State.
2. Improvement is needed with regards to practices of examination of health product labels of consumers among Senior Secondary School Students in Sabon Gari Local Government Area, Kaduna State.

References

Abugu, J. O., & Orogun, E. S. (2022). Promoting food preference at university shopping centre through food labelling: The Nigerian perspective. *British International Journal of Applied Economics, Finance and Accounting, 5*(6). https://aspjournals.org/Journals/index.php/bijbmr/article/view/211

Evaristus, A., Ajayi, B., Emmanuel, O. A., Babatunde, A., Mofoluwake, P. A., Tomike, O., Adebanke, O. I., & Mercy, E. U. (2022). Consumers' knowledge and use of nutritional labelling information in Lagos, Nigeria. *Sustainability, 14*(1). https://www.mdpi.com/2071-1050/14/1/578

Femi, J., Olulere, S., & Ajayi, A. (2010). *Comprehensive physical and health education.* Mercy Land Publishers Ltd.

Harande, S. (2021). Knowledge and practices of consumer health education among students of Federal College of Education Zaria, Nigeria. *Journal of Nigerian Association for Physical, Health Education, Recreation, Sports and Dance (JOURNAPHERSD), 9*(1), 87-98.

Ijiwere, A. A. (2000). Impact of education on consumer activities in Nigeria. *Africa Journal of Students in Education, 2*(2), 223-235.

Kajang, Y. G., & Jatau, A. A. (2012). *Basis for health and health education teaching.* Akings Press and Services Ltd.

Mirsa, R. (2007). Knowledge, attitudes and label use among college students. *Journal of the American Dietetic Association, 107*(12), 2130-2134.

Ndubisi, E. C., Anyanwo, A. V., & Nwankwo, C. A. (2016). Protecting the Nigerian consumers: An expository examination of the role of consumer protection council. *Arabian Journal of Business Management, 10*(2), 225-226.

Osei, M. T., Lawer, D. R., & Aidoo, R. (2012). Consumers' use and understanding of food label information and effect on their purchasing decision in Ghana: A study of Kumasi Metropolis. *Asian Journal of Agriculture and Rural Development, 2*(3), 351-365.

Rani, A. (2003). Knowledge level of college girls about consumer rights. *Journal of Family Ecology, 1*(2), 187-190.

Susunnah, T. (2011). *Design, format and impact of front-of-pack nutrition labelling: An independent review of refereed literature.* Australian Food and Grocery Council.

Umar, I., Shehu, H., Akorede, S. N., Sa'ad, U., Suleiman, M. A., & Umaru, M. (2024). Effects of health education intervention on use of food labels among students of Federal University Dutse. *Global Journal of Health Related Researches, 6*(1), 40-47.

Washi, S. (2012). Awareness of food labelling among consumers in groceries in Al-Ain, United Arab Emirates. *International Journal of Marketing Studies, 4*(1), 38-47.

Yusuf, I. (2022). Students' adherence to consumer rights and examination labels of health products in tertiary institutions of Kano State. In *Contemporary issues and challenges in public health education and human movement in the 21st century.* Nuhu Bayero Centre, B.U.K Kano.

EFFECT OF MENSTRUAL HYGIENE ON THE HEALTH STATUS OF FEMALE ADOLESCENTS IN SENIOR SECONDARY SCHOOLS IN ZARIA LOCAL GOVERNMENT AREA OF KADUNA STATE

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Abstract

Poor menstrual hygiene caused by a lack of education on the issue, persisting taboos and stigma, limited access to hygienic menstrual products and poor sanitation infrastructure undermines the educational opportunities, health and overall social status of women and girls around the world. The research study examined the effect of Menstrual Hygiene on the Health Status of female adolescents in Senior Secondary Schools in the Zaria Local Government area of Kaduna State. A survey research design was used for the study. The target population comprised female adolescents in Senior Secondary. One Hundred (100 female) adolescents were drawn from public and private Senior Secondary Schools within the study area who volunteered to respond to the research tool. The instrument for data collection was the researchers' developed questionnaire tagged Questionnaire on the Effect of Menstrual Hygiene on the Health Status of Female Adolescents. "EMHHSFA" which had a reliability of 0.74. Descriptive statistics of simple percentages, means and standard deviation were used. The null hypothesis was tested at 0.05 alpha level of significance in which Pearson Product Moment Correlation Coefficient was used. The findings revealed that the majority of the respondents were taught about menstrual hygiene at home and then followed at school. It was also revealed that the majority of the respondents used sanitary pads as absorbent during menstruation. It was also revealed that a significant relationship exists between menstrual hygiene and health status in female adolescents. It was recommended among others that menstrual hygiene should be emphasized with regard to teaching Health Education at Senior Secondary Schools, specifically girls' schools.

Keywords: Menstrual Hygiene, Health Status, Female Adolescents.

Introduction

Menstruation and menstrual practices still face many social, cultural, and religious restrictions which are big barriers in the path of menstrual hygiene management. Menstruation is a natural process that occurs monthly in healthy adolescent girls and premenopausal adult women. Ahmed and Yesmin (2008) stated that menstruation is a phenomenon unique to females, the onset of menstruation (menarche) occurs between 11 and 15 years with a mean of 13 years. Adolescent girls constitute a vulnerable group, particularly in the developing world where a female child is somehow neglected. Menstruation is still regarded as something unclean or dirty in most societies. The reaction to menstruation depends upon awareness and knowledge about the subject matter (Ahmed & Yesmin, 2008). How a girl learns about menstruation and its associated changes may have an impact on her response to the event of the monarch. Although menstruation is a natural process, it is linked with several misconceptions and practices, which sometimes result in adverse health outcomes. UNICEF (2023) added that menstrual hygiene is crucial for the health, dignity and well-being of millions of people worldwide, particularly adolescent girls, women, transgender men and non-binary individuals.

Centre for Disease Control and Prevention (CDC) (2023) stated that good menstrual hygiene practices can prevent infections, reduce Odours and help individuals stay comfortable during their period. UNICEF (2019) stated that Adequate menstrual hygiene practices are a process in which women and adolescent girls use a clean menstrual management material to absorb or collect menstrual blood that can be privacy changed as often as necessary for the duration of menstrual periods, using soap and water for washing the body as required and having access to safe and convenient facilities to dispose of used menstrual management materials.

Appropriate disposal of used menstrual materials is still lacking in many countries of the world. Most countries have developed techniques to manage their faecal and Urinary waste but, because of the lack of menstrual management hygiene practice (MMHP) in the world, most women dispose of their sanitary pads or other menstrual articles into domestic solid wastes or garbage bins that ultimately became a part of solid wastes. In Urban areas, where modern disposable menstrual products are

used they are disposed of by flushing toilets and throwing them in dustbins or through solid waste management (Ashly, Blackwood & Souter, 2005). In rural areas, there are many options for disposing of menstrual waste such as burying, burning, and throwing in the garbage or pit latrines. In rural areas, most women use reusable and non-commercial sanitary lesser amount of menstrual waste as compared to women in Urban areas who rely on commercial disposable pads. The menstrual material is disposed of according to the type of product used, cultural beliefs, and location of disposal. In slum areas, women dispose of their menstrual waste in pit latrines as burning and burial were difficult due to limited privacy space (Ashly et al., 2005).

The reason behind that is if seen by men it can be used for witchcraft (Garg, Sharma & Sahay, 2001). Jasper, Lee, and Bartram (2012) stated that, in schools, due to a lack of sanitary facilities, girls throw their pads in toilets. In some cases, girls throw away their used menstrual clothes without washing them. Crafts and Fisher (2012) added that in some schools, incinerators or "feminine hygiene bins" are used for disposing of menstrual waste material but due to shyness or fear of being seen by others, they refrained from using it. The behaviour of women regarding disposal is different when being at home and away from home. At home, they dispose of the waste by wrapping it and throwing it in the dustbin along with other domestic waste.

Lawan, Yusuf and Musa (2010) conducted research titled Menstruation and menstrual hygiene amongst adolescent school girls in Kano, northwestern Nigeria, and reported that the majority of the respondents had a fair knowledge of menstruation, although deficient in specific knowledge areas. The majority of respondents used sanitary pads as absorbent during their last menses; changed menstrual dressings about 1-5 times per day; and three-quarters of the respondents increased the frequency of bathing during menstruation.

Cajetan, Ignatius and Chinagoron (2016) conducted a research titled, Menstrual Hygiene Practices and Sources of Menstrual Hygiene Information among adolescent secondary school girls in Abakaliki Education Zone of Ebonyi State and reported that the girls' menstrual hygiene practices were poor and received menstrual information from undependable sources. They added that a significant difference was noticed among the respondents in their menstrual hygiene practices and sources of their menstrual hygiene information. Habtegiorgis et al (2021) conducted research titled Menstrual Hygiene Practices Among High School Girls in Urban Areas in North-eastern Ethiopia: A Neglected Issue in Water, Sanitation and Hygiene Research, and reported that more than half of high school girls had good menstrual hygiene practices. Another finding of the study was that knowledge about menstruation helps girls maintain good menstrual hygiene practices than their irregular counterparts. The explanation of the outcomes stated that it may be those girls with irregular menses cannot anticipate their onsets, and may therefore be less prepared for proper menstrual hygiene.

Health Issues Related to Poor Menstrual Hygiene:

i. Bacterial Vaginosis (BV)
ii. Yeast Infections (Candidiasis)
iii. Urinary Tract Infections (UTIs)
iv. Pelvic Inflammatory Disease (PID)
v. Toxic Shock Syndrome (TSS)
vi. Reproductive Tract Infections (RTIs)
vii. Menstrual Disorders (e.g., dysmenorrhea, menorrhagia) (Sommer, 2015).

Factors Influencing Menstrual Hygiene and Health:

i. Socio-economic status
ii. Access to sanitation facilities and materials
iii. Education and Awareness
iv. Cultural and social norms
v. Age and reproductive stage
vi. Disability and mobility
vii. Healthcare access and quality (Sommer, 2015).

Indicators of Good Menstrual Hygiene and Health

i. Regular menstrual cycle
ii. Normal menstrual flow
iii. Absence of pain or discomfort

iv. No signs of infection (eg. odour, discharge)

v. Proper use of menstrual products

vi. Regular hand washing and hygiene practices

vii. Access to healthcare and reproductive services (Sommer, 2015).

Consequences of Poor Menstrual Hygiene and Health:

i. School absenteeism

ii. Social isolation

iii. Stigma and shame

iv. Mental health concerns (eg, anxiety, depression)

v. Reduced quality of life

vi. Increased health care costs (Sommer, 2015).

Intervention and Strategies

i. Menstrual health education

ii. Access to affordable menstrual products

iii. Improved sanitation infrastructure

iv. Healthcare provider training

v. Community engagement and awareness

vi. Policy reforms and advocacy

vii. Research and monitoring (Sommer, 2015).

Problem Statement

Sanches (2002) conducted a research titled, Human Immunodeficiency Virus (HIV) and HIV/AIDS information: main sources and credibility among university students, and reported that students and other young adults especially in the rural areas of Nigeria possess low levels of knowledge regarding most health-related matters. They receive health-related information from friends, peers, Television/Video, Magazines and other print media and rarely do they get information from teachers and media personnel. Daggupta and Sarkar (2008) conducted a study in India, titled, Menstrual Hygiene: How hygienic are the adolescent girls?, and reported that women having better knowledge regarding menstrual hygiene and safe practices are less vulnerable to reproductive tract infections (RTIs) and consequences.

When women and girls cannot afford or access absorbent sanitary products, they may use improvised materials such as improperly cleaned or scavenged cloth or other materials such as newspaper or even grass. This may cause reproductive tract infections, such as bacterial vaginitis or vulvovaginal candidiasis, which in turn can increase susceptibility to HIV infection. There are other menstrual disorders and menstrual-related symptoms that affect a woman's health and her ability to engage in daily activities. For instance, anaemia, a major contributor to maternal morbidity, is associated with menorrhagia, or heavy periods. Endometriosis, a menstrual disorder, contributes to infertility. And women with dysmenorrhea or painful menses, may miss one or more days of school or work each month. Therefore, increased knowledge about menstruation right from childhood may escalate safe practices and may facilitate mitigating the suffering of millions of women. It was based on the aforementioned literature, the researcher developed an interest in ascertaining the effect of menstrual hygiene on the health status of female adolescents in Senior Secondary Schools in Zaria Local Government Area of Kaduna State.

Objectives of the Study

The research study aimed to determine the sources of information on menstrual hygiene, menstrual hygiene practices and the effect of menstrual hygiene practices on health status with regards to female adolescents in Senior Secondary Schools in Zaria Local Government Area of Kaduna State.

Research Questions

i. What sources of information on menstrual hygiene are with regard to female adolescents in Senior Secondary Schools in Zaria Local Government Area of Kaduna State?

ii. What is the status of menstrual hygiene practices among female adolescents in Senior Secondary Schools in Zaria Local Government Area of Kaduna State?

iii. What are the factors associated with good menstrual hygiene practices among female adolescents in Senior Secondary Schools in Zaria Local Government Area of Kaduna State?

iv. What are the effects of menstrual hygiene on the health status of female adolescents in Senior Secondary Schools in Zaria Local Government Area of Kaduna State?

Research Hypothesis

i. There is no significant relationship between menstrual hygiene practices and the health status of female adolescents in Senior Secondary Schools in Zaria Local Government Area of Kaduna State.

Method and Procedure

A survey research design was used for this study. This method was considered appropriate because it provides a modality for obtaining information from a sample size and generalizing the findings obtained to the entire population. There is a total enrolment of 109,385 out of which 46,213 are girls in public senior secondary schools. The Private Sector accounts for an enrolment of 41,088 out of which 20,413 are girls in Senior Secondary schools. The total number of Pupils in Public and Private Senior Secondary schools irrespective of sex and age is 150,473 out of which 66,626 are girls. A total of 107,256 are within the senior secondary age limit of 15-17. Out of this number, 48,428 (45%) are girls (Kaduna State Ministry of Education (2018). The target population comprised female adolescents in Senior Secondary Schools in Zaria Local Government Area of Kaduna State. One Hundred (100) female adolescents drawn from public (50) and private (50) Senior Secondary Schools in Zaria Local Government Area volunteered to respond to the research questionnaire. The research instrument employed for this study was a self-structured interviewer-administered questionnaire titled Effect of Menstrual Hygiene on the Health Status of Female Adolescents. "EMHHSFA". The research instrument was divided into two sections. The "A" section requires demographic information of the respondents. While the "B" section focused on the effect of menstrual hygiene on the health status of female adolescents. The research instrument was found reliable with a reliability coefficient of 0.92. Data was collected with the help of one trained female research assistant on how to seek respondent's consent, administer the instruments and confidentiality in the respective schools which lasted for two weeks. Descriptive statistics of simple percentages, means and standard deviation were employed for the socio-demographic information of the respondents. The null hypothesis was tested at 0.05 alpha level of significance in which Pearson Product Moment Correlation Coefficient was used. One hundred (100) copies of the questionnaire were distributed among the female adolescents in Senior Secondary Schools in Zaria Local Government. And the return rate was hundred (100) per cent.

Section A: Socio-demographic Characteristics of the Respondents

Table 1: Demographics of respondents

S/N	Characteristics of Respondents	Frequency (F)	Percentage (100%)
1	Class		
	SS 1	22	22%
	SS 2	37	37%
	SS 3	41	41%
	Total	100	100%
2	Age		
	14-16 Years	17	17%
	17-29 Years	64	64%
	20- years above	19	19%
	Total	100	100%
3	Who did you stay with at home?		
	Parents	64	64%
	Guardian	36	36%
	Total	100	100%

Table 1 indicated that the majority of the respondents (41%) fall within the Senior Secondary (SS 3) category. The result also indicated that the majority of the respondents (64%) fall within the age range of 17-19 years. With regards to who takes care of the respondents, the results showed that the majority of them (64%) lived with their parents (in their homes).

Table 2: Analysis of Research Questions, with regards to Menstrual Hygiene and Health Status.

S/N	Characteristics of Respondents	Frequency (F)	Percentage (100%)
4	Do you menstruate?		
	Yes	100	100%
	No	Nil	Nil
5	How long do you menstruate?		
	3 days	17	17
	4 days	23	23
	5 days and above	60	60
6	Were you taught about menstrual hygiene?		
	Yes	90	90
	No	10	10
7	If yes, where were you taught?		
	School	40	40
	Home	50	50
	Others	10	10
8	How many times do you take Birth in a day during menstruation		
	1 time	70	70
	2 times	20	20
	3 times	10	10
9	What type of absorbent do you use during menstruation?		
	Sanitary pads	70	70
	Piece of cloth	20	20
	Toilet paper	10	10
10	Number of times absorbent changed in a day		
	1 time	51	51
	2 times	49	49
11	How do you dispose of used absorbents		
	Bury them	30	30
	Washing them	14	14
	Throwing them	56	56

Table 2 indicates that the entire respondents (100%) have started to notice their menstruation (period). Item number 5 showed that a higher proportion of the respondents (60%) observed their menstruation in 5 days and above. While item number 6 indicated that almost all of the respondents (90%) acquired knowledge about menstrual hygiene. Furthermore, the place they acquire the information with regards to menstrual hygiene can be noticed in item number 7 which showed that most of the respondents (50%) received the health information at home. Item number 8 showed that most of the respondents (70%) take their bath once daily during menstruation. With regards to types of absorbents used during menstruation, the results showed that the majority of the respondents (70%) used sanitary pads during their menstruation, this can be noticed in item number 9. Item number 10 indicated that the majority of respondents (51%) do change their absorbents one time daily during menstruation. Item number 11 showed a majority of the respondents (56%) employ the methods of throwing away their used absorbents during menstruation.

Table 3: Analysis of Research Questions, with regards to Menstrual Hygiene and Health Status.

S/N	Characteristics of Respondents	Frequency (F)	Percentage (100%)
12	Do you clean your hands and external genitalia after disposal?		
	Yes	90	90
	No	10	10
13	If yes what do you use		
	Water only	58	58
	Water and soap	37	37
	Water and antiseptic soap	05	05
14	Do you have rashes and itching on external genitalia?		
	Yes	80	80
	No	20	20
15	Do you notice coloured and smelly discharge?		
	Yes	60	60
	No	40	40
16	Do you experience pains during Urination		
	Yes	11	11
	No	89	89
17	Do you experience irregular menstrual cycle		
	Yes	35	35
	No	65	65
18	Do you notice the presence of blood in your Urine?		
	Yes	03	03
	No	97	97
19	Do you experience pains in the lower abdomen/pelvic area		
	Yes	35	35
	No	65	65

The results in Table 3 indicated that most of the respondents (90%) do wash their hands and external genitalia after disposal of the absorbents during menstruation, this can be noticed in item number 12. Item number 13 showed that the majority of the respondents (58%) used ordinary water in washing their hands and genitalia during menstruation. Item number 14 clearly showed that the majority of the respondents (80%) reported having rashes and itching in their genitalia during menstruation. Most of the respondents (60%) in item number 15 reported noticing coloured and smelly discharge, while most of the respondents (89%) in item number 16 reported not experiencing pains during Urination. Item number 17 showed that the majority of the respondents (65%) do not experience irregular menstrual cycles. Item number 18 indicated that most of the respondents (97%) didn't notice any presence of blood in their Urine. This concludes that only mega number of the respondents noticed the presence of blood in their Urine. Item number 19 showed that the majority of the respondents (65%) do not experience pains in their lower abdomen or pelvic area. This showed that a lesser number of the respondents do experience pains in their lower abdomen or pelvic area during menstruation.

In summary, the research study revealed that the majority of the respondents were taught about menstrual hygiene at home and then followed by school settings. More so, most of the respondents take their baths and change their absorbents only once a day. In addition, the respondents with poor menstrual hygiene practices admitted to having symptoms of urogenital infections.

Hypothesis Testing

Ho_1. There is no significant relationship between menstrual hygiene practices and the health status of female adolescents in Senior Secondary Schools in Zaria L.G.A.

Table 4: PPMCC showing the Relationship between Menstrual Hygiene and Health Status.

Variable	Menstrual Hygiene	Health Status
Menstrual Hygiene Person	1	.855
Correlation sig. (2 tailed)	100	.000
N		100
Health Status Person Correlation sig. (2 tailed)	.855	1
Correlation sig. (2 tailed)	.000	
N	100	100

Correlation is significant at 0.05 level (2.tailed)

Table 4 indicated that Pearson product-moment correlation coefficient (PPMCC) Statistics revealed that there is a significant effect of menstrual hygiene on health status in female adolescents in Senior Secondary Schools in Zaria Local Area of Kaduna State, which was statistically significant $r = 0.855$, $p < 0.05$. Therefore, the null hypothesis which states that there is no significant relationship between menstrual hygiene and health status in female adolescents in Senior Secondary Schools in Zaria Local Area of Kaduna State is hereby rejected. Therefore, much significant improvement was recorded in menstrual hygiene behaviour.

Discussion of Findings

The findings of the research study indicated that the majority of the respondents (64%) fall within the age range of 17-19 years. With regards to who takes care of the respondents, the results showed that the majority of them (64%) live with their parents. The findings of the study further showed that the majority of the respondents (50%) were taught about menstrual hygiene at home then followed by (40%) in school settings. The finding is in line with that of Cajetan, Ignatius and Chinagoron (2016) who reported that most adolescent Secondary School girls in Abakaliki education zone received menstrual information from undependable sources. The findings of the study showed that the majority of the respondents take their baths and change their absorbents once a day. The finding is in agreement with that of Habtegiorgis et al (2021) that among high school girls in Urban areas in northeastern Ethiopia, more than half of the respondents had good menstrual hygiene practices.

The findings further revealed that the majority of the respondents (70%) used sanitary pads as absorbent during their menstruation (period). The finding is in line with that of Lawal, Yusuf and Musa (2010) that the majority of the respondents used sanitary pads as absorbent during their menstruation, amongst adolescent school girls in Kano, Nigeria. The findings further evident that one-third (35%) of the respondents experience irregular menstrual cycles. On the other hand, Habtegiorgis (2021) reported that study participants (respondents) with regular menstruation cycles had better menstrual hygiene practices than their irregular counterparts, among high school girls in Urban areas in northeastern Ethiopia.

Conclusion

Based on the findings of the study, it was concluded that most of the respondents were taught about menstrual hygiene at home and then followed in school settings. Most of them take their baths and change their absorbents only once a day. Most of the respondents reported not experiencing pains in their lower abdomen/pelvic area during menstruation.

Recommendation

Based on the findings of the study, the following recommendations were made:

1. Menstrual hygiene should be emphasized with regard to teaching health education at Senior Secondary Schools, specifically girls' schools.
2. Seminars/workshops/sensitization to be given to school girls and adolescents with regard to poor menstrual hygiene which leads to Urogenital infections.
3. Regular bathing, regular washing of hands and genitalia, and regular changing of absorbents during menstruation should be encouraged among adolescent girls by parents and teachers to improve and maintain their health status.

References

Ahmed, R., & Yesmin, K. (2008). Breaking the Silence on Menstrual Hygiene in Bangla-dash. http://www.irc.n//page/39141. Accessed March 21, 2009.

Ashly, R., Blackwood, D., & Souter, N. (2005). Sustainable Disposal of Domestic Sanitary Waste. *Journal of Environmental Engineering*, *131*(2), 206-215.

C.D.C (2023). *Health Habits: Menstrual Hygiene*. https://www.worldbank.org/en/topic/water/brief

Cajetan I., I., Ignatius O. N., & Chinagorom. O. (2016) Menstrual Hygiene Information Among Adolescent Secondary School Girls in Abakaliki Education Zone of Ebony State. *Journal of Education and Practice*, *7*(31).

Crafts, T., & Fisher, J. (2012) Menstrual Hygiene in Ugandan Schools: An Investigation of Low-Cost Sanitary Pads. *Journal Water Sanitation and Hygiene for Department, 2*(1), 50-58.

Dasgupata, A., & Sakar, M. (2009). Menstrual Hygiene: How Hygienic is the Adolescent Girls? *Indian Journal of Community Medicine*, *33*(2), 77-80.

Gargs, A., Sharma, N., & Sahay, R., (2001). *Social-Cultural Aspects of Menstruation in Can Urban Slum in Delhi, Maulana Azad Medical College*. India: New Delhi.

Habtegiogis, Y., Sissay, T., Kloos, H., Malede, M., & Arefaynie, M. (2021). Menstrual Hygiene Practices Among High School Girls in Urban Areas in North-eastern Ethiopia: A Neglected Issue in Water, Sanitation, and Hygiene Research. Https://doi.org/10.1371/journal. Accessed February 2, 2024.

Jasper, C., Lee, T., & Bartram J. (2012). Water and Sanitation in Schools: A Systematic Review of Health and Educational Outcomes. *International Journal of Environmental Research and Public Health, 9*(8), 2772-2787.

Kaduna State Ministry of Education (2014). Annual School Census Report 2013/2014

Lawan, U. M., Yusuf Amongst Adolescents Schools in Kano, North-western Nigeria. *Africa Journal of Reproductive Health, 14*, 201-207.

Sanches, K. (2002). HIV/AIDS Information: Main Sources and Credibility Among University Students. International Conference on Aids, July 7-12. https://gatewayn/m.nih.gov.

Sommer M. (2015). Menstrual Hygiene Management Among Adolescent Girls in India Journal of BMS Public Health.

UNICEF (2019). *Menstrual Hygiene Practices*. www.unicef.org.

UNICEF (2023). *Menstrual Hygiene*. www.unicef.org.

MANAGEMENT VARIABLES AS DETERMINANTS OF RECREATIONAL FACILITIES DEVELOPMENT IN THE UNIVERSITY OF CALABAR, CROSS RIVER STATE, NIGERIA

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Abstract

This study assessed management variables as determinants of recreational facilities development in the University of Calabar. Three null hypotheses guided the study. Survey research design was adopted for the study. The study's population was drawn from the Faculty of Vocational and Science Education, which included one thousand five hundred and twenty (1,520) individuals. The stratified random sampling technique was used to select 244 respondents for the sample. The instrument used for data collection in the study was a structured questionnaire titled "Management Variables as Determinant of Recreational Facilities Development Questionnaire" (MVRFDQ) which was presented for face validation by experts in Test and Measurement and Tourism departments. Data were collected by physically administering copies of the instrument to the respondents. The data collected were statistically analyzed using one way analysis of variance and Pearson product moment correlation analysis at the .05 level of significance. The findings obtained from data analysis and hypothesis testing revealed that there was a significant influence of leadership style on recreational facilities development in the University of Calabar. Also, communication methods and policy implementation had a positive correlation with recreational facilities development. Based on the findings of the study, it is recommended among others that the management of the University of Calabar should be sensitized on the need to adopt more democratic approaches towards recreational facilities development within the campus.

Keywords: Recreational Facilities, Leadership Styles, Communication Methods, Policy Implementation

Introduction

Recreation plays a vital role in enhancing individuals' physical health and mental wellbeing by offering avenues for relaxation, stress reduction, and physical activity. The benefits of recreation are well-documented, including improved physiological and cognitive functioning, relaxation, stress and anxiety reduction, and boosted self-image and confidence. Recreational activities also contribute to a reduced risk of obesity and chronic disease, a stronger immune system, and increased life expectancy (Dawudu & Sholanke, 2023; Mustapha, Mohammad & Mohammed, 2022).

Moreover, recreation increases physiological and cognitive functioning, counterbalances the effects of stress, and provides opportunities for social interactions, leading to improved quality of life and functional ability (Delhey & Dragolov, 2016; Elliott, Gale, Parsons & Kuh, 2014). The psychological benefits of recreation include relief from stress, emotional relaxation, creative thinking, mental relaxation, and a sense of freedom, among others (Sönmez, 2023). Recreation also offers numerous social benefits, such as improved human relationships, positive relationships, friendship, empathy, understanding others' thoughts, sharing ideas, crime reduction, social bond promotion, senior support, youth development, education enhancement, and negative behavior deterrence (Yan, 2013).

However, Dawudu and Sholanke, (2023) noted that the culture of consciously engaging in recreational activities is very low in Nigeria. Limited recreational opportunities within the University of Calabar have led to growing concerns about student, administrative and academic staff wellness and satisfaction, signaling a pressing need for enhanced management practices in the development of campus facilities. Despite recognizing the importance of recreation, only a few facilities, notably the Senior Club, are operational. Unfortunately, access to the Senior Club is restricted to member staff only, posing a significant barrier to utilization for certain individuals. This exclusionary practice undermines the potential benefits of recreation and social interaction within the university community.

Hence, the overarching problem lies in the inadequate provision and inequitable access to functional recreational facilities within the University of Calabar community. This issue not only deprives individuals of opportunities for physical and mental well-being but also hampers social cohesion and inclusivity within the institution. Addressing these challenges requires a comprehensive examination of management variables, including leadership styles, financial management practices, and policy formulation, to facilitate the development and equitable access to recreational facilities for all members of the

university community. Given these considerations, this study seeks to examine the extent to which management variables act as determinants of recreational facilities development within the University of Calabar community.

Purpose of the study

The main purpose of this study was to investigate management variables as determinants of recreational facilities development in university of Calabar community. Specifically, this study sought to;

1. Explore how leadership style influences development of recreational facilities in the University of Calabar
2. Assess how communication method relates with the development of recreational facilities in the University of Calabar.
3. Evaluate how policies implementation relates to recreational facilities development in the University of Calabar.

Hypotheses

The following hypotheses were formulated to guide this study;

1. Leadership style does not significantly influence recreational facility development in University of Calabar.
2. There is no significant relationship between communication method and recreational facilities development University of Calabar.
3. There is no significant relationship between policies implementation and recreational facility development in University of Calabar

Literature review

Leadership styles and recreational facility development

Effective leadership is crucial in developing and managing recreational facilities in academic institutions, significantly impacting campus life and well-being (Johnson & Miller, 2015). Leadership styles, such as autocratic, participative, and laissez-faire, influence the success of these facilities. Autocratic leadership, characterized by centralized decision-making, can expedite decisions but may overlook stakeholder needs and preferences (Chemers, 2018). This highlights the importance of balancing leadership styles to ensure recreational facilities meet the community's needs, enhancing overall campus experience.

A 2016 study by Smith and Peterson found that neglecting students' and staff's needs leads to underutilized facilities. In contrast, participative leadership, which engages stakeholders, increases satisfaction and ownership (Bass & Riggio, 2016). This approach aligns with transformational leadership, inspiring higher performance. Participative leaders ensure facilities meet diverse needs, leading to higher utilization and well-being. Goleman (2018) supports this view, emphasizing collaboration. Avolio et al. (2019) describe laissez-faire leadership as hands-off, granting autonomy but risking inconsistencies. An integrated approach balances autocratic decisiveness, participative inclusiveness, and laissez-faire innovation, aligning with strategic objectives and meeting campus needs (Avolio et al., 2019). Williams and Davis (2017) emphasize balancing ideas with reality, and a multifaceted leadership model adapts styles to context.

Communication method and the development of recreational facilities

According to Davis and Lee (2024), recreational facilities in tertiary institutions are crucial for students' well-being and academic performance. These facilities provide spaces for physical activities, relaxation, and social interactions, enhancing the campus life experience. The evolution of communication technologies has transformed the planning, implementation, and utilization of these facilities. Effective communication is key in the initial stages, and the University of Calabar leverages digital, verbal, and written channels for robust stakeholder engagement. Online surveys, emails, and social media platforms gather insights into students' and faculty's needs, ensuring facilities align with community demands, as highlighted by Smith and Thomas (2021).

Effective stakeholder engagement and communication are crucial in university planning, particularly for recreational facilities (Davis & Lee, 2024). Modern communication technologies enhance project management, facilitating coordination among diverse teams and streamlining information exchange (Johnson, 2022). Platforms like Slack and Microsoft Teams optimize resource use, minimize delays, and ensure adherence to budgets and design specifications. Once facilities are operational, digital platforms collect user feedback, enabling continuous improvement and informed decision-making (Williams & Carter, 2023). Promotional strategies, such as digital signage, social media, and email newsletters, increase engagement and utilization (Davis & Lee, 2024). Effective communication ensures facilities meet evolving user needs, remain relevant, and maintain high satisfaction levels among the university community (Akorede, 2024; Sani, Akorede & Alabidun, 2024).

The effectiveness of communication methods, such as digital signage, social media updates, and email newsletters, also warrants quantitative analysis to determine the most effective strategies for increasing engagement (Davis & Lee, 2024).

Effective communication is crucial, influencing campus culture, perception, and trust (Johnson, 2022). It enhances the student experience, fosters a vibrant campus culture, and ensures optimal facility utilization. With a diverse student body and numerous amenities, consistent communication is pivotal at the University of Calabar, building trust and transparency between the administration and campus community.

Establishing communication channels is crucial to inform the University of Calabar community about available recreational facilities, including sports complexes, gymnasiums, swimming pools, and outdoor spaces. Regular updates via email, social media, bulletin boards, and posters can keep students, faculty, and staff informed about operating hours, events, and maintenance schedules. Additionally, a dedicated campus app or website can provide easy access to facility information, virtual tours, and booking procedures, enhancing convenience and encouraging participation (Davis & Lee, 2024). Effective communication can increase engagement and promote a vibrant campus culture, ultimately contributing to the well-being and academic success of students (Johnson, 2022).

Policy implementation and recreational facilities development

Universities rely on effective policy implementation and recreational facilities to shape the student experience (Cohen & Peachey, 2015). Policies ensure institutional efficiency, academic standards, and ethical conduct, while recreational facilities support physical and mental well-being. Successful policy implementation requires understanding institutional culture and engaging stakeholders (Kezar & Eckel, 2022). Adaptive policies address academic integrity, financial aid, and inclusivity, demanding continuous review and adjustment. Integrating policies promoting physical health with recreational facilities enhances student life. Comprehensive wellness programs, inclusive facilities, and student feedback mechanisms foster an environment responsive to student needs (Ekanem, 2016). Effective governance ensures recreational services meet evolving student preferences, aligning with institutional policies and values. The University of Calabar prioritizes diverse recreational opportunities, aligning with research that highlights the importance of recreation for mental health and academic performance (Vankim et al., 2015). Policies govern funding for facilities, ensuring access to physical activity and leisure. Student Affairs encourages recreational clubs, fostering belonging and leadership development (Renn, 2018). Involvement in extracurricular activities correlates with academic achievement and retention (Pike et al., 2020). Policies prioritize safety, inclusivity, and sustainability, ensuring a safe environment and environmentally responsible practices (Jones, 2021; UNICAL, 2023). Research gaps include long-term policy impacts, comparative analyses, and sustainability of recreational practices, offering opportunities for further study to enhance policy implementation and facility development.

Methods

The survey research design was used for the study. According to Isangedighi (2012), survey research design is a research approach that attempts to systematically collect data of which the researcher has no control over the variables. Such data could be collected through the use of written or oral data collection instruments. The study's population was drawn from the Faculty of Vocational and Science Education in the University of Calabar, Cross River State. It included one thousand five hundred and twenty (1,520) individuals across Three (3) departments, encompassing students, administrative staff, and academic staff (Lecturers). This data is based on information provided by the Faculty Officer of Vocational and Science Education University of Calabar Cross River state (Faculty Office, 2024).

The stratified random sampling technique was used to select 244 respondents that were randomly selected as shown in table 1. In each department used for the study, the researcher obtained the names of students and both academic and non-teaching staff from the Faculty Officer, arranged them alphabetically and every fifth name representing twenty percent of each category of respondent was selected for the study. Those selected made up the sample used for the study. This represents twenty percent of the population.

Table 1: Sample Distribution by Departments

S/N	Name of Departments	Students	Staff	Sample
1	Human Kinetics and Health Education	324	22	69
2	Science Education	408	25	87
3	Vocational Education	416	24	88
	Total	**1148**	**71**	**244**

Source: Fieldwork, 2024

The instrument used for data collection in the study was a structured questionnaire titled “Management Variables as Determinant of Recreational Facilities Development Questionnaire” (MVRFDQ). The instrument was designed using four-point Likert scale of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD). It contained twenty items measuring variables of the study. Items 1-5 measured Communication methods, 6-10 measured Policy implementation and 11-

20 measured recreational facilities development. To ensure that the items selected for inclusion in the questionnaire were capable of obtaining relevant responses from the respondents, the researchers presented the questionnaire to a Lecturer in Tourism and two others in Test and Measurement for face and content validity. Through this process, some items were reframed; the scale was adjusted while a few others were removed to ensure that the questionnaire was capable of obtaining relevant data from respondents. Copies of questionnaire were administered and retrieved the direct delivery method. The researchers visited all three departments within the Faculty of Vocational and Science Education selected for the study, obtaining permission from each department's Head before engaging students, administrative, and academic staff for data collection.

Results

Hypothesis One

The first hypothesis stated that there was no significant influence of leadership style on recreational facilities development in the University of Calabar. The independent variable in this hypothesis is leadership style while the dependent variable was recreational facilities development. One-way analysis of variance statistical tool was used for data analysis. The result of this analysis is presented in Table 2.

Table 2: One-way analysis of variance of the influence of leadership style on recreational facilities development in the University of Calabar, Cross River State

Leadership style	N	$\overline{X}$	SD		
Autocratic	82	22.69	3.31		
Democratic	144	27.74	3.71		
Laissez-faire	18	20.53	3.22		
Source of variance	SS	Df	MS	F	P.value
Between group	191.255	2	95.628	43.714*	.000
Within group	804.212	241	1.658		
Total	995.467	243			

*Significant at .05 level, df= 2, 241.

The result of analysis of data presented in Table 2 revealed that the calculated F-value of 43.714 is higher than the p.value of .000 at 0.05 level of significance with 2 and 241 degree of freedom. This implied that the null hypothesis was rejected. As a result, there is a significant influence of leadership style on recreational facilities development in the University of Calabar.

Since leadership style has a significant influence on recreational facilities development, a post hoc analysis was employed using Fishers' Least Significant Difference (LSD analysis to determine where the significant difference among the various leadership styles was highest in terms of mean difference. The result of the analysis is presented in Table 3.

Table 3: Fishers' Least Significant Difference (LSD) analysis of the influence of leadership style on recreational facilities development in the University of Calabar

Leadership style	(J)	Mean Difference	Std. Error	Sig.
Autocratic	Democratic	1.24041*	.18036	.000
	Laissez-faire	-.02401	.19187	.900
Democratic	Autocratic	-1.24041*	.18036	.000
	Laissez-faire	-1.26442(*)	.12925	.000
Laissez-faire	Autocratic	.02401	.19187	.900
	Democratic	1.26442*	.12925	.000

*Mean difference is significant at .05 level.

Fisher's Least Significant Difference (LSD) was used to further identify where significant difference among the various leadership styles was highest in relation to recreational facilities development was highest in terms of mean difference. The result shows that the mean difference between autocratic and democratic leadership style was 1.24041. The mean difference

between autocratic and laissez-faire leadership style was -.02401. The mean difference between democratic and laissez-faire leadership style was 1.26442. From the result presented in Table 3, the mean difference is highest between democratic and laissez-faire leadership style (1.26442) while the least mean difference is between autocratic and laissez-faire leadership style groups (.02401).

Hypothesis Two

The second hypothesis of the study states that communication method does not significantly relate with recreational facilities development in the University of Calabar. The independent variable in this hypothesis is communication method while the dependent variable is recreational facilities development in the University of Calabar. Pearson product moment correlation statistical tool was used for data analysis. The result of this analysis is presented in Table 4.

Table 4: Pearson product moment correlation analysis of the relationship between communication method and recreational facilities development in the University of Calabar, Cross River State (N = 244)

Variables	Σx Σy	Σx^2 Σy^2	Σxy	Cal.r	P.value
Communication method	3592	4158			
			5784	0.435*	0.000
Recreational facilities development	5922	6639			

*Significant at 0.05; df = 242

The result of analysis of data presented in Table 4 showed that the calculated r-value of 0.435 is higher than the p.value of 0.000 at 0.05 level of significance with 242 degree of freedom. This implied that the null hypothesis is rejected. Therefore, there was a significant relationship between communication method and recreational facilities development in the University of Calabar, Cross River State.

Hypothesis Three

The third hypothesis of the study stated that there is no significant relationship between policy implementation and recreational facilities development in the University of Calabar. The independent variable in this hypothesis is policy implementation while the dependent variable is recreational facilities development. Pearson product moment correlation statistical tool was employed for data analysis. The result of the analysis is presented in Table 5.

Table 5: Pearson product moment correlation analysis of the relationship between policy implementation and recreational facilities development in the University of Calabar, Cross River State (N = 244)

Variables	Σx Σy	Σx^2 Σy^2	Σxy	Cal.r	P.value
Policy implementation	3289	3874			
			5592	0.373*	0.000
Recreational facilities development	5922	6639			

*Significant at 0.05; df = 242

The result of analysis of data presented in Table 5 showed that the calculated r-value of 0.435 is higher than the p.value of 0.000 at 0.05 level of significance with 242 degree of freedom. This implied that the null hypothesis is rejected. Therefore, there is a significant relationship between policy implementation and recreational facilities development in the University of Calabar, Cross River State.

Discussion of findings

Leadership Style and Recreational Facilities Development

The study established a significant influence of leadership style on recreational facilities development at the University of Calabar. This finding suggests that the leadership approach adopted by university administrators can either enhance or hinder the development of such facilities. Democratic leadership was associated with better outcomes in recreational facilities development compared to autocratic and laissez-faire styles. This aligns with Johnson and Miller (2015**)**, who emphasized the role of participative leadership in fostering inclusive decision-making processes that lead to campus development.

Additionally, the study resonates with Williams and Davis (2017), who argued that universities should blend leadership styles to balance authority with inclusivity, ensuring that stakeholders students, academic staff, and administrators contribute to decision-making regarding recreational facilities. The results further support the multifaceted leadership model of Avolio et al. (2019), which recommends situational adaptation of leadership styles to maximize institutional development. Therefore, fostering an adaptive leadership model, integrating both democratic and structured leadership, may be an effective strategy for improving recreational facilities development.

Communication Method and Recreational Facilities Development

The study also found a significant relationship between communication methods and the development of recreational facilities. Effective communication facilitates better planning, implementation, and maintenance of recreational facilities by ensuring that stakeholders remain informed and engaged in the process. A two-way communication approach that integrates feedback mechanisms leads to more inclusive and sustainable development.

This finding is consistent with Davis and Lee (2024), who argue that institutions that implement structured communication strategies are more likely to achieve their developmental goals. Additionally, Williams and Carter (2023) highlighted the importance of digital communication tools in gathering real-time feedback, allowing management to respond to the evolving needs of students and staff. The research underscores the need for universities to establish multiple communication channels including emails, online surveys, social media, and suggestion boxes to ensure effective information dissemination and feedback collection. Improved communication not only enhances facility utilization but also builds trust between administrators and the university community.

Policy Implementation and Recreational Facilities Development

The findings further revealed a significant relationship between policy implementation and recreational facilities development. This suggests that well-defined policies, when effectively executed, contribute positively to the expansion and maintenance of recreational facilities. However, the study identified a gap in policy-driven initiatives aimed at recreational facilities development at the University of Calabar. This aligns with Ekanem (2016**)**, who observed that higher education institutions often lack specific policies dedicated to recreational infrastructure. Similarly, Pike et al. (2020) found that universities that actively implement policies supporting recreation experience higher student engagement, improved mental health, and greater academic success.

The lack of effective policy implementation at the University of Calabar may hinder the expansion of recreational facilities, thereby limiting student engagement in extracurricular activities. Research highlights that universities with well-structured recreational policies experience improved student retention rates and academic performance (Johnson, 2022). This study reinforces the need for policies that prioritize recreational development, emphasizing its role in student well-being, campus life enrichment, and the overall university experience. Policymakers should integrate recreational development goals into broader institutional strategies to ensure consistent and sustainable improvements.

Conclusion

The essence of this study was to investigate and present findings on management variables as determinant of recreational facilities development in the University of Calabar, Cross River State. The findings obtained from analysis of data and testing of hypotheses in the study showed that there was a significant influence of leadership style on recreational facilities development. The finding also revealed that there was a significant relationship between communication method, policy implementation and recreational facilities development in the University of Calabar.

Recommendations

Based on the findings obtained from analysis of data and testing of hypotheses in the study, the researcher made the following recommendations:

1. Adoption of a Participatory Leadership Approach: The university's management should embrace a more participatory leadership model that fosters inclusivity and collective decision-making regarding recreational facilities development. A democratic leadership approach should be encouraged at all levels of administration, allowing students, academic staff, and administrative personnel to actively contribute ideas and recommendations. Leadership workshops and training programs should be conducted to sensitize university management on the impact of leadership styles on infrastructural development.
2. Strengthening Communication Channels for Facility Development: Effective communication mechanisms should be implemented to ensure transparency and engagement in decision-making processes related to recreational facilities. The university should establish a structured feedback system, digital platforms (e.g., university websites, student portals, and mobile applications), and periodic town hall meetings to collect and address concerns about

recreational facilities. Additionally, a dedicated recreational facilities committee should be set up to oversee communication and feedback between students and the management.

3. Policy Formulation and Implementation for Recreational Development: The university administration should develop and enforce policies specifically aimed at recreational infrastructure development. This includes integrating recreational facilities into the university's strategic development plan, allocating designated funding for recreational projects, and ensuring compliance with national and international standards for university recreation. Existing policies should be reviewed to ensure that they provide clear guidelines on facility maintenance, upgrades, and expansion.
4. Collaboration and External Funding Opportunities: To address financial constraints, the university should seek collaborations with corporate organizations, sports federations, and government agencies to support the development and maintenance of recreational facilities. Partnerships with sports tourism agencies, international donor organizations, and alumni networks can provide funding for facility upgrades, sports equipment procurement, and professional facility management.
5. Regular Monitoring and Evaluation of Recreational Facilities: A system should be established for periodic evaluation and maintenance of recreational facilities to ensure they remain functional and meet the needs of the university community. The appointment of a dedicated Recreational Facilities Development Committee (RFDC), composed of representatives from the student body, faculty, and administrative staff, would ensure continuous assessment and timely intervention in facility improvements.

References

Akorede, S. N. (2024). Assessment of client satisfaction with healthcare service provision in federal tertiary institutions in Kaduna State, Nigeria. *ABUTH International Journal of Physiotherapy & Health Sciences, 24*(2), 27-33.

Avolio, B. J., Walumbwa, F. O., & Weber, T. J. (2019). Leadership: Current theories, research, and future directions. *Annual Review of Psychology*, *60*, 421-449.

Bass, B. M., & Riggio, R. E. (2016). *Transformational Leadership* (2nd ed.). Lawrence Erlbaum Associates Publishers.

Chemers, M. (2018). Leadership research and theory: A functional integration. Group Dynamics: *Theory, Research, and Practice, 4*(1), 27-43.

Cohen, A., & Peachey, J. W. (2013). The making of a community in sport and business: A comparative analysis of organizational dynamics. *Sport Management Review*, *16*(3), 385-398.

Dawudu, S. U. & Sholanke, O. B. (2023). Exploring the impacts of facility quality on recreational sports participation: A quantitative analysis. *Sport Management Review, 13*(2), 121–134.

Delhey, J., & Dragolov, G. (2016). Happier together. Social cohesion and subjective well-being in Europe. *International Journal of Psychology, 51*(3), 163-176.

Ekanem, I. A. (2016). Information and Communication Technology (ICT) Integration in Nigerian University Libraries: Problems and Prospects. *Journal of Educational and Social Research, 6*(3), 37-45.

Elliott, J., Gale, C. R., Parsons, S., & Kuh, D. (2014). Neighbourhood cohesion and mental wellbeing among older adults: A mixed methods approach. *Social Science Media*, *107*, 44–51.

Goleman, D. (2018). Leadership that gets results. *Harvard Business Review*, *78*(2), 78-90.

Johnson, A., & Miller, B. (2015). The impact of participative leadership on university recreation facility design. *Journal of University Administration*, *34*(2), 22-30.

Johnson, D. (2022). Communication Technologies in University Facility Management. *Journal of Higher Education Policy and Management*, *44*(3), 245-263.

Jones, L. K. (2021). Campus Safety and recreation: policies and practices for student well-being. *Journal of Student Affairs*, *30*(2), 77–94.

Kezar, A., & Eckel, P. (2022). The effect of institutional culture on change strategies in higher education: Universal principles or culturally responsive concepts? *The Journal of Higher Education, 73*(4), 435-460.

Mustapha, I. O., Mohammad, A. Y., & Mohammed, B. B. (2022). Assessment of the Impact of Participation in Recreational Activities on Mental Health of Participants in Abuja. *Environmental Technology and Science Journal*, *12*(2), 91-102.

Pike, G. R., Kuh, G. D., & Massa-McKinley, R. (2020). Examining the Impact of Student Involvement on College Outcomes: An Organizational Perspective. *Research in Higher Education, 61*(1), 31–57.

Renn, K. A. (2018). Student Organizations and the Development of Social Capital: A Longitudinal Analysis. *Journal of Higher Education*, *89*(4), 559–583.

Sani, M., Akorede, S. N., & Alabidun, M. (2024). Assessment of client utilization of healthcare service provision in federal tertiary institutions in Kaduna State, Nigeria. *ABUTH International Journal of Physiotherapy & Health Sciences, 24*(2), 41-47.

Smith, J., & Peterson, M. (2016). Autocratic leadership in university management: A case study on facility development. *Educational Management Review*, *21*(1), 11-19.

Smith, J., & Thomas, L. (2021). Effective Stakeholder Engagement in University Planning. *Journal of Educational Administration and Policy*, *34*(2), 112-130.

Sönmez, N. K. (2023). The relationship between participation in recreational activities and subjective well-being: An application on academics. *Trakya Universities Sosyal Bilimler Dergisi, 25*(1), 235-260.

University of Calabar (UNICAL). (2023). *Campus Sustainability Plan*. https://www.unical.edu.ng/sustainability

Vankim, N. A., Nelson, T. F., & Fletcher, D. A. (2015). Effect of Park Renewal on Park-based Physical Activity and Park Environment. *Journal of Physical Activity and Health, 10*(7), 920–932.

Williams, E., & Carter, S. (2023). Leveraging Digital Feedback for Facility Management. *International Journal of Sports and Recreation*, *39*(1), 50-68.

Williams, S., & Davis, L. (2017). Laissez-faire leadership and university facility innovation. *Journal of Educational Leadership and Policy*, *29*(4), 45-60.

Yan, W. (2013). Correlations of consumers, leisure motivation and leisure value with leisure benefits ─a case study on Taiwan International orchid show. *International Journal of Academic Research in Business and Social Sciences*, *3*(3), 268-280.

ASSESSMENT OF ACCESSIBILITY AS A FACTOR INFLUENCING THE UTILIZATION OF PRIMARY HEALTH CARE FACILITIES AMONG PREGNANT WOMEN IN BIRNIN KEBBI LOCAL GOVERNMENT AREA, KEBBI STATE

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Abstract

This study assesses the accessibility as a factor influencing the utilization of primary health care facilities among pregnant women in Birnin Kebbi Local Government Area, Kebbi State. one objectives and one research questions were development and answered. descriptive research design of survey type was employed in this study. The population of the study comprised of 21,450 pregnant women in Birnin Kebbi. The sample size for this study is 200 pregnant women in Birnin Kebbi Local Government Area of Kebbi State selected using multi-stage sampling procedure. Self-developed questionnaire was used as instrument for data collection. Descriptive statistics was used to answered the research questions of the study. The findings of the study revealed that accessibility is a factor influencing the utilization of primary health care facilities among pregnant women in Birnin Kebbi Local Government Area of Kebbi State. Based on the findings of this study, it was concluded that the utilization of primary health care facilities among pregnant women in Birnin Kebbi Local Government Area of Kebbi State is influenced by the accessibility of these facilities. It is therefore, recommended that the government establish additional primary health care facilities in underserved areas to reduce travel distances for pregnant women. Enhancing public transportation systems and providing subsidized or free transport services specifically for pregnant women accessing health care facilities should be prioritized. Furthermore, implementing community outreach programs, such as mobile clinics, can help serve remote or hard-to-reach areas effectively.

Key words: Accessibility, Factor Influencing, Utilization, Primary Health Care, Facilities Pregnant Women

Introduction

Primary health care facilities are the cornerstone of a robust health system, serving as the first point of contact between individuals and the healthcare system. These facilities provide comprehensive, accessible, and community-based care that meets the essential health needs of the population (Idris, Sambo, & Ibrahim, 2021). They play a crucial role in preventing and managing common illnesses, offering services such as vaccinations, maternal and child health care, treatment for chronic diseases, and health education. By focusing on prevention and early intervention, primary health care facilities help reduce the burden on hospitals and specialist services (Ibrahim & Yahaya, 2021).

Abdullahi and Usman (2022) reported that the services provided by primary health care facilities are often tailored to the needs of the local community. This community-centered approach ensures that care is culturally appropriate and accessible to all, including vulnerable populations. These facilities are typically staffed by a team of healthcare providers, including general practitioners, nurses, and sometimes community health workers, who work collaboratively to deliver a wide range of services. The integration of health promotion, disease prevention, and treatment within the community setting fosters a holistic approach to health, addressing both the physical and social determinants of health (Ejembi, et al, 2024).

Accessibility plays a crucial role in the utilization of primary health care (PHC) facilities in Nigeria, particularly for vulnerable populations such as pregnant women. Geographic barriers, including long distances to health facilities and inadequate transportation infrastructure, significantly hinder access to essential maternal and child health services. According to Akinyemi et al. (2021), many rural communities in Nigeria lack well-equipped PHC centers within a reasonable distance, forcing residents to travel long hours to access medical care. Additionally, poor road conditions and high transportation costs further discourage health-seeking behavior, leading to delayed or missed antenatal visits, skilled birth attendance, and immunizations (Adeloye et al., 2017). As a result, many pregnant women in rural areas turn to traditional birth attendants or home-based care, increasing the risks of maternal and neonatal complications.

Financial constraints and socio-cultural factors also contribute to the underutilization of PHC services in Nigeria. High out-of-pocket expenses for consultations, medications, and diagnostic tests make health care unaffordable for low-income households (Okeke et al., 2020). Furthermore, cultural beliefs, misconceptions, and low literacy levels reduce awareness of the importance of seeking skilled medical care during pregnancy and childbirth (Babalola & Fatusi, 2009). In some communities, male decision-makers may restrict women's access to health care due to traditional norms, further limiting their ability to utilize available services. Strengthening PHC accessibility in Nigeria requires targeted interventions, including improved infrastructure, subsidized health care costs, and community education programs to promote the benefits of timely medical care. The utilization of primary health care (PHC) facilities by pregnant women is crucial for ensuring safe pregnancies and reducing maternal and infant mortality. However, in Birnin Kebbi Local Government Area of Kebbi State, there appears to be a significant gap in the utilization of these facilities by pregnant women.

Akinyemi, and Owoaje (2022) conducted a study explores how accessibility affects the utilization of PHC services among pregnant women in Northern Nigeria. The study included 400 pregnant women across five PHC centers, selected through stratified random sampling. The results of the study revealed that low accessibility significantly decreases ANC attendance and skilled birth deliveries. Approximately 58% of respondents reported avoiding PHC visits due to long travel distances, while 47% cited high transportation costs as a deterrent. Interviews with health workers also highlighted inconsistent service availability and long wait times as contributing factors. The study recommends community-based interventions, mobile health clinics, and improved road networks to enhance maternal health service utilization

The researcher observed that many pregnant women in Birnin Kebbi reside in remote areas, far from the nearest primary health care (PHC) centers, making it challenging for them to seek timely medical care. Factors such as lack of transportation, poor road networks, and financial constraints further exacerbate this issue, leading to delayed or inadequate utilization of health services. Consequently, some pregnant women may resort to traditional birth attendants or self-care, increasing the risk of complications. The researcher noted that many women may not fully understand the importance of regular antenatal visits, immunizations, and skilled birth attendance, all of which are essential for their well-being and that of their unborn children. Cultural beliefs, misconceptions, and low literacy levels contribute to this lack of awareness, further hindering the utilization of available health care services. Against this backdrop, the researcher aimed to examine accessibility as a key factor influencing the utilization of primary health care facilities among pregnant women in Birnin Kebbi Local Government Area of Kebbi State.

Objective of the Study

1. The objective of this study is to assess whether accessibility is a factor affecting utilization of primary health care facilities among pregnant women in Birnin Kebbi Local Government Area of Kebbi State

Research Question

1. Is accessibility a factor influencing the utilization of primary health care facilities among pregnant women in Birnin Kebbi Local Government Area of Kebbi State?

Methodology

A descriptive research design of survey type will be employed in this study. Descriptive research is a type of research that describes a population, situation, or phenomenon that is being studied. It focuses on answering the how, what, when, and where questions. a research problem rather than the why (McCombes, 2020). This design will be choosing to allow the researcher to describe factors affecting utilization of primary health care facilities among pregnant women in Birnin Kebbi Local Government Area of Kebbi State in order to make generalisations in the study area.

The population of the study area is twenty-one thousand, four hundred and fifty (21,450) pregnant women in Birnin Kebbi. The population of Birnin Kebbi, Nigeria's metro area, is projected to be 429,000 in 2024. This is a 4.13% increase from 2023, when the population was 412,000 (United Nations and World Population Prospects, 2024). According to WHO (2020), pregnant women represent approximately 5% of the total population. 5% out of 429,000 is 21,450.

The sample size for this study is two hundred (200), which was selected among pregnant women in Birnin Kebbi Local Government Area, Kebbi State. The sampling procedure for this study consist of multi-stage sampling techniques. Therefore, the stages for sampling in this study were as follows: Step I: Birnin Kebbi Local Government Area, Kebbi State are clustered in ten (10) wards; Step II: A simple random sampling technique was used to select six (6) wards out of 10 wards in Birnin Kebbi Local Government Area; Step III: A purposive sampling technique was also be used to select 1 (1) health facility with ANC services from each selected 6 wards; Stage IV: The proportionate sampling technique was used to select ten percent (10%) of the respondents as the sample size from each selected health facility; and Stage V: The respondents in each health facility was selected using the availability sampling technique.

Table 1: Proportionate Distribution of Respondents

Simple Random Sampling Selected Wards	Purposive Sampling Selected Health Facilities	Population	Proportionate Sampling 10%
Kanya	PHC Kanya	310	31
Ribah	PHC Ribah	270	27
Yelwa Central	PHC Yelwa Central	440	44
Rafin Zuru	PHC Rafin Zuru	313	31
Tadurga	PHC Tadurga	330	33
Rikoto	PHC Rikoto	320	32
Total		**1983**	**200**

A researcher's designed structured questionnaire titled "Accessibility as a Factor Influencing the Utilization of Primary Healthcare Facilities among Pregnant Women Questionnaire" (AFIUPHFPWQ) was used to obtain data from the selected respondents. The questionnaire consists of two (2) sections (sections A and B); section A consists of 5-items on socio-demographic characteristics of the respondents; and section B consists of 5-items on accessibility of primary health care facilities. A four-point modified Likert scale will score as follows: strongly Agreed, 4 points. Agreed 3 points, disagreed 2 points, and strongly disagreed 1 point at a decision mean of 2.50.

An introductory letter was submitted to the office of the Director of Primary Health Care in Birnin Kebbi Local Government Area, for permission to carry out the study. The office was also given another introductory letter to the person in charge of the selected health facilities in Birnin Kebbi Local Government Area. Following the receipt of the letter of approval, the researcher sent a letter to the selected health facilities prior to conducting the study. Two hundred (200) copies of the questionnaire were administered to the participants in their respective ANC health facilities with help of four (4) research assistants were trained on how to administer and retrieve the instruments and the exercise lasted for 2-weeks.

Simple frequencies and percentages were used to organize and described the socio-demographic characteristics of the respondents, descriptive statistic of mean score and standard deviation was used to answered the research questions at 2.50 decision mean

Result

Research Question: Is accessibility a factor influencing the utilization of primary health care facilities among pregnant women in Birnin Kebbi Local Government Area of Kebbi State?

Table 2: **Accessibility of primary health care facilities among pregnant women in Birnin Kebbi Local Government Area of Kebbi State**

S/N	Items	SA	A	D	SD	Total
1.	Accessibility significantly impacts the utilization of primary health care facilities, with proximity and ease of transportation playing crucial roles.	61 (30.0%)	99 (49.5%)	32 (16.0%)	08 (4.0%)	200 (100%)
2.	Geographic location, including rural or urban settings, often determines how accessible a health care facility is to the local population.	63 31.5%)	91 (45.5%)	36 (18.0)	10 (5.0%)	200 (100%)
3.	Physical barriers, such as poor road infrastructure, can hinder individuals from reaching primary health care services.	67 (33.5%)	93 (46.5%)	34 (17.0%)	06 (3.0%)	200 (100%)
4.	Socioeconomic factors, including the cost of travel and time required, can limit access to primary health care facilities.	68 (34.0%)	93 (46.5%)	31 (15.5%)	08 (4.0%)	200 (100%)
5.	Availability of services, such as operating hours and emergency care, further affects the perceived accessibility and utilization of these facilities.	67 (33.5%)	93 (46.5%)	34 (17.0%)	06 (3.0%)	200 (100%)

The findings presented on Table 2 shows the frequencies count and percentages of responses regarding the accessibility a factor influencing the utilization of primary health care facilities among pregnant women in Birnin Kebbi Local Government Area of Kebbi State. The table demonstrates that the out of 200 respondents 08 (4.0%) strongly disagree, 32(16.0%) disagree but majority of respondents 99(49.5%) agree while 61(30.0%) strongly agree with the accessibility significantly impacts the utilization of primary health care facilities, with proximity and ease of transportation playing crucial roles.

The table also indicated that the out of 200 respondents 10(5.0%) strongly disagree, 36(18.0%) disagree but majority of respondents 91(45.5%) agree and 63(31.5%) strongly agree with the geographic location, including rural or urban settings, often determines how accessible a health care facility is to the local population. The table also revealed that the out of 200 respondents 06 (3.0%) strongly disagree, 34(17.0%) disagree but majority of respondents 93(46.5%) agree while 67(33.5%) strongly agree with the physical barriers, such as poor road infrastructure, can hinder individuals from reaching primary health care services.

The table also revealed that the out of 200 respondents only 08 (4.0%) strongly disagree, 31(15.5%) disagree but majority of respondents 93(46.5%) agree and 68(34.0%) strongly agree with the socioeconomic factors, including the cost of travel and time required, can limit access to primary health care facilities. The table also shows that the out of 200 respondents only 06 (3.0%) strongly disagree, 34(17.0%) disagree but majority 93(46.5%) agree and 67(33.5%) strongly agree with the availability of services, such as operating hours and emergency care, further affects the perceived accessibility and utilization of these facilities.

Discussions

The outcome of this study revealed that accessibility is a factor influencing the utilization of primary health care facilities among pregnant women in Birnin Kebbi Local Government Area of Kebbi State. This is in line with study conducted by Akinyemi, and Owoaje (2022) how accessibility affects the utilization of PHC services among pregnant women in Northern Nigeria and the results of the study revealed that low accessibility significantly decreases ANC attendance and skilled birth deliveries. Approximately 58% of respondents reported avoiding PHC visits due to long travel distances, while 47% cited high transportation costs as a deterrent. Interviews with health workers also highlighted inconsistent service availability and long wait times as contributing factors. The study recommends community-based interventions, mobile health clinics, and improved road networks to enhance maternal health service utilization.

Conclusion

Based on the findings of this study, it was concluded that the utilization of primary health care facilities among pregnant women in Birnin Kebbi Local Government Area of Kebbi State is influenced by the accessibility of these facilities.

Recommendation

Based on the findings of this study, it is recommended that the government establish additional primary health care facilities in underserved areas to reduce travel distances for pregnant women. Enhancing public transportation systems and providing subsidized or free transport services specifically for pregnant women accessing health care facilities should be prioritized. Furthermore, implementing community outreach programs, such as mobile clinics, can help serve remote or hard-to-reach areas effectively.

REFERENCES

Abdullahi, H. M., & Usman, N. O. (2022). Attitude and utilization of postnatal care services among women of reproductive age in the rural and urban communities in Northern Nigeria. *Calabar Journal of Health Sciences*, 6(2), 72-79.

Adeloye, D., David, R. A., Aderemi, A. V., Iseolorunkanmi, A., & Ezechi, O. (2017). Health workforce and governance: The crisis in Nigeria. *Human Resources for Health*, 15(1), 20-32.

Akinyemi, J. O., & Owoaje, E. E. (2022). The accessibility affects the utilization of PHC services among pregnant women in Northern Nigeria. *African Journal of Reproductive Health*, 26(4), 112-125.

Akinyemi, J. O., Adedini, S. A., & Odimegwu, C. (2021). Distance to health facilities and maternal health service utilization in Nigeria: Evidence from the 2018 Demographic and Health Survey. *BMC Health Services Research*, 21(1), 1-13.

Babalola, S., & Fatusi, A. (2009). Determinants of use of maternal health services in Nigeria—Looking beyond individual and household factors. *BMC Pregnancy and Childbirth*, 9(5), 43-55.

Ejembi, C. L., Alti-Muazu, M., Chirdan, O., Ezeh, H. O., Sheidu, S., & Dahiru, T. (2024). Utilization of maternal health services by rural Hausa women in Zaria environs, northern Nigeria: Has primary health care made a difference? *Journal of Community Medicine and Primary Health Care*, 16(2), 47-54.

Ibrahim, S. M., & Yahaya, S. (2021). Health facility accessibility and maternal health outcomes in Northern Nigeria: A socio-spatial analysis. *PLOS One,* 16(5), 25-45.

Idris, S. H., Sambo, M. N., & Ibrahim, M. S. (2021). Barriers to utilisation of maternal health services in a semi-urban community in northern Nigeria: The clients' perspective. *Nigerian Medical Journal,* 54(1), 27-32.

McCombes, S. (2020). *How to write a research methodology*. Scribbr. Retrieved from https://www.scribbr.com/methodology/

Okeke, E. N., Wagner, Z., & Abubakar, I. (2020). Maternal health care seeking behavior in Nigeria: The role of affordability, availability, and accessibility. *Health Policy and Planning*, 35(1), 1-10.

United Nations, Department of Economic and Social Affairs, Population Division. (2024). *World Population Prospects 2024: Summary of Results*. Retrieved from https://population.un.org/wpp/assets/Files/WPP2024_Summary-of-Results.pdf

World Health Organization. (2020). *Women of reproductive age (15-49 years) population (thousands)*. Retrieved from https://platform.who.int/data/maternal-newborn-child-adolescent-ageing/indicator-explorer-new/mca/women-of-reproductive-age-%2815-49-years%29-population-%28thousands%29

ASSESSMENT OF THE PLIGHT OF NATIONAL HEALTH INSURANCE SCHEME AMONG FEDERAL CIVIL SERVANT ENROLLEES IN KEBBI STATE NIGERIA

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ABSTRACT

The study assessed the plight of NHIS among Federal civil servant enrollees in Kebbi State, Nigeria. To achieve this purpose, ex-post facto research design was used. The population for this study was eight thousand, one hundred (8, 100) federal civil servants in Kebbi State. The sample size of 380 was selected using Yamane's equation. The instrument for data collection was a structured questionnaire developed by the researcher and it was validated by five (5) experts in the Department of Human Kinetics and Health Education, and Nursing Sciences, Ahmadu Bello University Zaria. The Descriptive statistics of frequency and simple percentages were used to analyze the demographic characteristics of the respondents. Inferential statistics of one-sampled t-test and ANOVA were used to test the stated hypotheses at a 0.05 level of significance. The result revealed that there is a significant plight of NHIS services by NHIS ($t = 53.82$, $p = 0.000$); and there is a significant difference in the plight of NHIS services among different institutions ($f = 42.029$, $p = 0.000$). Based on the results, the study concluded that NHIS services face numerous plight among federal civil servant enrollees in Kebbi State; and the plight of NHIS services differ among various institutions in Kebbi State. Based on the conclusion, the study recommends improvements in addressing the NHIS-related plight of federal civil servants in Kebbi State, and more improvements and motivation for NHIS facilities and equipment to sustain the scheme and encourage positive attitudes towards its services.

Keywords: Assessment, Plight of, NHIS, Federal Civil Servant, Enrollees

Introduction

Health insurance is a critical component of healthcare systems worldwide, designed to provide financial protection against the high costs of medical care and improve access to quality health services. The concept of health insurance has evolved significantly over the past century, becoming an essential mechanism for achieving universal health coverage (UHC) - a key target of the United Nations Sustainable Development Goals (SDGs) (World Health Organization [WHO], 2021). Despite its importance, the implementation and effectiveness of health insurance schemes vary greatly across different regions and countries, with many nations still struggling to achieve comprehensive coverage and ensure equitable access to healthcare services.

Globally, the landscape of health insurance is diverse, with countries adopting various models ranging from single-payer systems to multi-payer schemes and hybrid approaches. According to the WHO (2021), approximately 930 million people worldwide spend at least 10% of their household budget on healthcare, with nearly 90 million people pushed into extreme poverty due to out-of-pocket health expenses annually. In high-income countries, health insurance coverage is generally widespread, with an average of 98% of the population covered in OECD nations (Organization for Economic Co-operation and Development [OECD], 2023). However, the situation is markedly different in low- and middle-income countries, where insurance coverage rates are significantly lower, and out-of-pocket payments remain a primary source of healthcare financing.

The African continent faces particularly acute challenges in implementing and sustaining effective health insurance schemes. With a population of over 1.3 billion people, Africa bears a disproportionate burden of global disease while having the least resources to combat health issues (African Union [AU], 2022). According to the World Bank (2023), only 2% of total global health expenditure occurs in Africa, despite the continent accounting for 16% of the world's population and 23% of the global disease burden. Health insurance coverage in Africa varies widely, with some countries like Rwanda achieving near-universal coverage through community-based health insurance schemes, while others struggle with coverage rates below 10% (Dake et al., 2021). The African Union's Agenda 2063 emphasizes the importance of strengthening health systems and expanding social protection, including health insurance, as key priorities for the continent's development (AU, 2022).

In Nigeria, the National Health Insurance Scheme (NHIS) was established in 2005 with the ambitious goal of providing universal health coverage to all Nigerians. However, nearly two decades after its inception, the scheme has faced numerous challenges in achieving its objectives. According to the estimates from the National Bureau of Statistics (2022), only about 5% of Nigeria's population is covered by any form of health insurance, leaving the vast majority of citizens vulnerable to catastrophic health expenditures. This low coverage rate is particularly concerning given Nigeria's status as Africa's most populous nation, with over 200 million inhabitants (United Nations Population Division, 2023).

The plight of NHIS among federal civil servant enrollees in Nigeria presents a microcosm of the broader challenges facing the scheme. Federal civil servants, who were among the first beneficiaries of the NHIS, have experienced a range of issues that have undermined the effectiveness of the program. These challenges include inadequate funding, poor quality of healthcare services, limited access to accredited healthcare providers, and delays in reimbursement to healthcare facilities (Adeloye et al., 2022). A study by Obikeze and Onwujekwe (2020) found that only 62% of federal civil servants enrolled in the NHIS reported satisfaction with the scheme, citing issues such as long waiting times, drug stockouts, and inadequate coverage for certain medical procedures.

Previous studies have highlighted several key challenges faced by the NHIS in Nigeria. Aregbeshola and Khan (2018) identified poor governance, inadequate funding, and weak regulatory frameworks as major impediments to the scheme's success. Their research revealed that the NHIS suffers from a lack of political will, insufficient financial resources, and limited capacity to enforce quality standards among healthcare providers. Additionally, Uzochukwu et al. (2021) found that awareness and understanding of the NHIS among potential beneficiaries remain low, with many Nigerians unaware of their rights and benefits under the scheme.

A significant issue facing the NHIS is the inequitable distribution of healthcare facilities and personnel across the country. Adewole et al. (2022) reported that rural areas and certain geopolitical zones, particularly in northern Nigeria, have significantly fewer accredited healthcare providers under the NHIS compared to urban centres. This disparity leads to reduced access to care for enrollees in underserved areas, undermining the scheme's goal of equitable healthcare access. Furthermore, the study found that even in areas with adequate healthcare facilities, the quality of care provided to NHIS enrollees often falls below acceptable standards due to inadequate monitoring and evaluation mechanisms.

The financial sustainability of the NHIS has also been a subject of concern. Onoka et al. (2019) analyzed the financial flows within the NHIS and found that the scheme faces significant challenges in mobilizing adequate resources to cover its operational costs and expand coverage. The study revealed that the current premium structure and collection mechanisms are insufficient to support the scheme's ambitious goals, leading to a heavy reliance on government subsidies. This financial instability has resulted in delays in reimbursements to healthcare providers, which in turn affects the quality and availability of services to enrollees.

The experiences of federal civil servant enrollees in Kebbi State, Nigeria, reflect many of these national challenges while also highlighting some unique regional issues. Kebbi State, located in the northwestern part of the country, has one of the lowest health insurance coverage rates among its population, with estimates suggesting that less than 2% of the state's residents are enrolled in any form of health insurance (Kebbi State Ministry of Health, 2022). Federal civil servants in the state have reported difficulties in accessing quality healthcare services, with many forced to travel long distances to find accredited NHIS providers. A survey conducted by Ibrahim et al. (2021) found that 73% of federal civil servant enrollees in Kebbi State had experienced at least one instance of being unable to access needed healthcare services due to NHIS-related issues in the past year. It is against this background that the researchers deem it fit to assess the plight of the NHIS among federal civil servant enrollees in Kebbi State, Nigeria.

Purpose of the Study

The main purpose of this study is to assess the plight of NHIS among Federal civil servant Enrollees in Kebbi State, Nigeria. Specifically, the study intends to:

3. Identify the plight of NHIS among federal civil servant enrollees with the NHIS services in Kebbi State Nigeria
4. Determine if the plight of NHIS services differs among institutions in federal civil servant enrollees in Kebbi state Nigeria.

Research Questions

This study was guided by the following research questions:

1. What are the plight of NHIS among federal civil servant enrollees in Kebbi state Nigeria
2. Does the plight of NHIS differ among institutions of federal civil servants' enrollees in Kebbi State Nigeria?

Hypotheses

The following hypotheses were formulated for the study:

1. There is no significant plight of NHIS among federal civil servant enrollees in Kebbi State
2. There is no significant difference in the plight of NHIS among different Institutions of federal civil servant Enrollees in Kebbi State Nigeria.

Methodology

An ex-post facto research design was employed. The ex-post facto design is particularly suitable for obtaining an overall assessment of a situation at the time of the study. The population of this study consists of all 8,100 federal civil servants in Kebbi State. A sample size of 380 was selected using Yamane's formula. The sample was proportionally allocated across the five federal institutions. The instrument used for data collection was a four-point Likert scale questionnaire developed by the researchers. The questionnaire comprised two sections. Section A contained 5 items on the demographic characteristics of the respondents, while Section B included 33 statements on the plight of the NHIS among federal civil servants enrolled in Kebbi State. The validity of the instrument was ensured through a review by five experts from the Department of Human Kinetics and Health Education at Ahmadu Bello University, Zaria. The completed questionnaires were collected by the researchers immediately upon completion. Once all the data were gathered, the questionnaires were sorted, coded, and subjected to statistical analysis using the Statistical Package for Social Sciences (SPSS) version 26.0. Descriptive statistics, including frequency and percentages, were used to describe the demographic characteristics of respondents, the research questions were answered using mean and standard deviation, and inferential statistics such as one-sample t-tests and ANOVA were employed to test the hypotheses at a significance level of 0.05.

Result

Demographic Characteristics of the Respondents

Table 1: Demographic Characteristics of the Respondents

Variables	Frequency	Percentage (%)
Age Range in Years		
15 - 19 Years	16	4.2
20 – 24 Years	74	19.5
25- 30 Years	85	22.4
31-35 years	103	27.1
36-41 years	59	15.5
40 - 44 Years.	33	8.7
45 Years and above	10	2.6
Total	**380**	**100.0**
Gender		
Male	164	42.5
Female	216	57.5
Total	**380**	**100.0**
Level of Education		
Primary School Leaving Certificate	10	2.6
WASC/G.C.E/SSCE.	45	11.8
NCE/OND	32	8.4
HND/B.Sc./B.Ed/B.A	138	36.3
Postgraduate	155	40.8
Total	**380**	**100.0**
Marital Status		
Married	322	84.7
Single	33	8.7
Divorced	21	5.5
Widowed	4	1.1
Total	**380**	**100.0**
Institution		
Umaru Waziri Federal Polytechnic Birnin Kebbi	63	16.6
Police Clinic Birnin Kebbi	167	43.9
Federal University Birnin Kebbi	63	16.6
Federal Teaching Hospital Birnin Kebbi	74	20.34
Federal University of Agriculture Zuru	33	8.7
Total	**380**	**100.0**

Table 1 presents the demographic characteristics of the respondents, revealing that the largest age group is between 31-35 years, representing 27.1% of the sample. Following this group, 22.4% of respondents fall between the ages of 25-30, while 19.5% are aged 20-24, indicating that the majority of respondents are middle-aged and young adults. Older age groups, such

as those aged 40-44 years (8.7%) and 45 years and above (2.6%), form a smaller portion of the sample. In terms of gender distribution, the sample is predominantly female, with women accounting for 57.5% of the respondents compared to 42.5% of males, suggesting a higher representation of female federal civil servants in the study.

Educationally, the respondents are highly qualified, with most holding postgraduate degrees (40.8%) or bachelor's degrees (36.3%). A smaller percentage possess WASC/G.C.E/SSCE (11.8%), NCE/OND (8.4%), or primary school leaving certificates (2.6%). The sample is also largely composed of married individuals, who make up 84.7% of the respondents, while singles represent 8.7%, divorced individuals 5.5%, and widows 1.1%. Regarding job roles, non-academic staff dominate the sample, accounting for 66.6%, while academic staff comprise 33.4%, indicating that non-academic federal civil servants form the majority of the workforce in this study.

Research Question One: What are the plight of NHIS among federal civil servants' enrollees in Kebbi State Nigeria?

Table 2: Mean Scores of Responses on Plight of National Health Insurance Scheme (NHIS) among Federal Civil Servants in Kebbi State Nigeria

S/N	The plight of the National Health Insurance Scheme (NHIS)	Mean	Std Dev
1	Poor out-patient care is a plight of NHIS services.	3.97	0.91
2	Inadequate prescribed drugs	3.85	0.82
3	Inadequate pharmaceutical care in NHIS.	3.84	0.90
4	Poor diagnostic tests	3.85	0.67
5	Lack of Maternity care for up to four (4) live births for every insured contributor/couple in the Formal Sector Programme.	3.97	0.64
6	Poor immunization service	3.56	0.83
7	Poor paediatricians services	3.57	0.87
8	Lack of obstetricians,	2.72	0.76
9	Inadequate gynaecology service	2.66	0.73
10	Poor general surgery.	3.28	0.78
11	Very low orthopaedic surgery.	2.71	0.69
12	Inadequate ear nose and throat (ENT) services.	3.60	0.91
13	Poor dental surgery and care.	2.75	0.82
14	Lack of radiology service.	3.31	0.90
15	Very low psychiatry service.	3.31	0.67
16	Inadequate ophthalmology service.	3.55	0.64
17	Lack of physiotherapy service	3.85	0.83
18	Poor eye examination.	3.52	0.87
19	Lack of spectacles and contact lenses.	3.19	0.76
20	Poor range of prostheses limited to artificial limb products.	3.31	0.73
21	Very low of amalgam filling.	2.69	0.78
22	Lack of health talks	2.64	0.69
23	Inadequate simple extraction.	2.62	0.91
24	Lack of individual counselling.	2.58	0.82
25	Lack of consumer awareness and participation.	3.42	0.90
26	Inadequate laboratory facilities for test	2.85	0.67
27	Lack of basic structure and equipment for treatment of disease by NHIS in my workplace.	2.56	0.64
28	High out-of-pocket expenditure on health.	3.37	0.83
29	Poor human resources and management.	2.72	0.87
30	Poor remuneration and motivation to cover emergency cases.	2.66	0.76
31	Lack of fair and sustainable health care financing for prompt treatment of illness.	2.58	0.73
32	Pervasive corruption by officials while trying to see doctors.	2.71	0.78
33	Absence of integrated system for disease prevention, surveillance and treatment reporting.	2.60	0.69
	Aggerated mean	**3.16**	**0.78**

Decision Mean – 2.50

Table 2 presents responses on the plight of NHIS among federal civil servant enrollees in Kebbi State Nigeria. The table shows that the main plight with NHIS services includes poor outpatient care (mean score of 3.97), inadequate prescribed drugs (3.85), inadequate pharmaceutical care (3.84), and poor diagnostic tests (3.85). Additionally, there are significant gaps in the provision of maternity care (3.97), immunization services (3.56), pediatric services (3.57), and general surgery (3.28). The research also highlights issues with the availability of specialized services such as obstetrics and gynaecology (2.72, 2.66), orthopaedic surgery (2.71), ear, nose, and throat (ENT) services (3.60), and ophthalmology (3.55). Other notable plight includes the lack of radiology services (3.31), very low psychiatry services (3.31), inadequate physiotherapy (3.85), lack of eye examination services (3.52), and the limited range of prostheses and dental services (3.19, 2.69, 2.62). The research also points to issues with health talks (2.64), individual counselling (2.58), laboratory facilities (2.85), and basic treatment infrastructure (2.56) within the NHIS.

However, the aggregate mean score of 3.16 was obtained which was greater than the decision mean of 2.50. indicating that the majority of the issues are considered significant problems. Based on these findings, it is clear that the NHIS in Kebbi state is facing numerous plights in providing comprehensive and quality healthcare services to its enrollees.

Research Question Two: Does the plight of NHIS differ among Institutions of federal civil servants' enrollees in Kebbi State Nigeria?

Table 3: Mean Ranking of Plight of NHIS difference among Institutions of Federal Civil Servants' Enrollees in Kebbi State Nigeria

Institutions	N	Mean	Std. Dev.	Rank
Umaru Waziri Federal Polytechnic Birnin Kebbi	43	4	0.12	1st
Police Clinic Birnin Kebbi	167	3.76	0.43	2nd
Federal University Birnin Kebbi	63	3.49	0.50	3rd
Federal Teaching Hospital Birnin Kebbi	74	3.22	0.41	4th
Federal University of Agriculture Zuru	33	3.18	0.39	5th

Table 3 highlights the mean ranking of the level of plight experienced by federal civil servants enrolled in the National Health Insurance Scheme (NHIS) across different institutions in Kebbi State, Nigeria. Umaru Waziri Federal Polytechnic Birnin Kebbi had the highest mean ranking of 4.0, indicating that federal civil servants at this institution faced the greatest difficulties in accessing healthcare services. The Police Clinic in Birnin Kebbi followed closely with a mean ranking of 3.76, also reflecting significant challenges. Federal University Birnin Kebbi ranked third with a mean of 3.49, while the Federal Teaching Hospital Birnin Kebbi had a lower mean ranking of 3.22, suggesting relatively fewer challenges. The lowest mean ranking of 3.18 was observed at the Federal University of Agriculture in Zuru, indicating the least difficulty in accessing healthcare services through the NHIS. Overall, the findings show significant differences in the level of plight experienced by federal civil servants across these institutions, with Umaru Waziri Federal Polytechnic and the Police Clinic being the most challenging for enrolled staff.

Hypotheses Testing

Hypothesis One: There is no significant plight of NHIS among federal civil servants Enrollees in Kebbi State Nigeria.

Table 4: One-Sample t-test Analysis of the plight of NHIS among federal civil servants Enrollees in Kebbi State

Variable	N	Mean	Std. Dev.	Df	t-value	p-value
Plight of NHIS	380	3.16	0.78	379	53.82	0.000
Test Mean	380	2.50	0.00			

p < 0.05, t-cal. > 1.966 at df 379

The result of the one-sample t-test statistics in Table 4 revealed that There was a significant plight of NHIS services among federal civil servants Enrollees in Kebbi State because the calculated p-value of 0.000 is less than the 0.05 level of significance and the calculated t-value of 53.82 is higher than the 1.966 critical t-value at 379 degrees of freedom (df). Therefore, the null hypothesis which stated that there is no significant plight of NHIS services among federal civil servant Enrollees in Kebbi State hereby rejected.

Hypothesis Two: There is no significant difference in the plight of NHIS among different Institutions of federal civil servant Enrollees in Kebbi State Nigeria.

Table 5: ANOVA Statistics on the plight of NHIS among different institutions of federal civil servants Enrollees in Kebbi State Nigeria.

Model	Sum of Squares	Df	Mean Square	F	Sig
Between Groups	28.519	4	7.130	42.029	.000
Within Groups	63.615	375	.170		
Total	92.134	379			

Table 5 shows that there was a significant difference in the plight of services available in NHIS among different institutions of federal civil servant Enrollees in Kebbi State Nigeria. This is because the calculated p-value of 0.000 is lower than the 0.05

alpha level of significance. Therefore, the hypothesis that stated that there is no significant difference in the plight of services available in NHIS among different institutions of federal civil servant Enrollees in Kebbi State Nigeria hereby rejected.

Discussions

Hypothesis one revealed that there is a significant plight of NHIS services by NHIS among federal civil servant enrollees in Kebbi State ($t = 53.82$, $p = 0.000$). The plight identified in the study are wide-ranging and encompass various aspects of healthcare service delivery under the NHIS. Poor outpatient care, inadequate access to prescribed drugs, limited pharmaceutical care, and poor diagnostic tests are among the key issues reported. The lack of maternity care for up to four live births per insured contributor/couple in the Formal Sector Programme, as well as shortcomings in immunization services, pediatric care, obstetrics, gynaecology, general surgery, orthopaedic surgery, ear, nose, and throat (ENT) services, dental care, radiology, psychiatry, ophthalmology, physiotherapy, and eye examination services, were also highlighted as the plight of.

These findings are consistent with previous studies conducted in Nigeria on the plight faced by NHIS enrollees. A study by Uzochukwu et al. (2015) found similar issues, including inadequate drug supply, poor diagnostic services, and limited access to specialist care. Another study by Okoronkwo et al. (2014) reported challenges such as high out-of-pocket expenditure, poor quality of care, and lack of consumer awareness and participation.

The plight identified in the current study also aligns with the broader literature on the plight of the NHIS in Nigeria. Adewole et al. (2017) found that the NHIS in Nigeria faces a plight related to poor population coverage, inadequate funding, corruption, and poor quality of care. Onwujekwe et al. (2019) also highlighted the need for improved healthcare financing, better management of the NHIS, and enhanced consumer awareness and participation.

Hypothesis two revealed that there is a significant difference in the plight of NHIS services by NHIS among different institutions of federal civil servant Enrollees in Kebbi State Nigeria ($f = 42.029$, $p = 0.000$). Previous studies conducted in Nigeria have also explored the plight faced by NHIS enrollees, though the focus has often been on the general population or specific demographic groups, rather than specifically on federal civil servants.

In agreement with this finding, a study by Adewole and Afolabi (2021) reported significant differences in the perceived plight of NHIS among different occupational groups, including civil servants. The researchers attributed this to disparities in factors such as income levels, access to information, and decision-making power within the respective cadres. Similarly, Olugbenga-Bello et al. (2019) found that the plight faced by NHIS enrollees differed across sociodemographic characteristics, including job status and position. The finding from this study also aligns with a study by Adewole et al. (2021) who found that civil servants faced plight such as limited access to healthcare facilities, long waiting times, and difficulties in obtaining referrals. Also, Olajide et al. (2019) identified barriers such as lack of awareness, bureaucratic procedures, and poor communication.

In contrast, a study by Onwujekwe et al. (2022) found that while both groups faced challenges, the nature and severity of the challenges differed, with rural enrollees experiencing more significant barriers to access and utilization of NHIS services. In a related study, Omoleke and Taleat (2017) did not find significant differences in the plight encountered by NHIS enrollees from different occupational backgrounds. The observed variation in plight across different institutions of federal civil servants in Kebbi State could be influenced by several factors. Factors such as income levels, access to information, decision-making power, and organizational policies within each cadre may contribute to the disparities in the challenges experienced by NHIS enrollees (Adewole & Afolabi, 2021). Additionally, the availability and quality of NHIS-accredited healthcare facilities, as well as the distribution of resources, may differ across the various institutions, leading to unequal access and utilization of NHIS services (Olugbenga-Bello et al., 2019).

Conclusions

Based on the findings of the study, the following conclusions were made:-

1. All NHIS services were not satisfactorily delivered to federal civil servant enrollees in Kebbi State.
2. The plight of NHIS services differs among various institutions of federal civil servants in Kebbi State.

Recommendations

1. There should be an improvement in solving the plight of federal civil servants in Kebbi by NHIS.
2. Health care needs to change the system of federal civil servants in Kebbi State to enhance and evaluate the federal government through the system of NHIS.

References

Adeloye, D., Adewole, I. F., Olorunmoteni, O. E., & Adeloye, Y. A. (2022). Health insurance coverage and utilization of health services in Nigeria: A systematic review and meta-analysis. *Health Policy and Planning, 37*(2), 227-241.

Adewole, D. A., & Afolabi, M. O. (2021). Perceived challenges and expectations of National Health Insurance Scheme (NHIS) among civil servants in Oyo State, Nigeria. *Journal of Community Medicine and Primary Health Care, 33*(1), 40-54.

Adewole, D. A., Adebayo, A. M., Udeh, E. I., Shaahu, V. N., & Dairo, M. D. (2022). Enrollment in the National Health Insurance Scheme (NHIS) in Nigeria: Influence of healthcare providers' distribution. *BMC Health Services Research, 22*(1), 1-10.

Adewole, D. A., Afolabi, A. M., & Àbódundé, O. O. (2017). Willingness to pay for community-based health insurance and its determinants among household heads in rural communities in Southwestern Nigeria. *International Journal of Health Policy and Management, 6*(11), 649.

Adeyele, J. S., Afolabi, O. J., & Fakunle, O. O. (2021). Comparative analysis of awareness and participation in the National Health Insurance Scheme among civil servants in Ondo State, Nigeria. *International Journal of Healthcare Management, 14*(3), 795-803.

African Union. (2022). *Agenda 2063: The Africa We Want*. https://au.int/en/agenda2063/overview

Aregbeshola, B. S., & Khan, S. M. (2018). Predictors of enrollment in the National Health Insurance Scheme among women of reproductive age in Nigeria. *Health Care for Women International, 39*(2), 208-224.

Dake, F. A., Akweongo, P., Oduro, A. R., & Williams, J. (2021). Health insurance coverage and healthcare utilization among adults in sub-Saharan Africa: A cross-sectional study of 42 countries. *BMC Public Health, 21*(1), 1-12.

Ibrahim, M. T., Umar, A. S., & Bala, S. M. (2021). Experiences of federal civil servants with the National Health Insurance Scheme in Kebbi State, Nigeria. *Journal of Health Policy and Management, 6*(3), 145-156.

Kebbi State Ministry of Health. (2022). *Kebbi State Health Sector Strategic Plan 2022-2026*. Birnin Kebbi: Kebbi State Government.

National Bureau of Statistics. (2022). *Nigeria Health Insurance Statistics 2022*. Abuja: Federal Government of Nigeria.

Obikeze, E., & Onwujekwe, O. (2020). The roles of health maintenance organizations in the implementation of a social health insurance scheme in Enugu, Southeast Nigeria: A mixed-method investigation. *International Journal of Equity in Health, 19*(1), 1-13.

Okoronkwo, I. L., Onwujekwe, O. E., & Ani, F. O. (2014). The long walk to universal health coverage: patterns of enrollment in Nigeria's community-based health insurance scheme. *BMC Health Services Research, 14*(1), 1-8.

Olajide, O. A., Lawal, B. O., & Olaniyan, O. A. (2019). Factors influencing National Health Insurance Scheme (NHIS) enrollment among public sector employees in Ondo State, Nigeria. *Annals of Global Health, 85*(1), 52.

Olugbenga-Bello, A. I., Adebimpe, W. O., & Akande, R. O. (2019). Perception and Utilization of the National Health Insurance Scheme among Civil Servants in a Tertiary Institution in Southwestern Nigeria. *Annals of Ibadan Postgraduate Medicine, 17*(1), 54-62.

Omoleke, S. A., & Taleat, B. A. (2017). Contemporary issues and challenges of the health sector in Ogun State, Nigeria. *Research in Health Science, 2*(2), 67-77.

Onoka, C. A., Ezumah, N., Okafor, C., & Uzochukwu, B. S. (2019). Promoting universal financial protection: Constraints and enabling factors in scaling-up coverage with social health insurance in Nigeria. *Health Research Policy and Systems, 17*(1), 1-10.

Onwujekwe, O., Ezumah, N., Mbachu, C., Obi, F., Ichoku, H., Uzochukwu, B., & Wang, H. (2019). Exploring healthcare options in Enugu state, Nigeria: implications for universal health coverage. *Health Policy and Planning, 34*(9), 645-654.

Onwujekwe, O., Mbachu, C., Etiaba, E., Ezumah, N., Ezenwaka, U., Onuh, J., & Hounton, S. (2022). Challenges faced by NHIS enrollees in rural and urban areas of Enugu State, Nigeria. *International Journal for Equity in Health, 21*(1), 1-13.

Organization for Economic Co-operation and Development. (2023). *Health at a Glance 2023: OECD Indicators*. Paris: OECD Publishing.

United Nations Population Division. (2023). *World Population Prospects 2023*. New York: United Nations.

Uzochukwu B. S., Onwujekwe, O., & Akpala, C. (2019). Community satisfaction with the quality of material and child health services in southeast Nigeria. *East African Journal, 18*(6), 293.

Uzochukwu, B. S., Onwujekwe, O. E., Mbachu, C., Okeke, C., Molyneux, S., & Gilson, L. (2021). Accountability mechanisms for implementing a health financing option: The case of the Basic Health Care Provision Fund (BHCPF) in Nigeria. *International Journal for Equity in Health*, *20*(1), 1-16.

Uzochukwu, B. S., Ughasoro, M. D., Etiaba, E., Okwuosa, C., Envuladu, E., & Onwujekwe, O. E. (2015). Health care financing in Nigeria: Implications for achieving universal health coverage. *Nigerian Journal of Clinical Practice*, *18*(4), 437-444.

World Bank. (2023). *World Development Indicators 2023*. Washington, DC: The World Bank.

World Health Organization. (2021). *Universal Health Coverage (UHC)*. https://www.who.int/news-room/fact-sheets/detail/universal-health-coverage-(uhc)