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INFLUENCE OF CULTURAL BACKGROUND ON TEACHING AND LEARNING OF PHYSICAL EDUCATION IN SECONDARY SCHOOLS IN SOKOTO STATE, NIGERIA

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Abstract

This study assessed the influence of cultural background on teaching and learning physical education in secondary schools in Sokoto State, Nigeria. Ex-post facto research design was used. A total of three hundred and seventy-eight (378) secondary school teachers were used as a sample for this study. A close-ended questionnaire was used to obtain responses from the respondents. Three hundred and seventy-eight (378) copies of the questionnaire were administered while three hundred and seventy-one (371) were returned and used for data analysis. Descriptive statistics of frequency and percentages were used for the demographic characteristics of the respondents, means and standard deviation were used for the research question, and Chi-square analysis was used to test the hypothesis at a 0.05 level of significance. The findings of the study revealed that there is a significant influence of cultural background on the teaching and learning of physical education in secondary schools in Sokoto State, Nigeria ($p = 0.001 < 0.05$). The researchers concluded that cultural background influenced the teaching and learning of physical education in secondary schools in Sokoto State, Nigeria and recommended that there is a need for curriculum developers and policymakers to consider one's culture in developing and implementing physical education curriculum in secondary schools in Sokoto State to improve the situation.

Keywords: Cultural Background, Teaching, Learning, Physical Education, Secondary Schools

Introduction

Physical education is a vital part of general education which contributes to the development of educational programmes including the development of health, social, mental, intellectual, physical welfare, emotional, spiritual and recreational well-being of a person. According to Adedeji (2015), physical education is a process of education that concerns physical activities which develop and maintain the human body. The attainment of its objectives may depend on its acceptance by people from different cultural backgrounds.

One's cultural background guards his/her activities as a whole and gives direction often to his/her beliefs. According to Cultural Policy for Nigeria (CPN) (2011), culture is the totality of the way of life evolved by a people in their attempts to meet the challenge of living in their environment, which gives order and meaning to their social, political, economic, aesthetic and religious norms and modes of organization thus distinguishing a people from their neighbours (CPN, 2011). It went further to explain that culture comprises material, institutional, philosophical and creative aspects. The material aspect has to do with artefacts in their broadest form (namely: tools, clothing, food, medicine, utensils, housing, etc). The institution deals with the political, social, legal, and economic structure erected to help achieve material and spiritual objectives; while the philosophical is concerned with ideas, beliefs, and values; the creative concerns the people's literature (oral or written) as well as their visual and performing arts which are normally moulded by, as well as help to mould other aspects of culture.

Culture consists of assumptions with which people in a particular group approach their world as well as what is learned by each new generation while participating in organized transactions. Taken from an ethnographic sense, culture is everything about the way we live and do things which in essence encompasses every aspect of our society, including religion, language, knowledge, morals, laws, politics, technology, habits and social organization.

Teaching and learning physical education can support students in making decisions about their health, well-being, safety and physical activity participation which is guided by their beliefs. Ajala, Amusa and Sohi (2013) asserted that if physical education is a true reflection of the wider school environment, community norms and culture, learning will be more meaningful and reinforced. Students will also be able to practice and reinforce their learning skills in physical education especially if teaching and learning in the physical education curriculum and the whole school environment, vis-à-vis their beliefs are anchored on the needs, peculiarities, and knowledge, as well as understanding of the religion in relation to the conduct and the delivery of physical education curriculum (Adewunmi, 2011).

From an analysis of the concept of culture, taken from different fields and linking them to educate our specific action from the dual-body motion. Taking one by one, the paradoxes of Herskovits and applied to our field would have to face the first one,

universality, in the case of Physical Education, would be given by the confirmation of existence, over a considerable period of European historical time, a deliberate approach to education of the body in which, effectively and in accordance with the first paradox, the local or regional events would be different or unique to your case and the result of the necessities of life, of historical time, the environment and local culture in each case.

Over the past decade, studies have indicated a remarkable influence of cultural background which include; religious belief, norms and behaviour on teaching and learning (Alkhateeb & Alharthi, 2023; Kaur & Kaur, 2022; Zhang & Wang, 2023). It is also extremely difficult to conclude as to whether cultural background influences the teaching and learning of physical education in Sokoto State. Based on the observed gap, this study was conducted to find out the influence of cultural background on the teaching and learning of physical education in Secondary Schools in Sokoto State, Nigeria. The researchers tried to find the answer to the question of whether cultural background influences the teaching and learning of physical education in secondary schools in Sokoto State, Nigeria and hypothesized that cultural background would not significantly influence the teaching and learning of physical education in secondary schools in Sokoto State, Nigeria.

Methodology

Ex-post facto research design was employed for this study. This is because the research is by nature non-experimental (Uever, 2017). The population of this study includes all secondary school teachers in Sokoto State, Nigeria. Totalling ten thousand, four hundred and eighty-seven (10,487). (Sokoto State Ministry of Basic and Secondary Education, 2019).

According to Research Advisor (2006), 378 respondents are adequate to represent a population of 10,487 people based on a confidence level of 95% with a margin error of 0.05. To select the respondents for the study, stratified sampling technique was used to stratify Sokoto State into 3 senatorial zones namely; Sokoto North, Sokoto East and Sokoto South. Simple random sampling was used to select two local government areas per senatorial zone by writing all the names of local government areas on a piece of paper, folded and dropped in a container, shuffled it and the selection was made using the lucky-dip method. To select teachers per school, 'Yes' and 'No' were written on pieces of paper, folded and dropped into a container and shaken properly. Teachers were asked to pick one piece of paper. Any teacher who picked 'Yes' was given the questionnaire to fill out until the required number for that school was reached. Consider the table below:

Table 1: Sample Proportion

S/N		Local Government Area	Sample
1.	Sokoto North	Tangaza L.G.A.	56
		Gudu L.G.A.	48
2.	Sokoto East	Isa L.G.A.	62
		Illela L.G.A.	97
3.	Sokoto South	Tureta L.G.A.	51
		Kebbe L.G.A.	64
	TOTAL		**378**

Table 1 shows the proportional distribution of the respondents. Observed from the table was that 104 respondents were sampled from Tangaza and Gudu Local Government Areas of Sokoto North Senatorial Zone. 159 respondents were sampled from Isa and Illela Local Government Areas of Sokoto East Senatorial Zone and 115 respondents were sampled from Tureta and Kebbe Local Government Areas of Sokoto South Senatorial Zone. This gave rise to 378 respondents in total.

The instrument used for data collection in this study was questionnaire. The questionnaire comprised two Sections A and B. Section 'A' contained 4 items on the demographic characteristics of the respondents while Section 'B' contained 5 statements on the influence of cultural background on the teaching and learning of physical education in secondary schools. Five-point Likert scale was used with Strongly Agreed (SA) (5), Agreed (A) (4), Undecided (UN) (3), Disagreed (DA) (2), and Strongly Disagreed (SD) (1). Fifty (50) copies of the questionnaire were exposed to pilot testing using the Cronbach Alpha test of reliability in which 0.89 reliability index was obtained rendering the instrument reliable. Three hundred and seventy-eight (378) copies of the questionnaire were distributed by the researchers at Sokoto State Secondary Board through Heads of Planning Research and Statistics of each local government, this process lasted for 3 weeks as each local government was treated at the same time to avoid multiple filling of the questionnaire by one person.

Simple frequency and percentage was used to analyse the demographic characteristics of the respondents. Descriptive statistics of means and standard deviation were used to answer the research question while Chi-square was used to test the formulated hypothesis at 0.05 level of significance.

Results

Table 2: Demographic Characteristics of the Respondents

	Variable	Frequency	Percentage
Sex	Male	216	58.2
	Female	155	41.8
	Total	**371**	**100.0**
Age Range	18-25 years	11	3.0
	26-35 years	109	29.4
	36-45 years	137	36.9
	45 years and above	114	30.7
	Total	**371**	**100.0**
Experience in Sports Participation	1-3 years	59	15.9
	4-6 years	90	24.3
	7-9 years	121	32.6
	10-12 years	101	27.2
	Total	**371**	**100.0**
Highest Educational Qualification	PhD	5	1.3
	M.Sc	53	14.3
	B.Sc	124	33.4
	HND/NCE	110	29.6
	OND/ TC Grade II	79	21.3
	Total	**371**	**100.0**

Observation of Table 2 above shows that the majority of respondents 216 (58.2%) were males while 155 (41.8%) were female respondents. With regards to age range, the table further reveals that 11(3.0%) of the respondents were of age range18-25 years, 109 (29.4%) of the respondents were of age range 26 – 35 years, 137 (36.9%) of the respondents were of age range 36 – 45 years and 114 (30.7%) were between the age range of 45 years and above. This implied that the majority of the respondents were in the age range of 36-45. The table also, shows that 59 (15.9%) of the respondents have 1 – 3 years of experience in sports participation, 90 (24.3%) of the respondents have 3 – 6 years of experience in sports participation, 121 (32.6%) of the respondents have 7 – 9 years of experience in sports participation while 101 (27.2%) of the respondents have 10 – 12 years of experience in sports participation. This implied that majority of the respondents had work experience of 10- 12 years.

The table also, reveals that 5 (1.3%) of the respondents were PhD holders, 53 (14.3%) of the respondents were M.Sc holders, 124 (33.4%) of the respondents were B.Sc holder, 110 (29.6%) of the respondents were HND/NCE holders while 79 (21.3%) of the respondents were OND/ TC Grade II holders. This implied that majority of the respondents were first-degree holders.

Result
Research Question: Would cultural background influence the teaching and learning of physical education in secondary schools in Sokoto State, Nigeria?

Table 3: **Mean Scores of the Respondents on Whether Cultural Background influence the Teaching and Learning of Physical Education**

S/N		Mean	Std. Deviation
1	Traditions do not allow female students to enrol in the Physical Education programme	4.0484	1.00229
2	As a result of culture, students do not participate in Physical Education activities	4.0900	.92733
3	The teaching and learning of Physical Education is not encouraged in the state as a result of culture	3.9170	.90140
4	Physical education significantly enhanced the mental attitude of students and prevented them from performing their cultural dress code	3.9343	1.10829
5	Parents see athletic dress as a conflicting norm with their dress code	3.9412	.83333
	Cumulative Mean	**19.93**	

Aggregate Mean = 3.99   **Decision Mean = 3.50**

Table 3 above shows that cultural background influences the teaching and learning of physical education in secondary schools. The aggregate mean of responses 3.99 was found to be higher than the decision mean of 3.50. To answer the research question, since the aggregate mean is higher than the decision mean, it can be concluded that culture influences the teaching and learning of physical education in secondary schools in Sokoto State, Nigeria.

Test of Hypothesis

H₀₁: There is no significant influence of culture on the teaching and learning of physical education in secondary schools in Sokoto State, Nigeria.

Table 4: Summary of Chi-square (χ^2) on the cultural background on the teaching and learning of physical education in secondary schools

	χ^2 cal.	χ^2 crit.	α	df	P-value	Decision
Influence of Cultural background on the teaching and learning of physical education in secondary schools	34.01	26.29	0.05	16	0.001	Rejected

Table 4 revealed that there is a significant influence of culture on the teaching and learning of physical education in secondary schools in Sokoto State, Nigeria. The table showed the p-value of 0.001 which is less than 0.05 alpha level of significance and the χ^2 calculated value of 31.41 which is greater than the χ^2 critical value of 26.29 at df 16. This result indicated there is a significant influence of culture on the teaching and learning of physical education in secondary schools in Sokoto State, Nigeria. Hence, the implication of this result was to reject the null hypothesis that there is no significant influence of culture on the teaching and learning of physical education in secondary schools in Sokoto State, Nigeria.

Discussion

The hypothesis revealed that there is a significant influence of cultural background on the teaching and learning of physical education in secondary schools in Sokoto State, Nigeria. This finding corroborates with that of Oakley (2018), who found that the cultural and religious ideas on the design of the human body and its role, in deciding on the approach, depending on the model society, must apply to the education of the body which will necessarily impact on the educational approach of the discipline known as Physical Education. Drawing on the previous model, attempted to clarify the conceptual differences between the two positions; from a cultural point of view, the first approaches and objectives of Physical Education. As is known, physical education curricula are related to culture, with culturally sensitive elements, and culturally indifferent elements (Tomik, 2017). In future and the European areas most affected by nationalism, this will be the major problem in defining the curriculum in physical education. The probable total administrative decentralization in education in Europe, determined that in the medium term, the municipalities assume the full responsibility in education, including a high degree of involvement in curriculum planning, this will put on the table the problem of culturally sensitive educational materials, as it begins to be in Spain, where the claims of certain autonomous communities, in respect of the contents of physical education to include in the curriculum, are truly aberrant and lacked any scientific basis and there is no discussion on the content to include subjects such as mathematics, physics or natural sciences, On the contrary, culturally sensitive subjects such as social science and physical education, not only 'is not respected' but that is not even taken into account or, in other cases, it seeks the endorsement of an expert closer ideologically to justify the content to be introduced.

Conclusion

Based on the findings of this study, it can be concluded that the cultural background of teachers and learners influenced the teaching and learning of physical education in secondary schools in Sokoto State, Nigeria.

Recommendation

Based on the findings of this study, the researchers recommended that curriculum developers and policymakers need to consider one's cultural affiliation in designing physical education programme in secondary schools for effective teaching and learning process.

References

Adedeji, J. A. (2015). *The Teaching of Physical and Health Education*. Ibadan: West Books Publishers Limited.

Adewunmi, C. M. (2011). Participation of women in sports: Sharia Law implementation. *Nigeria Journal of Sports Management, 2*(1), 45-56.

Ajala, L., Amusa, O., & Sohi, I. (2013). *Application and strategies for advancing the level of Physical Education and Sports for the African Child*. Paper presented in 1st ICHPER in African Regional Conference, Lagos: University of Lagos Conference Centre: 67-70.

Alkhateeb, H. M., & Alharthi, K. (2023). The impact of cultural and religious values on educational practices in multicultural classrooms. *Journal of Multicultural Education, 17*(1), 15-32. https://doi.org/10.1108/JME-10-2021-0120

Cultural Policy for Nigeria (2011). *Contribution of physical education to school Sports development*. Paper presented in 1st ICHPER in African regional conference, Lagos, University of Lagos conference centre. 44-46

Kaur, S., & Kaur, R. (2022). Cultural influences on teaching and learning: A systematic review. *International Journal of Educational Research, 112*, 101812. https://doi.org/10.1016/j.ijer.2022.101812

Oakley, A. (2018). Interviewing women: a contradiction in terms. In: Roberts H, editor. *Doing feminist research*. New York: Routledge & Kegan Paul; 2018. pp. 30–55.

Research Advisors (2006).*The recommended sample size for a given population size, level of confidence, and margin of error*. Formal table

Tomik, R. (2017). School sports club members' attitudes towards physical education and sport. *Journal of Human Kinetics, 17*, 89-104.

Uever, J. N. (2007). *Assessment of human resource in State Sports Council of Nigeria*. Unpublished PhD Thesis, Ahmadu Bello University, Zaria.

Zhang, Y., & Wang, L. (2023). Navigating cultural diversity: Teacher perceptions of cultural influences in the classroom. *Educational Studies, 49*(2), 221-240. https://doi.org/10.1080/03055698.2023.2181374

PERCEPTION OF IN-SCHOOL ADOLESCENT GIRLS ABOUT STIGMA ASSOCIATED WITH SELECTED SEXUAL AND REPRODUCTIVE HEALTH ISSUES IN IBADAN NORTH LOCAL GOVERNMENT AREA

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Abstract

The conceptualisation of stigma has been in existence for a while among adolescents. Presently, Nigeria has no country-specific report about stigma associated with sexual and reproductive health issues most especially risky sexual activity, unwanted pregnancy, indiscriminate contraceptive use and unsafe abortion. This study therefore described the rate of perceived stigma among the in-school adolescent girls in Ibadan North Local Government Area, Nigeria. It also examined the perception of the respondents about the sexual and reproductive health stigma. A descriptive cross-sectional study was conducted that included 633 female students from the senior secondary classes in Ibadan Local Government Area. A self-administered semi-structured questionnaire was used to obtain data about socio-demographic characteristics and perceived stigma about selected sexual and reproductive health issues using a 20-item set of sexual and reproductive health stigma scale on a 3-point modified Likert scale (agree, neutral and disagree). Descriptive statistics, Chi-square test, and correlation at p=0.05 were used to analyse the data. The respondent's mean age was 15.3 ±1.5 years. Two hundred and five (32.4%) of the respondents were in early adolescence and, 370 (58.5%) were in mid-adolescence. Five hundred and ten (80.6%) of the respondents were from the Yoruba ethnic group and three hundred and ninety-three (62.1%) of them were Christians. More than half (82.8%) of the respondents were from monogamous families, 59 (88.3%) of the respondent's parents were married and 38 (6%) were separated. Two hundred and fifty-nine (40.9%) of the respondents were from low socioeconomic class. Respondents in early, mid and late adolescence who had high perceived stigma were 174 (84.9%), 311 (84.1%) and 54 (93.1%) with high perceived stigma respectively. Among the ethnic groups, 441 (83.1%) of the respondents who were Yoruba had a high perceived stigma with regard to sexual and reproductive health issues. Common reasons for high perceived stigma about sexual and reproductive health issues among the respondents were, 370(58.5%), 401(63.3%), and 399(63%) of the respondents agreed to the queries that people would behave differently from adolescents who are known to have had sex, abortion and used modern contraceptive respectively. Also, more than half of the respondents (81.4%) agreed that being pregnant would bring shame to their family, and 275(43.4%) agreed that modern contraceptives would have a negative effect on adolescent health. There was a high perceived stigma among the in-school adolescent girls in Ibadan North local government area. It is therefore necessary to sensitize the community about the stigma associated with sexual and reproductive health issues.

Keywords: Adolescents, girls, perception, stigma, sexual and reproductive health issues

Introduction

The health of adolescents creates a major global burden (WHO, 2021). It has a great deal of additional and diverse complications such as risky sexual behaviour, lack of contraceptive use, unwanted pregnancy, difficulties accessing contraception and safe abortions, lack of healthcare access, high rates of sexually transmitted infections and mental health issues (Akorede et al., 2019; Morris & Rushwan, 2015). According to the International Conference on Population and Development (ICPD) (1994), "safe sexual and reproductive health (SRH) is basically a human right". It has to do with the right to life, the right to be free of torture, the right to health, the right to freedom, the right to education, and the prohibition of discrimination, among other things (United Nations High Commissioners for Refugees (UNHR), 1996).

Stigma has been recognised as a major cause of adolescent health disparities and a key social factor of health (Hatzenbuehler et al., 2013). However, the vast majority of studies on adolescents' health-related and the consequences of stigma have focused on stigma associated with minority sexual orientation, likewise mental illness, lack of self-esteem, and obesity. The selected SRH issues for this study were risky sexual behaviour, contraceptive use, unwanted pregnancy and unsafe abortion which have been a result of the stigma associated with the SRH issues. Several studies show that adolescent stigmatization can lead to lack of use of health services, an increase in morbidity and mortality rates, loss of self-esteem, feelings of hopelessness and many more (Fatusi & Hindin, 2010; Hall et al., 2018; Laura et al., 2019).

Improving adolescent SRH knowledge and identifying the factors that influence their perception will directly contribute to their lifestyles, health and well-being. Therefore, this study hopes to assess the perception of adolescents and the factors influencing their perception of stigma associated with selected SRH issues. This will help appropriate stakeholders like the Federal Ministry of Health and Education, community heads, NGOs and others, to provide a holistic approach to guide them properly and help in policy formation if the need be in order to prevent adverse consequences like an increase in morbidity and

mortality rates, and also help in remodelling societal norms thereby strengthening their health as a whole. This study will also serve as a template for future studies.

Research Questions

1. What is the perception of in-school adolescent girls about the stigma associated with selected sexual and reproductive health issues in Ibadan North LGA?
2. What are the factors influencing the perception of in-school adolescent girls about the stigma associated with selected sexual and reproductive health issues in Ibadan North LGA?

Methodology

This study was conducted in Ibadan North Local Government Area (LGA) of Oyo State, Nigeria. Ibadan North is one of the five urban local government areas in Ibadan having an estimated population of 3,649,000 (United Nations, 2021). Ibadan is the capital city of Oyo State which is situated in the southern-western part of Nigeria and it is the third-largest city in Nigeria after Lagos and Kano. The local government area consists of multi-ethnic. This study was a descriptive cross-sectional study, and the study participants were in-school adolescent girls in Ibadan North LGA, Oyo State. The sample size was determined using the Leslie Kish formula and due to the clustering of the schools in the LGA, the sample size was multiplied by a design effect of 1.5. This resulted in the final sample size of 633 students. The study followed a four-stage sampling which included; the random selection of 6 wards out of 12; the selection of schools; the selection of class arm using stratified random sampling with the proportional allocation of students from the different classes in the selected secondary schools; stratification was done according to the senior secondary school classes (SS1 to SS3) and finally, selection of respondents using systematic sampling technique (with the sampling fraction calculated based on the number of students present in the class and the number of respondents to be selected) using the class register.

A semi-structured questionnaire was used for data collection for this study and the data was properly cleaned, coded, and entered using Statistical Package for Social Science (SPSS) version 20. The questionnaire was divided into two sections; Section A: Socio-demographic information and Section B: Sexual and reproductive health stigma. This section adopted the validated questionnaire for sexual and reproductive health stigma scale developed by Hall et al., in 2018. The scale covers sexual and reproductive health issues such as sexual behaviour, contraceptive use, pregnancy, abortion and family planning service use. It is a 3-point Likert scale (disagree, neutral and agree) comprising 20 items measuring three primary domains of environmental stigma. The environmental domains were disgrace and shame (internalized stigma), discrimination and marginalization (enacted stigma), and negative community norms (stigmatizing lay attitudes).

The socioeconomic class of the respondents was computed using the socio-index score of Oyedeji (1985). The scores were awarded to each respondent based on the occupation and educational attainment of the parents. The social economic class was determined using the mean of the parent's occupation with their level of educational attainment and classified into high social class (I-II), middle social class (III) and low social class (IV-V). Data cleaning was done to check for accuracy, missing values, and variables. A 20-item scale on a 3-point modified Likert scale was used to assess the sexual and reproductive health stigma of the respondents. 3 = agree, 2 = neutral and 1 = disagree, with total score 60. A score from 1-20 indicated a low level of stigma, 21-40 neutral/moderate and 41-60 high level of stigma.

Results and discussion

Table 1: Socio-demographic characteristics of the study participants (n=633)

Socio-demographic characteristics	Frequency (n)	Percent (%)
Age		
10-14	205	32.4
15-17	370	58.5
18-19	58	9.2
Ethnicity		
Hausa	24	3.8
Igbo	97	15.3
Yoruba	510	80.6
Others	2	0.3
Religion affiliation		
Christian	393	62.1
Muslim	229	36.2
Traditionalist	10	1.6
Others	1	0.2

Table 2: Socio-demographic characteristics of the study participants' family in Ibadan North Local Government Area, Nigeria

Sociodemographic characteristics	Frequency (n)	Percent (%)
Family type		
Monogamous	524	82.8
Polygamous	109	17.2
Parents' status		
Married	559	88.3
Separated	38	6.0
Divorced	21	3.3
Widowed	14	2.2
Never married	1	0.2
Social class		
High	213	33.6
Middle	161	25.4
Low	259	40.9

4.1 The perception of the in-school adolescent girls about sexual and reproductive health stigma

Among the respondents age group in Table 3, 10-14 and 15-17 years of age recorded high perceived stigma scores of 174(84.9%) and 311(84.1%) respectively.

Table 3: The relationship between the perceived stigma and socio-demographic characteristics among the study participants

Socio-demographic	Perceived stigma			P-value
	High n (%)	Moderate n (%)	Low n (%)	
Age group				
10-14	174(84.9)	30(14.6)	1(0.5)	0.47
15-17	311(84.1)	58(15.7)	1(0.3)	
18-19	54(93.10)	4(6.9)	0(0.00)	
Ethnicity				
Hausa	24(100.0)	0(0.0)	0(0.0)	0.14
Igbo	89(89.7)	8(10.3)	0(0.0)	
Yoruba	424(83.1)	84(16.5)	2(0.4)	
Other	2(100.0)	0(0.0)	0(0.0)	
Social Class				
High	197(92.5)	16(7.5)	0(0.0)	0.01
Middle	132(82.0)	27(16.8)	2(1.2)	
Low	210(81.1)	49(18.9)	0(0.0)	
Religion				
Christian	351(89.5)	42(10.7)	0(0.0)	0.00
Muslim	180(78.6)	48(21)	1(0.4)	
Traditionalist	7(70.0)	2(20.0)	1(10.0)	
Other	1(100.0)	0(0.0)	0(0.0)	

Table 4: The scores of enacted stigma subscale and distribution of study participants in Ibadan North Local Government Area, Nigeria

Full SRH stigma scale (mean =48.2± SD =8.1)	Mean	SD	Agree (%)	Neutral (%)	Disagree (%)
Enacted stigma item (mean = 14.8± SD = 3.4)					
People behave differently to adolescents they know is having sex.	2.3	0.88	58.5	14.4	27.3
People behave differently to adolescents they know is having an abortion	2.4	0.88	63.3	9.3	27.3
People behave differently to adolescents they know are using modern family planning methods (contraceptives like condom).	2.4	0.82	63.0	15.5	21.6
An adolescent whose parents know about having sexual intercourse often leads to being beaten or physically harmed by the parents.	2.6	0.71	73.8	12.8	13.4
Being pregnant and having a baby when I am still an adolescent will cause people around me to treat me differently.	2.5	0.8	69.8	8.2	22.0
Being pregnant and having a baby when I am still an adolescent will cause people to mock, humiliate, swear or gossip about me.	2.6	0.73	79.3	5.5	15.2

Table 5: The score of internalised stigma and perceived stigma distribution of study participants in Ibadan North Local Government Area, Nigeria

Internalized stigma items (mean 17.8± SD 3.4)	Mean	SD	Agree (%)	Neutral (%)	Disagree (%)
Having sexual intercourse when you are an adolescent is a form of disobedience.	2.7	0.7	78.7	8.8	12.5
Adolescents who abort are bad.	2.4	0.8	61.9	14.1	24
Adolescents who use modern family planning (an effective contraceptive method) are who have sexual intercourse with those who come to them (promiscuous).	2.3	0.9	53.7	18.8	27.5
Adolescents who use modern family planning (contraceptive method) are seen as bad girls and boys	2.4	0.8	64.5	15.8	19.7
Having sexual intercourse while young is a disgrace and shame for the adolescent and his/her family.	2.7	0.7	81.4	7.6	11.1
If I become pregnant as an adolescent, having a baby will disgrace my family.	2.7	0.7	81.0	6.6	12.3
Being pregnant and having a child when I am young caused me to feel embarrassed and ill.	2.7	0.7	79.5	7.4	13.1

Table 6: The score of stigmatising lay attitude and perceived stigma distribution of study participants in Ibadan North Local Government Area, Nigeria

Stigmatising lay attitudes item (Mean=15.5± SD=3.5)	Mean	SD	Agree (%)	Neutral (%)	Disagree (%)
Adolescents who have had an abortion will encourage others to have an abortion.	2.2	0.9	48.8	19.3	31.9
It is unacceptable for unmarried adolescents to use modern family planning methods (contraceptive-effective methods).	2.2	0.9	49.1	21.6	29.2
Modern contraceptives have negative effects on adolescent's health.	2.0	0.9	43.4	15.5	41.1
Having children (being curetted) is about murder.	2.3	0.9	62.1	10.4	27.5
The media, including television, the internet, and magazines, have a strong impact on adolescents' sexual behaviour.	2.6	0.8	73.9	9.0	17.1
The first time that adolescents have sexual intercourse, it is usually under the pressure of their friends or partners.	2.2	0.8	47.6	28.6	23.9
Children born from adolescents are worse than those born from adult parents.	2.0	0.9	36.3	27.2	36.5

4.2 The sociodemographic factors predicting the enacted stigma of the respondents

Sociodemographic factors predicting the enacted stigma are in Table 7 as most of the respondents 263 (71.1%) in the age group 15-17 agreed to the perceived stigma compared to their counterparts. With regards to social class, respondents from high-class families recorded 178 (83.6%).

Among the Yorubas ethnic group, it's recorded that 347 (68%) of the respondents agreed with the high stigma associated with sexual and reproductive health issues and 152 (29.8%) reported being neutral. The ethnicity of the respondents was statistically significant with a p-value < 0.05. Of those who were Christians among the respondents, 304 (77.7%) recorded high perceived stigma.

Table 7: The association between enacted stigma and the sociodemographic information of female adolescents in Ibadan North Local Government Area, Nigeria

Variable	Enacted perceive stigma						
	Low n (%)	Moderate n (%)	High n (%)	Total n (%)	X^2	Df	P value
Age							
10-14	6(2.9)	52 (25.4)	147 (71.7)	205(100)	7.713	4	0.103
15-17	4 (1.1)	103(27.8)	263(71.1)	370(100)			
18-19	1 (1.7)	8(13.8)	49(84.5)	58(100)			
Ethnicity							
Hausa	0(0.0)	0(0.0)	24(100)	24(100)	2.090	6	0.00
Igbo	0(0.0)	11(11.3)	86(88.7)	97(100)			
Yoruba	11(2.2)	152(29.8)	347(68.0)	510(100)			
Other	0(0.0)	0(0.0)	2(100)	2(100)			
Social class							
Low	6(2.3)	85(32.8)	168(64.9)	259(100)	21.892	4	0.00
Middle	4(2.5)	44(27.3)	113(70.2)	161(100)			
High	1(0.5)	34(16.0)	178(83.6)	213(100)			
Religion							
Christian	4(1.0)	85(21.6)	304(77.7)	393(100)	19.345	6	0.004
Muslim	6(2.6)	77(33.6)	146(63.8)	229(100)			
Traditional	1(10.0)	1(10)	8(80)	10(100)			
Other	0(0.0)	0(0.0)	1(100)	1(100)			

4.3 Sociodemographic factors predicting internalized stigma of the female adolescents in Ibadan North Local Government Area, Nigeria.

Sociodemographic factors predicting internalized stigma is in Table 8. The social class and religion of the respondents were statistically significant with p-value < 0.05. Respondents within the age group 10-14 had the most perceived stigma compared to others. Among the respondents from the Yoruba ethnic group, 274 (53.7%) were reported to have most perceived internalized stigma.

Table 8: The association between the internalised stigma and sociodemographic characteristics of female adolescents in Ibadan North Local Government Area, Nigeria

Variable	Perception internalized stigma						
	Low n (%)	Moderate n (%)	High n (%)	Total n (%)	X^2	Df	P value
Age							
10-14	6(2.9)	80(39.0)	119(58.0)	205(100.0)	3.683	4	0.451
15-17	20(5.4)	153(41.4)	197(53.2)	370(100.0)			
18-19	1(1.7)	25(43.1)	32(55.2)	58(100.0)			
Ethnicity							
Hausa	1(4.2)	8(33.3)	15(62.5)	24(100)	2.090	6	0.911
Igbo	3(3.1)	36(37.1)	58(59.8)	97(100)			
Yoruba	23(4.5)	213(41.8)	274(53.7)	510(100)			
Other	0(0.0)	1(50)	1(50)	2(100)			
Social class							
Low	13(5.0)	103(39.8)	143(52.2)	259(100.0)	12.004	4	0.017
Middle	12(7.5)	58(36.0)	91(56.5)	161(100.0)			

High	2(0.9)	97(45.5)	114(53.5)	213(100.0)		
Religion						
Christian	6(1.5)	177(45.0)	210(53.4)	393(100.0)	35.731 6 0.000
Muslim	18(7.9)	79(34.5)	132(57.6)	229(100.0)	
Traditional	3(30.0)	2(20.0)	5(50.0)	10(100.0)	
Other	0(0)	0(0)	1(100.0)	1(100.0)	

4.4 Sociodemographic factors predicting the stigmatising lay attitude

The sociodemographic factors predicting lay attitude are shown in Table 9. The social class of the respondents was statistically significant with $p<0.05$. The age group of the respondents and ethnicity were not statistically significant. Among the ethnic group, Yorubas had the most perceived stigma 112 (22%). Among the respondent's religious affiliations, Muslims had the most perceived stigma 60 (26.2%).

Table 9: The association between the lay attitude stigma and sociodemographic characteristics of female adolescents in Ibadan North Local Government Area, Nigeria.

Variable	Perceived stigma				X^2	Df	P value
	Low n (%)	Moderate n (%)	High n (%)	Total n (%)			
Age							
10-14	20(9.8)	148(72.2)	37(18.0)	205(100.0)	11.828	4	0.190
15-17	30(8.1)	252(68.1)	88(23.8)	370(100.0)			
18-19	1(1.7)	51(87.9)	6(10.3)	58(100.0)			
Ethnicity							
Hausa	0(0.0)	20(83.3)	4(16.7)	24(100.0)	10.513	6	0.105
Igbo	4(4.1)	79(81.4)	14(14.4)	97(100.0)			
Yoruba	47(9.2)	351(68.8)	112(22.0)	510(100.0)			
Other	0(0.0)	1(50.0)	1(50.0)	2(100.0)			
Social class							
Low	33(12.7)	169(65.3)	57(22.0)	259(100.0)	21.299	4	0.001
Middle	13(8.1)	111(68.9)	37(23.0)	161(100.0)			
High	5(2.3)	171(80.3)	37(17.4)	213(100.0)			
Religion							
Christian	22(5.6)	302(76.8)	69(17.6)	393(100.0)	22.497	6	0.001
Muslim	26(11.4)	143(62.4)	60(26.2)	229(100.0)			
Traditional	3(30.0)	5(50.0)	2(20.0)	10(100.0)			
Other	0(0.0)	1(100.0)	0(0.0)	1(100.0)			

4.5 Factors predicting the perception of the respondents using the regression model

Table 10 shows the predictor of the SRH stigma among sociodemographic characteristics. The social class, ethnicity of the respondents and religion were statistically significant at $p<0.05$.

Table 10: The factors predicting the perception of the respondents about sexual and reproductive health stigma

Predictors	B	S.E	Standard coefficient	95% CI		P value
Age	0.029	0.024	0.048	-0.190	0.077	0.231
Ethnicity	-0.086	0.029	-0.118	-0.142	-0.030	0.003
Social class	-0.021	0.007	-0.120	-0.035	-0.007	0.003
Religion	0.068	0.028	0.096	0.013	0.124	0.016

Discussion

Adolescents who are said to be vulnerable individuals are exposed to different health issues and they should not only be cared for but also catered for while preparing them for adulthood. From the study, it was deduced that stigma associated with sexual and reproductive health issues may lead to adverse effects like violence which are being beaten by the parents, mental morbidity, internalization of negative beliefs, hopelessness and isolation, feelings of shame, lack of understanding by family, friends and social interaction are mostly experienced by adolescents who are stigmatized. These findings were similar to the claim of the Mayo Clinic (2017) that adolescents who are stigmatized experience such adverse effects which include getting

beaten by parents, mocked by their peer group and their environment (religious leaders and other relevant stakeholders in the community) shame them as well.

The findings from this study show that there is bad perception among in-school adolescent girls about sexual and reproductive health issues and this is consistent with the study done by Hall, et al., (2018). This study also shows that adolescents in the older age group have the least value for high perceived stigma. This finding is supported by the claim that they are able to make decisions on their own at this age (Vicki, M. et al., 2019), and are already resistant to any form of discrimination because they picture themselves as an adult and make decisions about whether to engage in sexual activity or not.

The majority of the respondents agreed to the question that getting pregnant while in school would hinder their opportunity to attend school again and this is because they are seen as mothers already and they are easily shamed by people when there is dispute or disagreement among them. Most of the respondents in this study agreed that "Being pregnant and having a baby when I am still an adolescent will cause people to mock, humiliate, swear or gossip with me". This could lead to a high mortality rate of adolescent girls and necessary actions should be taken to avoid being stigmatized by this issue. However, the international development communities focused on efforts to lower adolescent pregnancy rates. It was essential to achieving the Millennium Development Goals (MDGs), which led WHO to promote capacity development, positive outcomes, and the reduction of adolescent pregnancy among LMICs. Additionally, it has played a crucial role in the establishment of the present sustainable development objectives and plans for global health (SDGs). Goal 3 in particular aims to ensure universal access to reproductive health care facilities. Despite these initiatives, the issue still exists, particularly in LMICs where access to healthcare, information, and educational opportunities is poor.

The study shows that social class, ethnicity of the respondents and religion were predicting factors that influenced the perception of the respondents as all of them were statically significant $p < 0.5$ except for the age group which was not significant. These findings are similar to Hall et al. (2018) study carried out in Ghana which reported that age, city, religious affiliation, educational attainment, relationship status, self-rated health, histories of sexual intercourse, receipt of family planning services, modern contraceptive use, pregnancy, and number of sexual partners were all statistically significant. SRH stigma scores were higher among the girls of younger age, high social class, Yoruba ethnic group and Christians compared to their counterparts. But the religion is in contrast with the work of Hall et al., (2018) that reported Muslim religious affiliation had a higher score of stigma. Regression analysis was carried out to be sure of the real predictors and social class, ethnicity and religion all came out to be statistically significant. According to Fisher, J.W. (2013), in his study he said, even though religious practices vary according to culture, political boundary, local community, and individual, religion plays an important role in the lives of many people all over the world, and in some cases is central to their lives. This is strong enough to be a predicting factor on the perceived stigma about sexual and reproductive health issues. Also, different scriptures preach against premarital sex, which shows religion plays a major role in their decision-making.

Conclusion

1. This study has shown that there is bad perception of sexual and reproductive health issues among the in-school adolescent girls in Ibadan North LGA.
2. Adolescents between the age group 10-17 years of age had more perceived stigma compared to the age group 18-19 who might have built the bridge between personal choices and environmental norms.
3. Peer group/pressure also had a great impact on the decision-making regarding sexual and reproductive health issues because they feel more safe to disclose to friends than family members.
4. The predicting factors for high perceived stigma among in-school adolescent girls were ethnicity, social class and religion. All of these contribute to the lifestyle of in-school adolescent girls whether positively or negatively in making decisions.

Recommendations

Based on the findings from this study, the following recommendations are made:

1. Communication should be paramount in the family to avoid bad advice from friends.
2. Family and friends should embrace the adolescents if they are experiencing any form of sexual and reproductive health issues instead of castigating them.
3. For girls who are pregnant or who are already mothers, certain tactics and interventions are required to prevent from them being stigmatised.
4. Relevant stakeholders should encourage adolescents free from being stigmatized as they are undergoing a transition period and the environment should not be harsh on them.
5. Future research should include in-school adolescent boys as well as out-of-school adolescents.

References

Abajobir, A. A., & Seme, A. (2014). Reproductive health knowledge and services utilization among rural adolescents in East Gojjam zone, Ethiopia: A community-based cross-sectional study. *BMC Health Services Research*. https://bmchealthservres.biomedcentral.com/articles/10.1186/1472-6963-14-138

Akorede, S. N., Hajara, A. A., & Muhammed, A. (2019). Effects of reproductive health education intervention on sexual choices of female undergraduates of University of Ilorin. *Journal of Physical Education Research, 6*(2), 50-55

Arboleda, J. (2002). What causes stigma? *World Psychiatry*. 1(1), pp. 25–26.

Atuyambe, L. (2008). Adolescent and adult first time mothers' health seeking practices during pregnancy and early motherhood in Wakiso district, central Uganda. *Reproductive Health*, 5(1), p. 13. https://doi.org/10.1186/1742-4755-5-13.

Axinn, W. G., & Thornton, A. (1996). The Influence of Parents' Marital Dissolutions on Children's Attitudes Toward Family Formation. *Demography*, 33(1), pp. 66–81. https://doi.org/10.2307/2061714.

Barney, L.J. (2006). Stigma about depression and its impact on help-seeking intentions. *The Australian and New Zealand Journal of Psychiatry*, 40(1), pp. 51–54. https://doi.org/10.1080/j.1440-1614.2006.01741.x.

Bermea, A. M., Toews, M. L., & Wood, L. G. (2018). Students Getting Pregnant Are Not Gonna Go Nowhere: Manifestations of Stigma in Adolescent Mothers' Educational Environment. *Youth & Society*, 50(3), pp. 423–436. https://doi.org/10.1177/0044118X16661734.

Bolarinwa, O. A. (2022). Spatial distribution and factors associated with adolescent pregnancy in Nigeria: a multi-level analysis. *Archives of Public Health*, 80(1), p. 43. Available at: https://doi.org/10.1186/s13690-022-00789-3.

Campbell, (2006). Barriers to fertility regulation: a review of the literature. *Stud Fam Plan*', pp. 87–98.

Clark, S. (2004). Early marriage and HIV risks in sub-Saharan Africa. *Stud Fam Plann*, p. 35:149-60. Available at: https://doi.org/doi: 10.1111/j.1728-4465.

Comstock, G. (1978). Television and Human Behavior. Columbia University Press, 562 West 113th Street, New York, New York 10025.

Corrigan, P. W. Markowitz, F. E. & Watson, A. C. (2004). Structural Levels of Mental Illness Stigma and Discrimination. *Schizophrenia Bulletin*, 30(3), pp. 481–491. Available at: https://doi.org/10.1093/oxfordjournals.schbul.a007096.

Devaney, A. (1981). *The determinants of adolescent pregnancy and childbearing. Final report to National Institute of Child Health and Human Development*. Washington DC: Mathematica Policy Research.

Fatusi, A. O., & Hindin, M. J. (2010). Adolescents and youth in developing countries: Health and development issues in context. *Journal of Adolescence*, 33(4), 499–508. https://doi.org/10.1016/j.adolescence.2010.05.019.

Federal Ministry of Health, Nigeria. (2010). Meeting the sexual and reproductive health needs of young people in Nigeria: A guide for action.

Fisher, J.W. (2013). Relating with God contributes to variance in happiness, over that from personality and age. *Religions*, 4(3):313-324.

Goffman, E. (1963). Stigma: Notes on the management of spoiled identity.

Gretchen, G. (2018). Overcoming Stigma. *NAMI: National Alliance on Mental Illness*. Available at: https://www.nami.org/Blogs/NAMI-Blog/October-2018/Overcoming-Stigma.

Hall, K. S., Morhe, E., Manu, A., Harris, L., Ela, E., & Dalton, V.K. (2018). Factors associated with sexual and reproductive health stigma among adolescent girls in Ghana. *PLoS ONE*, 13(4). https://doi.org/10.1371/journal.pone.0195163.

Hatzenbuehler, M.L., Jo, C.P., & Bruce, G.L. (2013). Stigma as a Fundamental Cause of Population Health Inequalities. *American Journal of Public Health*, 103(5), pp. 813–821. https://doi.org/10.2105/AJPH.2012.301069.

ICPD, (1994). Sexual and Reproductive Health is a Fundamental Human Right: UNFPA Executive Director Addresses Human Rights Council.

Jeynes, W. H. (2001). The effects of recent parental divorce on their children's sexual attitudes and behaviour. *Journal of Divorce & Remarriage*, *35*(1–2), 115–133. https://doi.org/10.1300/J087v35n01_07.

Julia, R., & Scott, H. (2011). Secondary Sexual Characteristics - an overview / *ScienceDirect Topics*. https://www.sciencedirect.com/topics/medicine-and-dentistry/secondary-sexual-characteristics

Kids First, (2021). Stages of Adolescence, Kids First Pediatric Partners. https://www.kidsfirstpediatricpartners.com/parent-education/stages-adolescence.

Laura, N., Melissa, A. S., & Edwin, W. (2019). Stigma in health facilities: why it matters and how we can change it. *BMC Medicine.* https://bmcmedicine.biomedcentral.com/articles/10.1186/s12916-019-1256-2.

Link, B. G., & Phelan, J. C. (2001). Conceptualizing Stigma, *Annual Review of Sociology*, *27*(1), 363–385. https://doi.org/10.1146/annurev.soc.27.1.363.

Makenzius, M. (2019). Stigma related to contraceptive use and abortion in Kenya: scale development and validation. *Reproductive Health* 16. https://doi.org/10.1186/s12978-019-0799-1.

Marshall, W.A., & Tanner, J.M. (1969). Variations in pattern of pubertal changes in girls. *Archives of Disease in Childhood*, *44*(235), 291–303.

Mayo Clinic, (2017). Mental health. *Overcoming the stigma of mental illness.* https://www.mayoclinic.org/diseases-conditions/mental-illness/in-depth/mental-health/art.

Merriam-Webster. Stigma | Definition of Stigma by Merriam-Webster. https://www.merriam-webster.com/dictionary/stigma.

Morris, J. L., & Rushwan, H. (2015). Adolescent sexual and reproductive health: The global challenges. https://doi.org/doi:10.1016/j.ijgo.2015.02.006. PMID 26433504.

Morris, R. G. M. (1982). Place navigation impaired in rats with hippocampal lesions. *Nature*, 297(5868), pp. 681–683. https://doi.org/10.1038/297681a0.

Munakampe, M. N., Zulu, J. M., & Michelo, C. (2018). Contraception and abortion knowledge, attitudes & practices among adolescents from low & middle-income countries: a systematic review. *BMC Health Services Research*, 18(1), p.909. https://doi.org/10.1186/s12913-018-3722-5

Norris, A. (2011). Abortion Stigma: A Reconceptualization of Constituents, Causes, and Consequences. *Women's Health Issues*, 21(3), pp. S49–S54. https://doi.org/10.1016/j.whi.2011.02.010.

Robert, (1982). Developing the concept of curriculum emphases in science education -Science Education. Available at: https://onlinelibrary.wiley.com/doi/10.1002/sce.3730660209 (Accessed: 23 November 2021).

Shah, F., & Zelnik, M. (1981). Parent and peer influence on sexual behaviour, contraceptive use, and pregnancy experience of young women. *Journal of Marriage and the Family*. p. 43(2), 339-348. https://doi.org/10.2307/351385.

Silva, P. (2015). The key to youth-friendly sexual and reproductive health services. Available at: http://www.iwhc.org/2015/01/key-youth-friendly-sexual-reproductivehealth-services.

Singh, S. (1998). Adolescent childbearing in developing countries: a global review. *Studies in Family Planning*, 29(2), pp. 117–136.

SlapGB, (2003). Sexual behaviour of adolescents in Nigeria: cross-sectional survey of secondary school students. *BMJ*, p. 326:15. https://doi.org/doi: 10.1136/bmj.326.7379.15.

Stangl, A. L. (2019). The Health Stigma and Discrimination Framework: a global, crosscutting framework to inform research, intervention development, and policy on health-related stigmas. *BMC Medicine*, 17(1), p. 31. https://doi.org/10.1186/s12916-019-1271-3.

Tunde, S. (2006). Factors affecting Adolescent Sexuality among in-school Adolescents in Lagos, Nigeria. *Training on Sexual Health Research Geneva, Switzerland.* Fonds Universitaire Maurice Chalumeau Scholarship https://www.gfmer.ch/Medical_education_En/PGC_SH_2006/Reviews/pdf/Segun_2006.

UNFPA, (2014). Adolescent sexual and reproductive health. https://www.unfpa.org/pcm/node/9110.

UNHR, (1996). Sexual and reproductive health and rights. https://www.ohchr.org/en/issues/women/wrgs/pages/healthrights.aspx.

UNICEF, (2019). *Adolescents Statistics*, *UNICEF DATA*. https://data.unicef.org/topic/adolescents/overview.

United Nations, (2021). Ibadan, Nigeria Metro Area Population 1950-2021. https://www.macrotrends.net/cities/21990/ibadan/population.

Vicki, M., Mwangome, N., Irene, J., & Aalun, D. (2019). Who should decide about children's and adolescents' participation in health research? The views of children and adults in rural Kenya. Doi:10.1186/s12910-019-0375-9.

Westney, O. E., Jenkins, R.R., & Benjamin, C.A. (1983). Sociosexual Development of Preadolescents, in J. Brooks-Gunn and A.C. Petersen (eds) *Girls at Puberty: Biological and Psychosocial Perspectives*. Boston, MA: Springer US, pp. 273–300. https://doi.org/10.1007/978-1-4899-0354-9_12.

Whitbeck, L. B., Simons, R.L., & Kao, M.Y. (1994). The Effects of Divorced Mothers' Dating Behaviors and Sexual Attitudes on the Sexual Attitudes and Behaviors of Their Adolescent Children. *Journal of Marriage and Family*, 56(3), pp. 615–621. https://doi.org/10.2307/352872.

Wilson, C. N., & Sathiyasusuman, A. (2015). Associated risk factors of STIs and multiple sexual relationships among youths in Malawi. https://doi.org/10.1371/journal.pone.0134286.

World Health Organization, (2008). Reproductive health.

World Health Organization, (2012). Expanding access to contraceptive services for adolescents.

World Health Organization, (2014). Orientation programme on adolescent health for health care providers.

World Health Organization, (2017). Maternal, newborn, child and adolescent health. 2017. http://www.who.int/maternal_child_adolescent/topics/adolescence/development/en.

World Health Organization, (2021). *Adolescent and young adult health*. https://www.who.int/news-room/fact-sheets/detail/adolescents-health-risks-and-solutions.

World Health Organization, (2002). Global consultation on adolescents friendly health service: A consensus statement.' World Health Organization. http://doi.org/WHO/FCH/CAH/02.18.

World Health Organization, (1998). Maternal Health and Newborn Health / Safe Motherhood Programme. *Unsafe abortion : global and regional estimates of incidence of and mortality due to unsafe abortion with a listing of available country data*. WHO/RHT/MSM/97.16. https://apps.who.int/iris/handle/10665/64087.

World Health Organization, (1993). The Health of young people : a challenge and a promise. World Health Organization. https://apps.who.int/iris/handle/10665/37353.

Zelnik, M., & Kantner, J. F. (1980). Sexual activity, contraceptive use and pregnancy among metropolitan-area teenagers: 1971-1979. *Family Planning Perspectives*, 12(5), pp. 230–231, 233–237.

SAFETY OF VACCINE A DETERMINANT OF UTILIZATION OF COVID-19 VACCINES AMONG ACADEMIC STAFF OF COLLEGES OF EDUCATION IN NORTHERN STATES, NIGERIA

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Abstract

The purpose of this study was to assess the safety of vaccines as a determinant of the utilization of COVID-19 vaccines among colleges of education academic staff in Northern States, Nigeria. To achieve the purpose of the study, one research question and hypothesis were formulated and tested for the study. The research design for this study was ex post facto research design. The target population for this study comprised 4,947 academic staff of the twelve Colleges of Education in the Northern States of Nigeria. Therefore, the sample for this study consists of 650 academic staff which were selected among colleges of education academic staff in Northern States, Nigeria by using multi-stage sampling techniques. The instrument used for data collection was a researcher-developed close-ended questionnaire which was validated by five experts in the Department of Human Kinetics and Health Education, Public Health and Nursing Science at Ahmadu Bello University Zaria with a reliability coefficient of 0.80. Descriptive statistics of frequencies and percentages were used to describe the demographic information of the respondents; means and standard deviations to answer the research question, and inferential statistics of one-sample t-test was used to test the null hypotheses at 0.05 level of significance. The study findings revealed that the safety of the vaccine is a significant determinant of COVID-19 vaccine utilisation among academic staff of Colleges of Education in Northern Nigeria (t=115.134, P=0.000). Based on the findings of the study it was concluded that; the safety of the vaccine determines the utilization of the COVID-19 vaccine among the academic staff of the College of Education in Northern States, Nigeria. It was therefore recommended that FGN and NGOs should sensitize the general public on the safety of vaccines through symposiums, lectures, drama, seminars and magazines this will help in correcting misconceptions and improve the rate of utilization of the vaccines among colleges of education academic staff in the northern states, Nigeria.

Keywords: Determinant, Safety, Utilization, Vaccination, COVID-19, Academic Staff

Introduction

The emergence of COVID-19 in late 2019 fundamentally altered the course of human history. This novel coronavirus, characterized by its high transmissibility and potential for severe illness, rapidly swept across the globe, leaving a devastating trail of illness and death. In late December 2019, a cluster of patients in Wuhan, China, presented with a mysterious respiratory illness. Investigations by Chinese health authorities identified a novel coronavirus, later named SARS-CoV-2, as the causative agent (Zhu et al., 2020). The disease caused by this virus was termed COVID-19 (coronavirus disease 2019) by the World Health Organization (WHO) in February 2020 (Cucinotta, & Vanelli, 2020). The outbreak rapidly escalated, prompting the WHO to declare a Public Health Emergency of International Concern (PHEIC) in January 2020 and a global pandemic just two months later (WHO, 2020). COVID-19 quickly spread across the globe, posing a significant threat to public health due to its high transmissibility and the absence of prior immunity in the human population.

Coronaviruses are a large family of viruses that can infect mammals and birds. While some coronaviruses cause the common cold, others, like SARS-CoV-2, can lead to more severe respiratory illnesses. The exact origin of SARS-CoV-2 remains under investigation, but scientists believe it likely jumped from bats to an intermediate animal host before infecting humans (Andersen et al., 2020). The virus primarily spreads through respiratory droplets expelled when an infected person coughs or sneezes. People can also become infected by touching a contaminated surface and then their face. The severity of COVID-19 illness varies greatly, ranging from asymptomatic or mild flu-like symptoms to severe pneumonia, respiratory failure, and even death. Older adults and individuals with underlying health conditions are at higher risk for developing serious complications (Akorede, 2021; Laires & Nunes, 2020).

Since its emergence, COVID-19 has had a profound impact on the world. The pandemic has resulted in millions of cases and deaths worldwide, straining healthcare systems and disrupting economies (Idris et al., 2022; Clemente-Suárez et al., 2021; Kaye et al., 2021). The global scientific community has responded rapidly, developing diagnostic tests, treatments, and most

importantly, vaccines. However, the virus continues to evolve, with new variants emerging that can be more transmissible or evade immune responses (Akorede et al., 2021; Lazarevic et al., 2021). As we move forward, continued vigilance and research are crucial to effectively manage COVID-19 and mitigate its future impact.

Vaccination is the introduction of a live or attenuated antigen to induce the formation of antibodies to protect against organisms that cause disease, such as bacteria and viruses. According to WHO (2020), vaccination is one of the most effective preventative measures against infectious illnesses. But for a vaccine or immunization program to be successful, uptake and coverage are essential factors (Akorede et al., 2022; Kwok et al., 2020). Estimating the degree of herd immunity needed to stop the COVID-19 outbreaks in the impacted nations. With the widespread distribution of many safe and effective vaccinations against SARS-Cov-2, false information about possible vaccine candidates has proliferated worldwide. According to many media sources, mistrust against the US and certain EU nations has grown to be a significant barrier to more widespread vaccination (Bajos et al., 2022). However, there are conflicting emotions, a great deal of mistrust, indifference, and denial in Nigeria regarding the pandemic's growth, as well as vaccine-related difficulties.

The global rollout of COVID-19 vaccines has been a significant achievement, with over 5.5 billion people receiving at least one dose as of May 2024 (UNU-MERIT, 2024). However, significant disparities exist in vaccine uptake between countries. High-income nations have generally achieved higher vaccination rates, with some exceeding 70% fully vaccinated (UNU-MERIT, 2023). Conversely, low- and middle-income countries often lag, hindered by a complex interplay of factors. These include vaccine supply chain challenges, limited healthcare infrastructure, economic constraints, and political instability (WHO, 2015).

Sub-Saharan Africa presents a unique picture of COVID-19 vaccine uptake. While initial enthusiasm was high, with surveys suggesting a strong willingness to be vaccinated (Wollburg, Markhof, Kanyanda, & Zezza, 2023), actual uptake has fallen short. As of March 2023, less than 30% of the population in Sub-Saharan Africa is fully vaccinated (UNU-MERIT, 2023). This gap can be attributed partly to logistical hurdles, such as limited vaccine access in remote areas, cold chain infrastructure deficiencies, and shortages of trained healthcare workers (Afolabi et al., 2021). However, vaccine hesitancy fuelled by misinformation and lack of trust in healthcare systems also plays a significant role (Tijani et al., 2023).

Nigeria, Africa's most populous nation, reflects the broader challenges faced by the continent. Despite government efforts, including public awareness campaigns and free vaccination programs, only a fraction of the population is fully vaccinated. Olumuyiwa, Mbachu, Nwizu and Uchegbu (2022) affirmed a high vaccine acceptance among those already vaccinated, but hesitancy remains a significant barrier. Misconceptions about vaccine safety and efficacy, particularly around social media-driven rumours and conspiracy theories, coupled with logistical issues and limited access to reliable information through trusted channels, contribute to this hesitancy (Olumuyiwa, et al, 2022). Additionally, pre-existing vaccine hesitancy related to routine childhood immunizations can spill over and influence COVID-19 vaccine decisions (Owolabi, Balogun, Adekanmbi, Nwizu, Uchegbu & Meremikwu, 2021).

While concerns about vaccine safety are a major factor contributing to hesitancy globally, their specific impact in Nigeria is nuanced. Anxieties surrounding unknown long-term effects and misinformation about serious adverse reactions propagated on social media remain significant deterrents (Olumuyiwa, et al, 2022; Owolabi, et al, 2021). This highlights the need for targeted public health campaigns that emphasize the rigorous testing undergone by COVID-19 vaccines and leverage trusted community voices to counter misinformation.

Despite the sensitizations on the devastating outcome of COVID-19 when contracted, the researchers observed that some myths and misconceptions about the vaccine still exist. Some saying is not safe, while others believe it is a plot to depopulate the African population and cause infertility among others. The researchers observed that despite the effort of the government to ensure everyone gets vaccinated against the disease. A lot of persons including academicians in the colleges of education shy away from being vaccinated. As a result, more people in Northern Nigeria are refusing to receive the immunization. The researcher also observed that despite jingles aired on vaccination safety, unfavourable perceptions about vaccination continue to persist. Therefore, on this background, the researcher was moved to carry out this study to assess the safety of vaccine as a determinant of the utilization of COVID-19 vaccines among academic staff of the colleges of education in Northern States, Nigeria.

Purpose of the Study

The purpose of this study was to assess the safety of vaccine as a determinant of COVID-19 vaccine utilization among academic staff of the College of Education in Northern States, Nigeria.

Research Question

Does the safety of vaccine determine the utilization of the COVID-19 vaccine among academic staff of the College of Education in Northern States, Nigeria?

Hypothesis

Safety of vaccine is not a significant determinant of the utilization of the COVID-19 vaccine among the academic staff of the College of Education in Northern States, Nigeria.

Methodology

To examine the safety of vaccine as a determinant of the utilization of COVID-19 vaccination among academic staff at colleges of education in the Northern States, Nigeria the study employed an ex-post facto research design. From the population of 23491 academic staff of Colleges of Education in the Northern States of Nigeria, a sample size of 650 academic staff members was drawn from 12 randomly selected colleges of education in the Northern States of Nigeria. Adopting a multistage sampling procedure; the researcher also adopted the Research Advisor (2006) procedure to arrive at the sample size. Research Advisor emphasized that for a population of more than 4,947 a sample size of 650 should be appropriate.

The researcher stratified the Northern states of Nigeria into the already existing three geo-political zones North-East zone, North-Central zone and North-West zone. Simple random sampling technique was used to select two States from each of the three geopolitical zones. Two (2) Colleges of Education were randomly selected from each of the six (6) States that were drawn from the three (3) geopolitical zones. A proportionate sampling technique was used to compute the number of respondents in each College of Education using the proportionate formula and lastly purposive sampling procedure was used to administer the questionnaires at the colleges selected for the study.

Table 1: Selected States Target Population and Proportionate sampled Respondents

S/N	Geo-political	State	College	Number of Staff	Sampled size
1.	North-east	Bauchi	ASCOE Azare	493	65
			ATBCOE Kangere	786	103
		Gombe	FCE Gombe	254	33
			COE Billiri	841	110
2.	North-west	Jigawa	COE Gumel	241	32
			COE Ringim	350	46
		Kano	FCE Kano	433	57
			COE SadaatuRimi	222	29
3.	North-central	Niger	COE Minna	303	40
			FCE Kotagora	261	34
		Plateau	FCE Pankshin	378	50
			COE SarkinMangu	385	51
	Total	**6**	**12**	**4947**	**650**

Source: National Commission for Colleges of Education, Abuja (2017)

The researchers used a researcher-developed questionnaire for data collection. The research instrument is made up of seven sections. The research instrument was vetted by five (5) experts in the Department of Human Kinetics and Health Education, Faculty of Education, Ahmadu Bello University, Zaria-Nigeria to determine its face, content and construct validity. After the final draft was produced a pilot test was conducted at the Federal College of Education Technical Potiskum (Yobe State) to confirm the content validity and reliability of the instrument. Using the split-half reliability approach of Cronbach's Alpha technique a reliability coefficient of 0.80 was obtained. Mean and standard deviation was used to answer the research question. One – Sample t-test was used to analyse the formulated hypothesis at 0.05 alpha level.

Answering of Research Questions

Research Question One: Is the safety of COVID-19 vaccination a determinant of utilization among academic staff of Colleges of Education in Northern States, Nigeria?

Table 2: **Mean scores and standard deviation on the Response of Academic Staff of Colleges of Education in Northern Nigeria on the Safety of COVID-19 vaccine as a Determinant of its Utilisation**

S/N	Safety of Covid-19 as Determinant of its Utilisation	Mean	SD
1.	There is no harm in taking COVID-19 vaccine	2.92	0.73
2.	The COVID-19 vaccine will be useful in protecting me from the COVID-19 infection.	2.95	0.71
3.	There is sufficient data regarding the vaccine safety released by the government.	2.65	0.76
4.	There is sufficient data regarding the vaccine efficacy released by the government.	2.55	0.75
5.	There are no serious side effects after taking the COVID-19 vaccine	2.69	0.70
6.	Many people are taking the COVID-19 vaccine because it is safe.	2.81	0.74
	Aggregate mean	**2.76**	**0.73**

Decision mean=2.50

Table 2 revealed the mean of the responses of the academic staff of Colleges of Education in Northern Nigeria on the safety of the COVID-19 vaccine as a determinant of COVID-19 vaccine utilisation. The table showed that the mean response of each item on the safety of the COVID-19 vaccine as a determinant of COVID-19 utilization was greater than the decision means of 2.50, the table also showed that the aggregate mean of 2.76 obtained was greater than the decision mean of 2.50, therefore, the safety of COVID-19 vaccine is a determinant of COVID-19 vaccine utilization among academic staff of Colleges of Education in Northern Nigeria.

Hypothesis Testing

Hypothesis: The safety of vaccine is not a significant determinant of the utilization of the COVID-19 vaccine among the academic staff of the College of Education in Northern States, Nigeria

Table 3: Summary of One Sample T-test on Safety as Determinant of COVID-19 Utilisation among Academic Staff of Colleges of Education in Northern Nigeria

Variable	N	Mean	SD	SE	Df	T	P
Safety of Vaccine	650	2.76	3.12	0.122	649	115.134	.000
Test mean	650	2.50					

t_{tab}=1.962, df: 649; P<0.05

Table 3 revealed the summary of one sample t-test on safety as a determinant of COVID-19 vaccine utilisation among academic staff of Colleges of Education in Northern Nigeria. The table showed the calculated mean of 2.76 which is greater than the decision mean of 2.50. The calculated t-cal was 115.134 greater than the t-critical value of 1.962 at 648df. The table further revealed that the calculated p-value was .000 less than the alpha value of .05; this indicated that safety is a significant determinant of COVID-19 vaccine utilisation among academic staff of Colleges of Education in Northern Nigeria, therefore, the hypothesis was rejected.

Discussions

This research assesses the safety of vaccine as a determinant for the utilization of COVID-19 vaccinations among academic staff in Northern States of Nigerian colleges of education. Data collected were computed and analysed. One hypothesis was developed and examined. According to the study's findings, academic staff at Northern Nigerian colleges of education have a higher likelihood of using the COVID-19 vaccination if they feel the vaccines are safe (t=115.134, df: 649; P<0.05). The study's conclusion showed that the safety of the COVID-19 vaccine is a significant factor in vaccination uptake among

academic staff in Northern Nigerian colleges of education. The results are consistent with the study conducted in 2021 by El-Elimat, Abu-AlSamen, Almomani, Al-Sawalha, and Alali, which evaluated attitudes and acceptability of the COVID-19 vaccination. According to the results, Jordan's public acceptance of the COVID-19 vaccination was just 37.4%. Participants who thought vaccinations are usually safe also said as much. Furthermore, participants were less likely to accept COVID-19 vaccinations if they thought there was a conspiracy behind it or if they didn't trust any source of information about it. The finding of this study aligns with the findings from a study conducted by Altulaihi, Alharbi, Alaboodi, Alkanhal, Alobaid, Aldraimly,...&Aldraimly, (2021) in Riyadh Saudi Arabia, the study reported that the most common deterrent to taking the COVID-19 vaccine was safety issues.

Conclusion

Based on the findings of this study, the study concluded that the safety of vaccine determines the utilization of the COVID-19 vaccine among the academic staff of the College of Education in Northern States, Nigeria.

Recommendation

Based on the conclusion of this study, the study recommended that the federal government and NGOs should sensitize the general public on the safety of vaccines through symposiums, lectures, drama, seminars and magazines this will help in correcting misconceptions and improve the rate of utilization of the vaccines among colleges of education academic staff in the northern states, Nigeria.

References

Afolabi, M. O., Wariri, O., Saidu, Y., Otu, A., Omoleke, S. A., Ebenso, B., ... & Yaya, S. (2021). Tracking the uptake and trajectory of COVID-19 vaccination coverage in 15 West African countries: an interim analysis. *BMJ Global Health*, *6*(12), e007518.

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., Atanda, T., & 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

Akorede, S. N., Isiya, G., & Usman, U. (2022). Acceptance of COVID-19 Vaccine among Staff of Federal College of Education, Katsina. *ABSU Journal of Educational Studies, 9*(3), 1-5.

Altulaihi, B. A., Alharbi, K. G., Alaboodi, T. A., Alkanhal, H. M., Alobaid, M. M., Aldraimly, M. A., ... &Aldraimly, M. (2021). Factors and determinants for uptake of COVID-19 vaccine in a medical university in Riyadh, Saudi Arabia. *Cureus*, *13*(9).

Andersen, K. G., Rambaut, A., Lipkin, W. I., Holmes, E. C., & Garry, R. F. (2020). The proximal origin of SARS-CoV-2. *Nature Medicine*, *26*(4), 450-452.

Bajos, N., Spire, A., Silberzan, L., Sireyjol, A., Jusot, F., Meyer, L., ... &EpiCov Study Group. (2022). When lack of trust in the government and scientists reinforces social inequalities in vaccination against COVID-19. *Frontiers in public health*, *10*, 908152.

Clemente-Suárez, V. J., Navarro-Jiménez, E., Moreno-Luna, L., Saavedra-Serrano, M. C., Jimenez, M., Simón, J. A., & Tornero-Aguilera, J. F. (2021). The impact of the COVID-19 pandemic on social, health, and economy. *Sustainability*, *13*(11), 6314.

Cucinotta, D., & Vanelli, M. (2020). WHO declares COVID-19 a pandemic. *Acta bio medica: AteneiParmensis*, *91*(1), 157.

El-Elimat, T., AbuAlSamen, M. M., Almomani, B. A., Al-Sawalha, N. A., & Alali, F. Q. (2021). Acceptance and attitudes toward COVID-19 vaccines: a cross-sectional study from Jordan. *Plos one*, *16*(4), e0250555.

Idris, S. Y., Akorede, A. A., & Isiaq, A. T**.** (2022). Assessment of knowledge and practice of COVID-19 prevention strategies among Secondary School Students in Samaru, Zaria. *Global Journal of Health Related Researches*, *4*(1), 16-23.

Kaye, A. D., Okeagu, C. N., Pham, A. D., Silva, R. A., Hurley, J. J., Arron, B. L., ... & Cornett, E. M. (2021). Economic impact of COVID-19 pandemic on healthcare facilities and systems: International perspectives. *Best Practice & Research Clinical Anaesthesiology*, *35*(3), 293-306.

Kwok, K. O., Lai, F., Wei, W. I., Wong, S. Y. S., & Tang, J. W. (2020). Herd immunity–estimating the level required to halt the COVID-19 epidemics in affected countries. *Journal of Infection*, *80*(6), e32-e33.

Laires, P. A., & Nunes, C. (2020). Population-based estimates for high risk of severe COVID-19 disease due to age and underlying health conditions. *Acta Medica Portuguesa*, *33*(11), 720-725.

Lazarevic, I., Pravica, V., Miljanovic, D., &Cupic, M. (2021). Immune evasion of SARS-CoV-2 emerging variants: what have we learnt so far? *Viruses*, *13*(7), 1192.

National Commission for Colleges of Education, Abuja (2017)

Olumuyiwa, O. O., Mbachu, C. O., Nwizu, N. C., &Uchegbu, O. I. (2022). Factors influencing COVID-19 vaccine hesitancy in Nigeria: A systematic review. International *Journal of Infectious Diseases*, *122*, 212-220.

Owolabi, M. O., Balogun, I. A., Adekanmbi, O. A., Nwizu, N. C., Uchegbu, O. I., &Meremikwu, A. O. (2021). Covid-19 vaccine hesitancy in Nigeria: A qualitative exploration of reasons for hesitancy and acceptance. BMJ Global Health, 6(12), e007518. https://bmjopen.bmj.com/content/13/7/e068668

Research Advisors (2006). *Sample Size Table*. http://research-advisors.com

Tijani, B., Filani, T., Oluyide, O., Odis, A., Ezike, E., Adewemimo, A., ... &Akinreni, T. (2023). COVID-19 Vaccine Uptake and its Determinants: Findings From A Web-Based Survey in Nigeria. *European Journal of Medical and Health Sciences*, *5*(4), 48-52.

UNU-MERIT (2023). COVID-19 vaccine uptake in Sub-Saharan Africa. Retrieved at https://www.merit.unu.edu/covid-19-vaccine-africa/

Wollburg, P., Markhof, Y., Kanyanda, S., & Zezza, A. (2023). Assessing COVID-19 vaccine hesitancy and barriers to uptake in Sub-Saharan Africa. *Communications medicine*, *3*(1), 121.

World Health Organization (2015). Global vaccine hesitancy landscape and country context. Retrieved at https://www.who.int/news/item/18-08-2015-vaccine-hesitancy-a-growing-challenge-for-immunization-programmes - (Accessed May 21, 2022)

World Health Organization (2020). WHO Director-General declares global health emergency over novel coronavirus (2019-nCoV).

World Health Organization (WHO) (2020). Transmission of SARS-CoV-2: implications for infection prevention precautions. World Health Organization. Retrieved from: https://www.who.int/news-room/commentaries/detail/transmission-of-sars-cov-2-implications-for-infection-prevention-precautions.July 9, 2020; Accessed: July 13, 2020.

Zhu, N., Zhang, D., Wang, W., Li, X., Yang, B., Song, J., ... & Tan, W. (2020). A novel coronavirus from patients with pneumonia in China, 2019. *New England Journal of Medicine*, *382*(8), 727-733.

HEALTH MANAGEMENT PRACTICES AND TEACHERS' CREATIVITY IN ALIMOSHO LOCAL GOVERNMENT AREA, LAGOS STATE

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Abstract

This study investigated the influence of health management practices, specifically sleep quality and duration, and illness management, on the creativity of senior secondary school teachers in Alimosho Local Government, Lagos State, Nigeria. Using a descriptive research design, data were collected from teachers through a structured questionnaire and analysed using linear regression. The results revealed that sleep quality and duration significantly affect teachers' creativity ($\beta = 0.331$, $p < 0.05$), explaining 10.9% of the variance in creativity. Additionally, illness management practices were found to significantly predict creativity ($\beta = 0.541$, $p < 0.05$), accounting for 29.2% of the variance. Based on these findings, this study concluded that adequate sleep and proactive health management are important in promoting creative capacities among teachers. Consequently, it is recommended that schools implement wellness programs that educate teachers on the importance of quality sleep and provide resources for managing sleep-related issues. This can include workshops on relaxation techniques, stress management, and the benefits of maintaining a regular sleep schedule. Also, educational authorities should encourage and facilitate proactive illness management practices among teachers. This can be achieved by providing access to health resources, such as regular health check-ups, mental health support services, and programs that teach effective stress management techniques.

Keywords: Creativity, health management, illness management practices, teachers, sleep quality and duration

Introduction

In the contemporary educational environment, the importance of creativity among teachers cannot be overstated. Creativity is essential for developing engaging lesson plans, accommodating diverse learning styles, and promoting an interactive classroom environment that stimulates student engagement and critical thinking (Acar et al., 2024). The ability to innovate and think creatively allows teachers to navigate the complexities of modern education, integrate technology effectively, and meet the varied needs of their students. Accordingly, interrogating the factors (health management practices) that enhance teacher creativity is of paramount importance for educational stakeholders aiming to improve educational outcomes and support a culture of innovation within secondary schools (Sawyer, 2011). Health management practices which include sleep quality and duration, and illness management, are crucial factors that could affect cognitive function and overall well-being, which are critical for creativity (King et al., 2017). Sleep plays a vital role in various cognitive processes such as memory consolidation, problem-solving, and creative thinking (Krause et al., 2017). Adequate sleep quality and duration are essential for the optimal functioning of the brain, supporting the mental flexibility and cognitive resources necessary for creative tasks. In contrast, insufficient or poor-quality sleep can lead to cognitive impairments, mood disturbances, and reduced creative performance (Gilley, 2023). Despite the well-documented importance of sleep, there is limited research specifically examining its effect on the creativity of teachers, highlighting a gap in the literature that this study aims to address.

Illness management practices, encompassing how individuals manage chronic illnesses, stress, and general health maintenance could significantly affect the cognitive function and creativity of people. Effective illness management, which some other scholars like Azeez and Soetan (2022) termed self-care practices can mitigate the adverse effects of chronic conditions on cognitive abilities and overall health of people. Chronic stress and unmanaged health issues can impair cognitive functions, reduce mental clarity, and hinder creative thinking (Buzsáki & Tingley, 2023; Singha, 2024). Conversely, proactive health management, including regular medical check-ups, stress management techniques, and maintaining a healthy lifestyle, can enhance cognitive resilience and support creative processes (Sorensen, 2024). To this end, this study filled these gaps in the literature by assessing the influence of sleep quality and duration on the creativity of senior secondary school teachers in Alimosho Local Government. Additionally, it seeks to investigate the effect of illness management practices on their creativity.

Sleep is a fundamental biological necessity that significantly influences overall health and well-being. The quality and duration of sleep are crucial aspects that determine the restorative functions of sleep. Sleep quality refers to how well one sleeps, encompassing factors such as sleep latency, sleep maintenance, and sleep architecture, while sleep duration is the total amount of time spent sleeping (Hirshkowitz et al., 2015). Adequate sleep quality and duration are vital for maintaining physical health.

Poor sleep quality and short sleep duration have been linked to an increased risk of various chronic health conditions, including cardiovascular diseases, diabetes, and obesity (Cappuccio et al., 2010). For instance, individuals with chronic sleep deprivation exhibit higher levels of inflammatory markers and reduced insulin sensitivity, which can contribute to the development of type 2 diabetes (Buxton & Marcelli, 2010). Furthermore, sufficient sleep is essential for immune function, with evidence suggesting that sleep deprivation impairs immune responses, making individuals more susceptible to infections (Besedovsky, Lange, & Born, 2012). Poor sleep quality and insufficient sleep duration can have detrimental effects on physical health, mental well-being, and cognitive performance. Therefore, ensuring adequate and good-quality sleep should be a priority for teachers to promote overall health and prevent various adverse health outcomes.

Illness management practices encompass a wide range of strategies and interventions designed to help individuals cope with and manage chronic diseases and health conditions. These practices are crucial for improving patients' quality of life, reducing the burden on healthcare systems, and promoting better health outcomes. Key components of illness management include self-management education, lifestyle modifications, medication adherence, and psychosocial support (Schipper et al., 2015). Self-management education empowers patients with knowledge and skills to take an active role in managing their health. This approach emphasizes the importance of understanding the illness, recognizing symptoms, and implementing daily management techniques such as monitoring health indicators and adjusting treatments as needed (Hermanns et al., 2020). Lifestyle modifications are integral to illness management, as they address the underlying risk factors and contribute to the overall well-being of individuals. These modifications often include dietary changes, regular physical activity, and smoking cessation. For instance, dietary interventions can help manage conditions like diabetes and cardiovascular diseases by controlling blood sugar levels and reducing cholesterol (Evert et al., 2019). Regular physical activity is associated with improved cardiovascular health, enhanced mood, and better weight management, which are essential for managing chronic illnesses (Stonerock & Blumenthal, 2017). Furthermore, smoking cessation is a critical aspect of managing respiratory and cardiovascular diseases, significantly improving health outcomes and reducing the risk of complications (Okorare et al., 2023). Psychosocial support plays a vital role in illness management by addressing the emotional and psychological aspects of living with a chronic condition. Support groups, counselling, and stress management techniques can help patients cope with the emotional burden of chronic illness, reduce anxiety and depression, and improve adherence to treatment plans (Maguire et al., 2021).

Creativity is a complex and multifaceted cognitive process involving the generation of new, useful, and original ideas or solutions. It is critical in various professional fields, including education, where it enables teachers to develop engaging instructional strategies, solve problems innovatively, and adapt to the diverse needs of their students (Runco, 2014). Creativity involves several cognitive processes such as divergent thinking, which allows for the exploration of multiple solutions, and convergent thinking, which narrows down these solutions to the most effective one (Guilford, 1967, as cited in Pinkow, 2023). Several factors influence creativity, including cognitive abilities, personality traits, and environmental conditions. Cognitive abilities such as working memory, attention, and executive functions play a crucial role in creative thinking by allowing individuals to retrieve and manipulate information in novel ways (Dietrich, 2004). Personality traits like openness to experience, intrinsic motivation, and resilience also significantly contribute to creative performance. Openness to experience, for example, fosters a willingness to explore new ideas and perspectives, which is fundamental for creative endeavours (Sawyer & Henriksen, 2024). Creativity is not a static trait but a dynamic process that can be cultivated through various practices and interventions. Techniques such as brainstorming, mind mapping, and creative problem-solving exercises can enhance creative thinking (Paulus et al., 2023). Additionally, activities that promote relaxation and reduce stress, such as physical exercise and mindfulness meditation, have been shown to improve cognitive function and creativity (Horan, 2009).

The self-determination theory (SDT), developed by Deci and Ryan (1985), provides a comprehensive framework for understanding human motivation, particularly how intrinsic and extrinsic factors influence behaviour and cognitive function. SDT posits that human motivation is driven by the need to satisfy three fundamental psychological needs: autonomy, competence, and relatedness. When these needs are met, individuals are more likely to experience enhanced motivation, well-being, and cognitive functioning, including creativity. The strength of SDT lies in its holistic approach to understanding motivation and behaviour. The theory emphasizes the role of intrinsic motivation—engaging in activities for their inherent satisfaction and enjoyment—over extrinsic motivation, which involves external rewards or pressures. Intrinsic motivation has been consistently linked to higher levels of creativity, as it fosters a deeper engagement with tasks and allows for more flexible and original thinking (Ryan & Deci, 2000). In the context of this study, SDT can explain how health management practices, such as ensuring adequate sleep and effectively managing illnesses, support the basic psychological needs that underpin intrinsic motivation and, consequently, enhance creativity. For example, teachers who maintain good health are more likely to feel competent and autonomous, which can boost their intrinsic motivation and creative performance. However, SDT has faced criticism from various scholars. One major critique is that SDT may not fully account for the complexity of motivation in real-world settings, where intrinsic and extrinsic motivations often interact in nuanced ways (Hagger et al., 2014). Critics argue that the theory's dichotomy between intrinsic and extrinsic motivation can be overly simplistic, failing to capture the dynamic interplay between different motivational forces. Additionally, some researchers have pointed out that SDT's emphasis on

autonomy may not be universally applicable across all cultures, as collectivist societies may value relatedness and community over individual autonomy (Chirkov et al., 2003). Despite these critiques, SDT remains a robust theoretical framework for understanding how fulfilling basic psychological needs can enhance intrinsic motivation and creativity.

Extant studies have shown the influence of sleep quality and duration on cognitive functions that are crucial for creativity. High-quality sleep, characterized by adequate duration and continuity, is essential for optimal brain function. Studies have demonstrated that sleep facilitates memory consolidation, emotional regulation, and various cognitive processes such as divergent thinking and problem-solving, which are integral to creative thinking (Walker, 2017). For instance, sleep allows for the reorganization and integration of information, enabling the formation of novel connections and ideas essential for creativity (Van den Berg et al., 2023). Furthermore, the study of Cai et al. (2009) found that individuals who napped showed improved performance on tasks requiring creative problem-solving compared to those who did not. This suggests that even short periods of sleep can significantly enhance creative processes by allowing the brain to refresh and reorganize. Furthermore, rapid eye movement (REM) sleep has been particularly linked to enhanced creativity due to its role in associative thinking and the integration of disparate information (Wagner et al., 2004). These findings highlight the necessity of adequate sleep for maintaining high levels of creativity.

Despite the clear link between sleep and cognitive performance, many professionals, including teachers, often suffer from inadequate or poor-quality sleep due to various stressors and demanding schedules. This sleep deprivation can lead to significant cognitive impairments, mood disturbances, and a reduction in creative capacities. A study by Killgore (2010) revealed that sleep deprivation negatively impacts innovative thinking and the ability to generate novel solutions, further emphasizing the importance of sleep for maintaining creativity. Addressing these sleep issues is crucial for optimizing cognitive functions and enhancing creative performance in demanding professions like teaching. Moreover, chronic sleep deprivation can have long-term adverse effects on health and cognitive functions, further diminishing creative capabilities. Chronic lack of sleep has been associated with reduced neuroplasticity, impaired memory, and decreased problem-solving abilities (Stickgold & Walker, 2013). These cognitive deficits can significantly hinder a teacher's ability to engage in creative thinking and develop innovative teaching strategies. Consequently, ensuring adequate sleep is essential for fostering a creative and effective teaching environment.

Illness management practices, which encompass strategies and behaviours adopted to manage chronic illnesses, stress, and overall health, are also critical for sustaining cognitive function and creativity. Research indicates that proactive illness management can support cognitive resilience and enhance creative output. For instance, individuals who effectively manage their health conditions tend to exhibit better cognitive performance and higher levels of creative thinking compared to those who do not. A study by Loziak (2022) found that effective stress management practices, such as mindfulness and relaxation techniques, can reduce the effect of chronic stress on cognitive functions, thereby preserving mental clarity and supporting creative processes. These findings underscore the importance of illness management for maintaining creativity, particularly in high-stress professions like teaching. Chronic stress and unmanaged health issues can have severe negative impacts on cognitive functions and creativity. Persistent stress can lead to cognitive fatigue, reduced mental flexibility, and impaired problem-solving abilities, all of which hinder creative thinking. McEwen (2006) noted that chronic stress can damage brain structures involved in memory and executive function, further diminishing creative capacities. Therefore, effective stress and illness management are essential for maintaining the cognitive functions required for creativity.

Research Hypotheses

H₁: sleep quality and duration have a significant effect on the creativity of senior secondary school teachers in Alimosho Local Government

H₂: Illness management practices have a significant effect on the creativity of senior secondary school teachers in Alimosho Local Government

Methodology

This study used the descriptive research design to examine the interplay between health management practices (sleep quality and duration and illness management practices) and the creativity of senior secondary school teachers in the Alimosho Local Government. This design is suitable as it allows for an in-depth description of the variables and their interactions without altering the study environment (Creswell, 2021). The study targeted all senior secondary school teachers in government-registered private schools within Alimosho Local Government. The estimated population is approximately 4,000 teachers, based on the number of private schools and the typical number of teachers employed per school. From this population, 351 respondents were selected using the Krejcie and Morgan (1970) sample size determination table, and participants were chosen through the convenience sampling technique. The justification for using the convenience sampling technique is based on the fact that

Data were gathered using a structured questionnaire and pre-established scales with reliable psychometric properties and Cronbach Alpha values ranging from α=.82 to .89 in various contexts. Sleep quality and duration were assessed with an 8-item scale by Yi et al. (2006), illness management practices were measured with a 13-item patient activation measure (PAM-13) scale developed by Hibbard et al. (2005), and creativity was measured using a 13-item scale developed by George and Zhou (2001). Responses were measured on a five-point Likert scale from strongly disagree (1) to strongly agree (5). The data collection spanned four weeks, during which copies of the questionnaires were distributed and collected, with follow-up reminders sent to ensure a high response rate. This culminated in a response rate of 93% (327 responses). Participants were assured of the confidentiality and anonymity of their responses to encourage honesty in line with the LASU Research Ethics Policy (2020). Out of the 327 responses, 6 were improperly filled and discarded, leaving 321 valid responses for final analysis. The collected data were analyzed using both descriptive and inferential statistics, with descriptive statistics summarizing demographic characteristics and linear regression testing the stated hypotheses. These analyses were conducted using the Statistical Package for the Social Sciences (SPSS) version 26.

Findings and Discussion

This section is concerned with the analysis and discussion of the collected and collated data to understand the interaction between the variables.

Table 1: Breakdown of Demographic Variables

Variable	Classification	Frequency (%)
Age Bracket	20-30	100 (31.2%)
	31-40	122 (38.0%)
	41-50	99 (30.8%)
Department	Science	80 (24.9%)
	Arts	100 (31.2%)
	Commercial	60 (18.7%)
	Vocational/Technical	81 (25.2%)
Marital Status	Single	149 (46.4%)
	Married	162 (50.5%)
	Separated	10 (3.1%)
Educational Qualification	NCE	83 (25.9%)
	BSc/B.Ed	181 (56.4%)
	M.Ed./MSc.	57 (17.8%)
Years of Teaching Experience	0-5	100 (31.2%)
	6-10	164 (51%)
	11-15	57 (17.8%)

Source: *Field Survey (2024)*

The survey results from Table 1 provide a detailed demographic profile of teachers in government-registered private senior secondary schools within Alimosho Local Government. The age distribution indicates that a significant proportion of the respondents fall within the 31-40 age range, making up 38.0% of the sample. This is followed by the 20-30 and 41-50 age groups, which constitute 31.2% and 30.8%, respectively. This suggests that the teaching workforce is predominantly young, with many educators in the early to mid stages of their careers. This youthful demographic may imply a workforce that is adaptable and open to educational reforms and new teaching methodologies. In terms of departmental representation, the respondents are well-distributed across various teaching areas. The Arts and Science departments are the most prevalent, with 31.2% and 24.9% of the teachers, respectively. Additionally, the Vocational/Technical and Commercial departments have substantial representations of 25.2% and 18.7%. This diversity in departmental membership highlights the broad and varied curriculum offered in these private senior secondary schools, reflecting Lagos State's commitment to providing a comprehensive and well-rounded education that caters to a wide array of academic and vocational interests.

The marital status of the respondents reveals that a large portion of the teachers are married (50.5%), with a significant number being single (46.4%) and only a small percentage of the teachers are separated (3.1%). These personal demographics could influence the work-life balance and overall stability of the teaching staff, which are crucial factors in fostering a supportive and dynamic work environment. These factors can affect teachers' job satisfaction, performance, and creative capacity, which are essential for effective teaching and learning. Educational qualifications among the respondents show that the teaching workforce is highly educated. A majority hold a BSc/B. Ed degree (56.4%), while a notable proportion have attained a Master's degree (M.Ed./MSc.), accounting for 17.8%. Additionally, 25.9% of the teachers hold the Nigeria Certificate in Education (NCE). This high level of academic qualification underscores the capability of the teachers to deliver quality education and

effectively employ advanced teaching techniques, which are vital for enhancing student outcomes and educational standards. Regarding teaching experience, the data reveals a range of experience levels among the teachers. The majority have between 6-10 years of experience, representing 51% of the respondents. This is followed by those with 0-5 years (31.2%) and 11-15 years (17.8%). This could bring fresh ideas and innovative practices to the educational environment.

Test of Hypotheses

Before conducting the linear regression analysis, pre-estimation tests were used to assess the variables. Linearity was assessed by plotting scatterplots of sleep quality duration and illness management practices against creativity, confirming linear relationships. The normality of the residuals was evaluated using Q-Q plots and the Shapiro-Wilk test, which indicated that the residuals were normally distributed (Shapiro-Wilk p-value > 0.05 for both predictors). For sleep quality duration, skewness was 0.15 and kurtosis was 2.20, indicating acceptable levels of symmetry and peakedness. For illness management practices, skewness was -0.22 and kurtosis was 2.35, also within acceptable ranges. These pre-estimation tests validated the assumptions of linear regression, ensuring robust and reliable results for the effects of sleep quality duration and illness management practices on creativity.

H₁: Sleep quality and duration have a significant effect on the creativity of senior secondary school teachers in Alimosho Local Government

Table 2:   **Model Summary of Regression Analysis**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.331[a]	.109	.107	.51917	1.654

a. Predictors: (Constant), Sleep_Quality_Duration

b. Dependent Variable: Creativity

Table 3:   **ANOVA of Regression Analysis**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10.556	1	10.556	39.161	.000[b]
	Residual	85.983	319	.270		
	Total	96.539	320			

a. Dependent Variable: Creativity

b. Predictors: (Constant), Sleep_Quality_Duration

Table 4:   **Coefficients of Regression Analysis**

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.670	.206		12.994	.000
	Sleep_Quality_Duration	.336	.054	.331	6.258	.000

a. Dependent Variable: Creativity

Source: Field Survey (2024)

As evident in Table 2, the model summary table indicates that the R^2 is 0.109, meaning that approximately 10.9% of the variance in creativity can be explained by sleep quality and duration. The standard error of the estimate is 0.51917, which measures the average distance that the observed values fall from the regression line. The Durbin-Watson statistic is 1.654, which is within the acceptable range (1.5 to 2.5), suggesting that there is no significant autocorrelation in the residuals. Furthermore, Table 3 which is the ANOVA table assesses the overall significance of the regression model. The F-statistic is 39.161 with a p-value (Sig.) of 0.000, which is highly significant ($p < 0.05$). This indicates that the regression model is statistically significant and that sleep quality duration is a meaningful predictor of the creativity of teachers in Alimosho Local Government. The model provides a significantly better fit to the data than a model with no predictors, confirming the importance of sleep quality and duration in explaining variations in teachers' creativity. Table 4 shows the constant (intercept) value is 2.670, representing the expected value of creativity when sleep quality and duration are zero. The unstandardized coefficient for sleep quality and duration is 0.336, indicating that for each one-unit increase in sleep quality and duration,

creativity is expected to increase by 0.336 units, holding all else constant. The standardized coefficient (β) of 0.331 shows the strength and direction of the relationship. The t-value for sleep quality and duration is 6.258, with a p-value of 0.000, indicating that sleep quality and duration are a statistically significant predictor of teachers' creativity at the 0.05 significance level. Therefore, the stated alternate hypothesis is accepted.

The results bring to the fore the importance of adequate sleep for cognitive functions that underpin creative thinking. These findings are consistent with existing literature that emphasizes the critical role of sleep in cognitive processes such as memory consolidation, emotional regulation, and problem-solving (Walker, 2017). The study's results reinforce the notion that high-quality sleep facilitates the reorganization and integration of information, enabling the formation of novel connections and ideas essential for creativity (Van den Berg et al., 2023). Furthermore, the significant F-statistic and low p-value from the ANOVA table indicates that sleep quality and duration are meaningful predictors of teachers' creativity. This aligns with the findings of Cai et al. (2009), who demonstrated that even short periods of sleep, such as napping, can significantly enhance creative problem-solving abilities. The regression coefficients further reveal that for each one-unit increase in sleep quality and duration, teachers' creativity is expected to increase by 0.336 units, holding all other factors constant. This strong positive relationship suggests that improvements in sleep quality and duration can lead to significant enhancements in teachers' creative capacities, making it crucial to address sleep-related issues among educators.

The self-determination theory (SDT) provides a robust theoretical framework for understanding the link between sleep and creativity. According to SDT, fulfilling basic psychological needs such as autonomy, competence, and relatedness enhances intrinsic motivation, which is crucial for creative thinking (Ryan & Deci, 2000). Adequate sleep contributes to these psychological needs by improving overall well-being and cognitive function. Teachers who maintain good sleep hygiene are likely to feel more competent and autonomous, boosting their intrinsic motivation and, consequently, their creativity. This aligns with the study's findings that show a significant positive influence of sleep quality and duration on creativity, suggesting that well-rested teachers are more motivated and capable of innovative thinking. Despite the clear benefits of sleep for cognitive performance and creativity, many teachers suffer from inadequate or poor-quality sleep due to various stressors and demanding schedules. This sleep deprivation can lead to significant cognitive impairments, mood disturbances, and reduced creative capacities, as highlighted by Killgore (2010). Chronic sleep deprivation is particularly detrimental, leading to reduced neuroplasticity, impaired memory, and decreased problem-solving abilities (Stickgold & Walker, 2013). These cognitive deficits can significantly hinder a teacher's ability to engage in creative thinking and develop innovative teaching strategies.

H₂: Illness management practices have a significant effect on the creativity of senior secondary school teachers in Alimosho Local Government

Table 5: **Model Summary of Regression Analysis**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.541[a]	.292	.290	.46275	1.804

a. Predictors: (Constant), Illness_Management_Practices
b. Dependent Variable: Creativity

Table 6: **ANOVA of Regression Analysis**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	28.229	1	28.229	131.824	.000[b]
	Residual	68.310	319	.214		
	Total	96.539	320			

a. Dependent Variable: Creativity
b. Predictors: (Constant), Illness_Management_Practices

Table 7: **Coefficients of Regression Analysis**

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.531	.212		7.232	.000
	Illness_Management_Practices	.616	.054	.541	11.481	.000

a. Dependent Variable: Creativity
Source: Field Survey (2024)

Table 5 which shows the model summary contains an R^2 value of 0.292 means that approximately 29.2% of the variance in teachers' creativity can be explained by their illness management practices. The standard error of the estimate is 0.46275, reflecting the average distance that the observed values fall from the regression line. The Durbin-Watson statistic is 1.804, which is within the acceptable range (1.5 to 2.5), suggesting that there is no significant autocorrelation in the residuals. The ANOVA as evident in Table 6 evaluates the overall significance of the regression model. The F-statistic is 131.824 with a p-value (Sig.) of 0.000, which is highly significant ($p < 0.05$). This indicates that the regression model is statistically significant and that illness management practices by teachers significantly predict their creativity. The model provides a substantially better fit to the data than a model with no predictors, confirming the importance of illness management practices in explaining variations in creativity.

From Table 7, the constant (intercept) value is 1.531, representing the expected value of creativity when illness management practices are zero. The unstandardized coefficient for illness management practices is 0.616, indicating that for each one-unit increase in illness management practices, creativity is expected to increase by 0.616 units, holding all else constant. The standardized coefficient (β) of 0.541 shows the strength and direction of the relationship. The t-value for illness management practices is 11.481, with a p-value of 0.000, indicating that illness management practices are a statistically significant predictor of teachers' creativity at the 0.05 significance level. This strong positive interplay suggests that better illness management practices are associated with higher levels of teachers' creativity. Thus, the stated hypothesis is accepted.

Extant studies reinforce the findings of this hypothesis by illustrating the significant cognitive benefits of effective illness management. Loziak (2022) highlights that stress management techniques such as mindfulness and relaxation can mitigate the cognitive impairments associated with chronic stress, thereby enhancing creative capacities. This aligns with the study's results, which demonstrate that teachers who effectively manage their health exhibit higher levels of creativity. Effective illness management reduces cognitive fatigue and enhances mental clarity, allowing teachers to engage more deeply with creative problem-solving and innovative teaching methods. Further supporting these findings, McEwen (2006) noted that chronic stress could damage brain structures involved in memory and executive function, which are critical for creativity. Persistent stress leads to reduced mental flexibility and impaired problem-solving abilities, both of which hinder creative thinking. The detrimental effects of chronic stress on cognitive functions underscore the importance of proactive health management practices. Teachers who adopt effective stress and illness management strategies can maintain better cognitive health, which is essential for sustaining high levels of creativity in their professional roles.

Conclusion and Recommendations

The findings of this study highlight the significant influence of health management practices (sleep quality and duration, as well as illness management practices), on the creativity of senior secondary school teachers in Alimosho Local Government. The regression analysis revealed that sleep quality and duration explain approximately 10.9% of the variance in creativity, emphasizing the critical role that adequate sleep plays in cognitive functions necessary for creative thinking. This aligns with existing literature that accentuates the importance of sleep for memory consolidation, emotional regulation, and problem-solving abilities. Furthermore, the analysis demonstrated that illness management practices account for 29.2% of the variance in creativity, indicating a substantial influence. This study concludes that teachers who effectively manage their health conditions and have good sleep in its right quality and quantity are more likely to maintain cognitive resilience and exhibit higher levels of creativity, supporting the notion that proactive health management practices are essential for optimal cognitive performance.

Based on the foregoing, this study recommends that educational institutions prioritize initiatives that promote high-quality sleep and effective illness management among teachers. Schools should implement wellness programs that educate teachers on the importance of quality sleep and provide resources for managing sleep-related issues. This can include workshops on relaxation techniques, stress management, and the benefits of maintaining a regular sleep schedule. The school needs to promote a culture that values and supports adequate sleep, schools can help teachers maintain the cognitive functions necessary for creative thinking and innovative teaching practices. Additionally, educational authorities should encourage and facilitate proactive illness management practices among teachers. This can be achieved by providing access to health resources, such as regular health check-ups, mental health support services, and programs that teach effective stress management techniques. Schools should also consider implementing policies that allow for flexible scheduling and time off for health reasons, ensuring that teachers can manage their health without compromising their professional responsibilities. By supporting teachers in maintaining their health, educational institutions can enhance their creative capacities and overall effectiveness in the classroom. As suggestions for further studies, future research should explore the long-term effects of sustained sleep quality and illness management practices on creativity across different educational contexts. Longitudinal studies that track teachers' health habits, sleep patterns, and creative outputs over extended periods can provide deeper insights into the causal relationships between these variables.

References

Acar, S., Cevik, E., Fesli, E., Bozkurt, R. N., & Kaufman, J. C. (2024). Testing the Domain Specificity of Creativity with Kaufman Domains of Creativity Scale: A Meta-Analytic Confirmatory Factor Analysis. *The Journal of Creative Behavior*, *58*(1), 171-189.

Azeez, R. O., & Soetan, O. (2022). Employee self-care, occupational stress, and burnout of security personnel. *LASU Journal of Employment Relations & Human Resource Management*, 3(1), 268-277.

Besedovsky, L., Lange, T., & Born, J. (2012). Sleep and immune function. *Pflügers Archiv-European Journal of Physiology*, *463*(1), 121-137.

Buxton, O. M., & Marcelli, E. (2010). Short and long sleep are positively associated with obesity, diabetes, hypertension, and cardiovascular disease among adults in the United States. *Social science & medicine*, *71*(5), 1027-1036.

Buzsáki, G., & Tingley, D. (2023). Cognition from the body-brain partnership: exaptation of memory. *Annual review of neuroscience*, *46*(1), 191-210.

Cai, D. J., Mednick, S. A., Harrison, E. M., Kanady, J. C., & Mednick, S. C. (2009). REM, not incubation, improves creativity by priming associative networks. *Proceedings of the National Academy of Sciences*, *106*(25), 10130-10134.

Cappuccio, F. P., D'Elia, L., Strazzullo, P., & Miller, M. A. (2010). Quantity and quality of sleep and incidence of type 2 diabetes: a systematic review and meta-analysis. *Diabetes care*, *33*(2), 414-420.

Chirkov, V., Ryan, R. M., Kim, Y., & Kaplan, U. (2003). Differentiating autonomy from individualism and independence: a self-determination theory perspective on internalization of cultural orientations and well-being. *Journal of personality and social psychology*, *84*(1), 97-110.

Creswell, J. W. (2021). *A concise introduction to mixed methods research*. SAGE publications.

Deci, E. L., Ryan, R. M., Deci, E. L., & Ryan, R. M. (1985). Conceptualizations of intrinsic motivation and self-determination. *Intrinsic motivation and self-determination in human behavior*, 11-40.

Dietrich, A. (2004). The cognitive neuroscience of creativity. *Psychonomic bulletin & review*, *11*, 1011-1026.

Evert, A. B., Dennison, M., Gardner, C. D., Garvey, W. T., Lau, K. H. K., MacLeod, J., ... & Yancy Jr, W. S. (2019). Nutrition therapy for adults with diabetes or prediabetes: a consensus report. *Diabetes care*, *42*(5), 731-754.

George, J. M., & Zhou, J. (2001). When openness to experience and conscientiousness are related to creative behavior: an interactional approach. *Journal of Applied Psychology*, *86*(3), 513-524.

Gilley, R. R. (2023). The role of sleep in cognitive function: the value of a good night's rest. *Clinical EEG and Neuroscience*, *54*(1), 12-20.

Hagger, M. S., Hardcastle, S. J., Chater, A., Mallett, C., Pal, S., & Chatzisarantis, N. L. D. (2014). Autonomous and controlled motivational regulations for multiple health-related behaviours: between-and within-participants analyses. *Health Psychology and Behavioral Medicine: An Open Access Journal*, *2*(1), 565-601.

Hermanns, N., Ehrmann, D., Finke-Groene, K., & Kulzer, B. (2020). Trends in diabetes self-management education: where are we coming from and where are we going? A narrative review. *Diabetic Medicine*, *37*(3), 436-447.

Hibbard, J. H., Mahoney, E. R., Stockard, J., & Tusler, M. (2005). Development and testing of a short form of the patient activation measure. *Health services research*, *40*(6p1), 1918-1930.

Hirshkowitz, M., Whiton, K., Albert, S. M., Alessi, C., Bruni, O., DonCarlos, L., ... & Ware, J. C. (2015). National Sleep Foundation's updated sleep duration recommendations. *Sleep health*, *1*(4), 233-243.

Horan, R. (2009). The neuropsychological connection between creativity and meditation. *Creativity Research Journal*, *21*(2-3), 199-222.

Killgore, W. D. (2010). Effects of sleep deprivation on cognition. *Progress in brain research*, *185*, 105-129.

King, E., Daunis, M., Tami, C., & Scullin, M. K. (2017). Sleep in studio based courses: outcomes for creativity task performance. *Journal of Interior Design*, *42*(4), 5-28.

Krause, A. J., Simon, E. B., Mander, B. A., Greer, S. M., Saletin, J. M., Goldstein-Piekarski, A. N., & Walker, M. P. (2017). The sleep-deprived human brain. *Nature Reviews Neuroscience*, *18*(7), 404-418.

Krejcie, R. V., & Morgan, D. W. (1970). Sample size determination table. *Educational and Psychological Measurement*, *30*, 607-610.

LASU (2020). *Research Ethics Policy*. LASU Press.

Loziak, A. (2022). Mindfulness or relaxation: What is more effective for work stress? Literature review. *Psychology & Its Contexts/Psychologie a Její Kontexty*, *13*(1), 33-45.

Maguire, R., Hanly, P., & Maguire, P. (2021). Living well with chronic illness: How social support, loneliness and psychological appraisals relate to well-being in a population-based European sample. *Journal of Health Psychology*, *26*(10), 1494-1507.

McEwen, B. S. (2006). Protective and damaging effects of stress mediators: central role of the brain. *Dialogues in clinical neuroscience*, *8*(4), 367-381.

Okorare, O., Evbayekha, E. O., Adabale, O. K., Daniel, E., Ubokudum, D., Olusiji, S. A., & Antia, A. U. (2023). Smoking cessation and benefits to cardiovascular health: a review of literature. *Cureus*, *15*(3), e35966.

Paulus, P. B., Baruah, J., & Kenworthy, J. (2023). Brainstorming: How to get the best ideas out of the "group brain" for organizational creativity. In *Handbook of Organizational Creativity* (pp. 373-389). Academic Press.

Pinkow, F. (2023). Creative cognition: A multidisciplinary and integrative framework of creative thinking. *Creativity and Innovation Management*, *32*(3), 472-492.

Runco, M. A. (2014). "Big C, little c" creativity as a false dichotomy: Reality is not categorical. *Creativity Research Journal*, *26*(1), 131-132.

Ryan, R. M., & Deci, E. L. (2000). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary educational psychology*, *25*(1), 54-67.

Sawyer, K. (2011). The cognitive neuroscience of creativity: A critical review. *Creativity Research Journal*, *23*(2), 137-154.

Sawyer, R. K., & Henriksen, D. (2024). *Explaining creativity: The science of human innovation*. Oxford University Press.

Schipper, K., Bakker, M., De Wit, M., Ket, J. C. F., & Abma, T. A. (2015). Strategies for disseminating recommendations or guidelines to patients: a systematic review. *Implementation Science*, *11*, 1-17.

Singha, R. (2024). Stress, Resilience, and brain performance. In *Building Organizational Resilience With Neuroleadership* (pp. 14-29). IGI Global.

Sorensen, J. (2024). *The Art and Science of Lifestyle Medicine: A Practical Guide to Transforming Your Health*. eBookIt.

Stickgold, R., & Walker, M. P. (2013). Sleep-dependent memory triage: evolving generalization through selective processing. *Nature Neuroscience*, *16*(2), 139-145.

Stonerock, G. L., & Blumenthal, J. A. (2017). Role of counselling to promote adherence in healthy lifestyle medicine: strategies to improve exercise adherence and enhance physical activity. *Progress in cardiovascular diseases*, *59*(5), 455-462.

van den Berg, N. H., Smith, D., Fang, Z., Pozzobon, A., Toor, B., Al-Kuwatli, J., ... & Fogel, S. M. (2023). Sleep strengthens resting-state functional communication between brain areas involved in the consolidation of problem-solving skills. *Learning & Memory*, *30*(1), 25-35.

Wagner, U., Gais, S., Haider, H., Verleger, R., & Born, J. (2004). Sleep inspires insight. *Nature*, *427*(6972), 352-355.

Yi, H., Shin, K., & Shin, C. (2006). Development of the sleep quality scale. *Journal of Sleep Research*, *15*(3), 309-316.

EVALUATION OF FOOD INTAKE PATTERN AMIDST THE CURRENT HARDSHIP AMONG UNDERGRADUATE STUDENTS OF AHMADU BELLO UNIVERSITY, ZARIA, KADUNA STATE, NIGERIA

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Abstract
The purpose of this study was to evaluate the food intake pattern amid the current hardship among undergraduate students of Ahmadu Bello University, Zaria. One research question was raised to guide the study. The research design adopted for this study was a descriptive survey. The population consist of about 19,764 undergraduate students living in the school hostels in both campuses; Samaru and Kongo. Five (5) out of sixteen (16) student hostels were randomly selected using simple random sampling technique. Respondents were selected from each of the five (5) hostels proportionately based on the total population of students in the hostels which gives the total sample size of three hundred and ninety-two (392) undergraduate students using proportionate sampling technique. Data was collected using a closed-ended questionnaire which was validated by three (3) experts. Percentage and frequency count were used as the statistical tools in analyzing the data presented in a pie chart. The results of the study revealed that the majority of undergraduate students in Ahmadu Bello University, Zaria, practised poor and irregular food intake habits, skipped meals by taking meals twice a day, skipped mostly launch, and breakfast and did not pay attention to the nutritional benefits of what they consume. Based on the findings of this study, it was concluded that the majority of undergraduate students in Ahmadu Bello University, Zaria, adopted a poor and irregular food intake pattern and do not pay attention to the nutritional benefits of what they consume. The researchers recommended that the university management should intervene in regulating food pricing within campus stores and eateries, and provide active and affordable cafeterias to help students access proper and adequate food.

Keywords: Evaluation, Food Intake Pattern, Current Hardship, Undergraduate Students, Ahmadu Bello University.

Introduction

In recent years, economic hardship has increasingly affected university students across Nigeria, impacting their daily lives and well-being. At Ahmadu Bello University Zaria, this challenge is particularly pressing, with many undergraduates struggling to maintain a balanced diet due to financial constraints. This research aims to evaluate the food intake patterns of these students amidst the current economic difficulties. By assessing their dietary choices and nutritional adequacy, the study seeks to provide insights into how economic hardship influences food consumption and identify potential areas for intervention to support student well-being (Ochure, Edeth & Dan, 2023).

Food intake was defined as the ingestion of any natural or synthetic food products that can be eaten, drunk and digested within the human body (Dhanani, 2023). The actual food intake is the amount of food that you consume (Hight, 2008). Food intake refers to the daily eating patterns of an individual including specific foods and calories consumed and their relative qualities (WHO, 2017).

Patterns of nutritional behaviours adopted in early life and adolescent stages are mostly continued in adult life and can increase the risk of developing many chronic diseases (Kathpalia & Satish, 2018). Diets in student-hood have public health implications due to evidence relating poor nutrition in adolescence to subsequent obesity and elevated risks for type 2 diabetes, metabolic syndrome, and cardiovascular diseases which are increasing in prevalence (Akorede et al., 2022).

According to the World Bank Group (2022) assessment of Nigeria's Poverty. Despite Nigeria's vast resources, poverty rates are high, with a significant portion of the population living below the poverty line. This exacerbates social inequalities and limits access to basic necessities such as food, education, healthcare, and adequate housing. Inadequate infrastructure, including power supply, transportation networks, and healthcare facilities, hinders economic activities and reduces the quality of life for many Nigerians (Tochukwu & Fadeyi, 2024).

The current economic hardships imposed on people by many unfavourable factors and situations in Nigeria may have a significant impact on students' food intake in Nigerian universities. Food prices are just one of the many ways in which students suffer due to these undesirable situations. Increased inflation and economic instability have led to rising food prices across the country. This makes it more expensive for students, especially those from low-income backgrounds, to afford nutritious meals (Gustafson, 2013). Economic challenges, including currency depreciation and inflation, have reduced the purchasing power of students and their families. This means they may have to cut back on the quantity and quality of food they can afford (Hayes, 2024). Many families are experiencing financial strain due to job losses, reduced income, or increased costs of living. This affects their ability to provide adequate financial support to their children studying in universities, impacting the students'

ability to buy food (Adams, Myers & Beidas, 2016). When universities across the globe have feeding programs or subsidized meal options for students. This is unfortunate with Nigerian universities and ABU in particular (Cohen et al., 2021).

For example, a study by MyProjec.ng (2024) on the assessment of food intake and consumption patterns of undergraduates of the University of Lagos, Akoka, Yaba Lagos revealed that the majority of the respondents eat twice every day, while only a few eat thrice and more than thrice in a day due to the overload economic challenges and syllables. Omage and Omuemu, (2018) conducted a study which assessed the dietary pattern and nutritional status of undergraduate students in a private university in southern Nigeria. The results show that over half of the respondents, 448 (56.0%) skipped breakfast and 608 (76.0%) ate in between meals with more females 280 (59.8%) compared to males 168 (50.6%) skipped breakfast.

The Ahmadu Bello University, Zaria (ABU), is a federal government research university located in Zaria, Kaduna State. Life in ABU campuses is becoming more expensive with each passing day and almost unbearable for student adoption. And this might contribute significantly to the unhealthy eating habits among undergraduate students of ABU Zaria. Also, the fast-growing of highly cost shopping malls, unaffordable stores, vending machines and expensive fast food outlets may create an alarming situation for young adults living in Ahmadu Bello University Zaria to practice poor or improper food intake. It's against this background that the researchers intend to evaluate the food intake pattern of undergraduate students of A.B.U, Zaria amid the current hardship. This led to finding the answer to the question: what is the food intake pattern of undergraduate students of Ahmadu Bello University, Zaria, amid current hardship in Nigeria?

Methodology

A descriptive survey design 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 pertaining to a particular population or group (Librarianship Studies & Information, 2023).

The population for this study consist of 19,764 undergraduate students living in the school hostels in both campuses; Samaru and Kongo. Going by Yamane's formula, the sample size for this population consists of 392 respondents.

Table 1: Proportionate Sample:

S/N	Hostels Selected	Population	Sample Size Selected
1	ICSA/Ramat Hostel	2,112	79
2	Suleiman Hostel	4,194	157
3	Tafawa Balewa Hostel	1,090	41
4	Dangote Hostel	2,880	108
5	Sardauna/Bedde	211	7
Total		**10,487**	**392**

Selection of the study cut across both sexes (male and female) from all hostels i.e. from 100 level–600 level.

The research instrument used for the collection of relevant data for this study was a researchers' developed closed-ended questionnaire named the Food Intake Pattern Assessment Questionnaire (FIPAQ). The questionnaire was made up of eight (8) items which are divided into Sections A & B. Section 'A' consists of five (5) items which sought information on the demographic characteristics of the respondents while section "B" was made up of three (3) items which sought information on Food Intake Pattern Amid Current Hardship Among Undergraduate Students of Ahmadu Bello University, Zaria. The instrument was validated by three experts in the Department of Human Kinetics and Health Education, ABU, Zaria. The data collected was subjected to statistical analysis using a pie chart for presentation and interpretation of results. Three hundred and ninety-two (392) copies of the questionnaire were administered to undergraduate students in their respective hostels within ABU campuses, to evaluate their food intake pattern amid this current hardship.

Results

Table 2: Demographic Information of the Respondents (n=384)

VARIABLE	FREQUENCY	PERCENTAGE
AGES		
17 – 21 years	60	15.6%
22 – 26	280	72.9%
27 and above	44	11.5%
SEX		
Female	210	54.7%
Male	174	45.3%
MARITAL STATUS		
Single	368	95.8%
Married	16	4.2%
ETHNICITY		
Hausa	182	47.4%
Yoruba	32	8.3%
Others	170	44.3%
ACADEMIC LEVEL		
100l	21	5.5%
200l	45	11.7%
300l	26	6.8%
400l, 500l, 600l	292	76.0%

Table 2 shows the demographic characteristics of the respondents. Observed from the table was that 60 (15.6%) of the correspondents are within the age range of 17-21. 280 (72.9%) were between the ages of 22-26 years while 44 (11.5%) were between the ages of 27 and above years. Also, the table revealed the gender of the respondents. 174 (45.3%) of the correspondents are female while 210 (40%) are male. 182 (47.4%) of the respondents are Hausa, 32 (8.3%) Yoruba and 170 (44.3%) are Others. 368 (95.8%) of the respondents are single, and 16 (4.2%) are married are married. 21 (5.5%) of the respondents are in their 1st year in the university, 45 (11.7%) are in 2nd year, 26 (6.8%) are in their 3rd year and the remaining 292 (76.0%) are in 4th, 5th and 6th years.

**Feeding Pattern of the Students.**

Chart 1
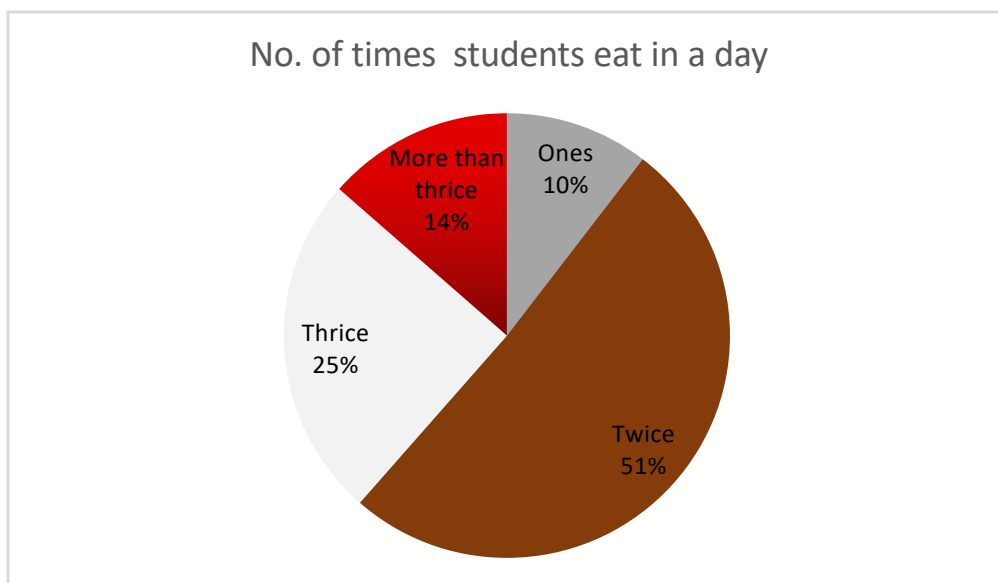
Chart 1 shows the number of times students eat in a day during this period of hardship in Ahmadu Bello University. Observed from the chart was that, 198 (51%) eat twice, 98 (25%) eat thrice, 54(14%) and 42(10%) eat once in a day. This implied that the majority of the undergraduate students in A.B.U Zaria eat just twice a day.

Chart 2
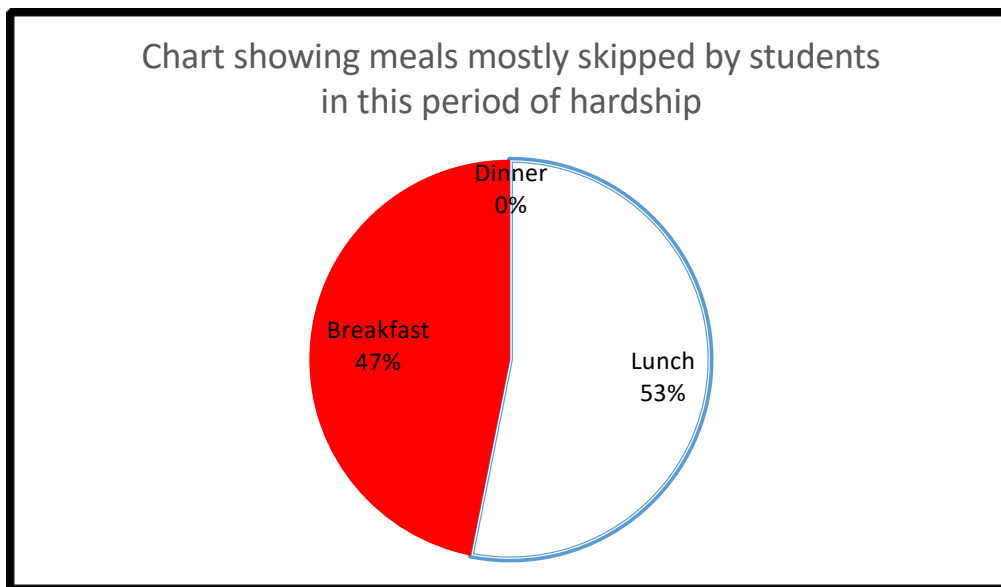
Chart 2 shows meals mostly skipped by students during this period of hardship in Ahmadu Bello University. Observed from the chart was that, no student skipped dinner (0%). Breakfast is skipped by 184(47%) of the respondents and 208 (53%) skip launch. This implied that the majority of the undergraduate students in A.B.U Zaria skipped lunch.

Chart 3
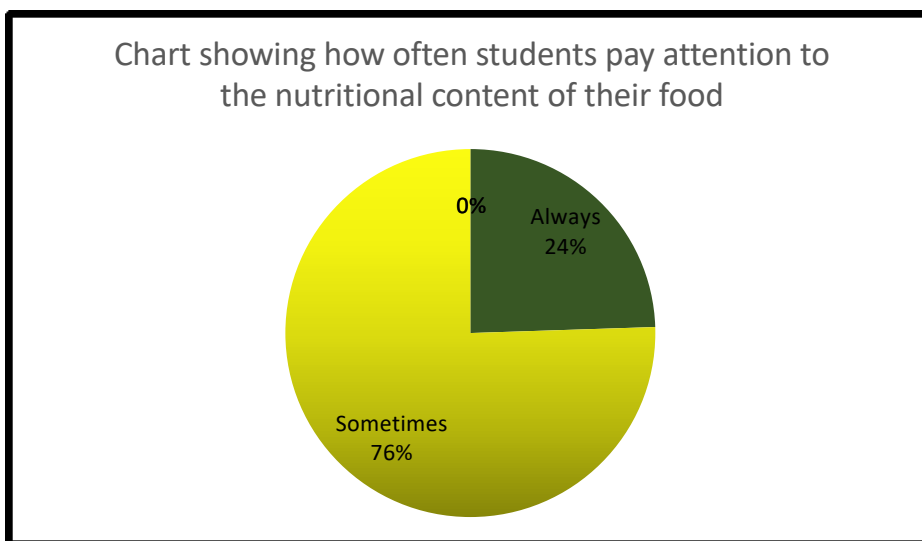
Chart 3 shows how often students pay attention to the nutritional content of their chosen foods during this period of hardship in Ahmadu Bello University. Observed from the chart was that, 294 (76%) sometimes pay attention while only 98 (24.5%) always pay attention. This implied that the majority of the undergraduate students in A.B.U Zaria do not pay attention to the nutritional content/composition of what they take as food in their meals.

Discussion

The study revealed that most undergraduate students at Ahmadu Bello University, Zaria, exhibited poor food intake behaviours, notably skipping lunch. This behaviour was attributed to the economic hardships currently facing Nigeria. This finding is consistent with research by MyProjec.ng (2024), which assessed food intake patterns among undergraduates at the University of Lagos, Akoka, Yaba Lagos. Their study found that most respondents ate only twice a day, with few eating three or more times due to economic pressures and academic workload. Research by Coffino and Hormes (2018) found that financial constraints significantly influence students' food choices, often leading to a reliance on cheaper, less nutritious food options. This supports the observation that economic hardship leads to poor food intake behaviours, such as meal skipping and choosing less balanced meals.

Similarly, Omage and Omuemu (2018) found in their study on dietary patterns and nutritional status of undergraduates in private universities in southern Nigeria that over half of the respondents (56.0%) skipped breakfast, with a higher proportion of females (59.8%) compared to males (50.6%) missing this meal. A study conducted by Otemuyiwa, Olusegun and Adewusi, Steve, (2012) examined food intake patterns among university students in various regions of Nigeria. The findings indicated that students in economically disadvantaged areas were more likely to skip meals and consume inadequate diets compared to their counterparts in more affluent regions. This underscores the broader impact of economic conditions on student nutrition. A research study by Almansour, Allafi & Al-Haifi (2020) highlighted that a lack of nutritional knowledge among students often leads to poor dietary choices. Students with a limited understanding of nutrition were more likely to skip meals or choose unhealthy foods, suggesting that educational interventions could help improve food intake patterns.

In contrast, Yun, Ahmad, and Quee (2018) reported different results in their study on dietary habits and lifestyle practices among university students at Universiti Brunei Darussalam. They observed that while most students maintained regular daily meals, more than half still skipped breakfast. However, another research finding by Maqsood et al. (2023) explored the relationship between academic stress and eating behaviours among university students. They found that high levels of stress were associated with irregular eating patterns and increased likelihood of skipping meals, which aligns with the observed trend of meal skipping among students facing economic challenges.

These comparisons highlight variations in food intake patterns across different regions and institutions, reflecting how economic and cultural contexts can influence student dietary habits.

Conclusion

Based on the findings of this study, it was concluded that the majority of undergraduate students in Ahmadu Bello University, Zaria, adopted a poor and irregular food intake habit and skipping meals as eating meals only twice a day, skipping launch and most do not pay attention to the nutritional benefits of what they consume.

Recommendation

Based on the findings of the study, the researchers recommended that the University management should intervene in regulating food pricing within campus stores, and provide affordable food for sale at cafeterias to help students access proper and adequate food to ease the living conditions of A.B.U students.

References

Adams D.R., Meyers S.A., Beidas R.S., (2016). *"The relationship between financial strain, perceived stress, psychological symptoms, and academic and social integration in undergraduate students"*. J Am Coll Health. 2016 Jul;64(5):362-70. doi: 10.1080/07448481.2016.1154559. Epub 2016 Mar 4. PMID: 26943354; PMCID: PMC5086162.

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. *Alhikamah Journal of Business Education, 2*(1), 17-21.

Almansour, F.D., Allafi, A.R., & Al-Haifi, A.R. (2020). Impact of nutritional knowledge on dietary behaviours of students in Kuwait University. *Acta bio-medica:Atenei Parmensis, 91(4),* e2020183. https://doi.org/10.23750/abm.v91i4.8716

Coffino, J.A., & Hormes, J.M. (2018). A Default Option to Enhance Nutrition Within Financial Constraints: A Randomised, Controlled Proof-of-Principle Trial. *Obesity (Silver Spring, Md.), 26(6), 961-967.* https://doi.org/10.1002/oby.22151

Cohen J.F.W., Hecht A.A., McLoughlin G.M., Turner L., Schwartz M.B., (2021). Universal School Meals and Associations with Student Participation, Attendance, Academic Performance, Diet Quality, Food Security, and Body Mass Index": A Systematic Review. *Nutrients. 2021 Mar 11;13(3):911. doi: 10.3390/nu13030911. PMID: 33799780; PMCID: PMC8000006.*

Dhanani, S, (2023) "Public Health in Nutrition". www.quora.com

Gustafson D.J., (2013). Rising food costs & global food security: key issues & relevance for India. *Indian J Med Res. 2013 Sep;138(3):398-410. PMID: 24135190; PMCID: PMC3818609.*

Hayes, A., (2024). *"Understanding Purchasing Power and the Customer Price Index"*.Investopedia: https//www.investopedia.com

Hight K., (2008). Portion size perceptions of various athletes. *Journal of Nutrition,81,513-525.*

Kathpalia, Renu; Bhatla, Satish C. (2018). Plant Mineral Nutrition. In Bhatla, Satish C; A. Lal, Manju (eds.). *Plant Physiology, Development and Metabolism. Singapore: Springer. pp. 37–81. doi:10.1007/978-981-13-2023-1_2. ISBN 978-981-13-2023-1. Retrieved 20 January 2023.*

Librarianship Studies & Information (2023). Overview: Descriptive Research, www.librarianshipstudies.com

Maqsood, L., Aslam, M., Masood, F. J., Asad, I., Iqbal, M. ., Sheikh, N. ul A., Waqar, O., Tahir, W., & Zafar, Z. (2023). Association between Academic Stress and Eating Patterns among University Students: Association between Academic Stress and Eating Patterns. *DIET FACTOR (Journal of Nutritional and Food Sciences), 4*(02), 06–10. https://doi.org/10.54393/df.v4i02.74

MyProjec.org (2024). *Assessment of food intake and consumption patterns of undergraduates of University of Lagos.* https://www.myproject.ng/education/the-assessment-of-food-intake-and-consumption-pattern-of-undergraduates-of-university-of-lagos/index.html

Ochure, L., Edeth, I., & Dan, F. (2023). Effects of emerging trend among postgraduates students of physical and health education in the global economic crisis. ABU, Zaria, Nigeria.

Olufemi A., (2023). *"Exploring government initiatives to tackle youth unemployment in Nigeria"*: A comprehensive analysis. The Cable News and Views Unlimited.https://medium.com/@roariyo and LinkedIn: https://www.linkedin.com/in/olufemi-ariyo-923ba6130/techtalk@freesia.com.ng

Omage K, Omuemu VO, (2018). Assessment of dietary pattern and nutritional status of undergraduate students in a private university in southern Nigeria. *Food Sci Nutr. 2018 Aug 22;6(7):1890-1897. doi: 10.1002/fsn3.759. PMID: 30349678; PMCID: PMC6189614.*

Otemuyiwa, Olusegun & Adewusi, Steve, (2012). Food choice and meal consumption pattern among undergraduate students in two universities in Southwestern Nigeria. *Nutrition and Health, 21.233-45, 10.1177/0260106013510994.*

Tochukwu S.E., & Fadeyi, (2024) Taofiq James comW155 Examining the Influence of Infrastructure Deficit on Economic Activities, Education, and Healthcare in Rural Areas of Nigeria. *Nnamdi Azikiwe Journal of Political Science (NAJOPS).2024, Vol. 9(1)ISSN: 2992-5924*

WHO, (2017). "*Definition of dietary intake"*. World Health Organization; 237 pages. (WHO/NUT/98.1).

World Bank Group, (2022) Assessment on Nigeria Poverty.

Yun T.C., Ahmad S.R., Quee D.K.S., (2018). Dietary Habits and Lifestyle Practices among University Students in Universiti Brunei Darussalam. *Malays J Med Sci. 2018 May;25(3):56-66. doi: 10.21315/mjms2018.25.3.6.* Epub 2018 Jun 28. PMID: 30899187; PMCID: PMC6422551.

INFLUENCE OF ECONOMIC STATUS ON THE SOCIAL HEALTH OF UNDERGRADUATE STUDENTS AT AHMADU BELLO UNIVERSITY, ZARIA

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Abstract

This paper explores the influence of economic status on the social health of undergraduate students at Ahmadu Bello University in Zaria, Nigeria. Education is a fundamental aspect of individual growth and societal development. However, students' economic backgrounds can significantly impact their social well-being. To execute this research, four research questions and four research hypotheses were formulated to guide the study. In this study, descriptive survey design was used with three hundred and fifty-seven (357) respondents chosen as the sample size for the study. The analytical tool used was mean and standard deviation with a benchmark of 2.50. The results revealed that there are challenges students with lower economic status face in accessing essential educational resources, there are ways economic status contributes to the mental health and overall well-being of undergraduate students, economic status influences Social Integration and Networking Opportunities of Students and perceptions of undergraduate students regarding the role of economic status in shaping their access to social support systems is high. The researchers conclude by recommending that compare the experiences of students with lower economic status across different educational institutions and settings, among others.

Keywords: Influence, Economic Status, Social Health, Undergraduate, Students

Introduction

Ahmadu Bello University, Zaria, stands as one of Nigeria's premier institutions of higher learning, boasting a diverse student population with varied economic backgrounds. The economic status of undergraduate students has emerged as a critical factor influencing their experiences within the academic environment, encompassing academic performance, access to resources, mental health, and overall social well-being.

Research indicates that economic disparities among students in higher education can lead to unequal access to educational resources, affecting academic achievement and overall educational outcomes (Akorede et.al., 2017; Buchmann & DiPrete, 2016; Pascarella et al., 2014). The influence of economic status on academic success is a complex interplay of factors, including access to textbooks, technology, and other learning materials (Hossler et al., 2019). Consequently, investigating the relationship between economic status and academic performance becomes imperative to understand the challenges faced by students with different economic backgrounds.

Moreover, studies highlight the significant impact of economic status on mental health and well-being among university students (Eisenberg et al., 2017; Stallman, 2020). Financial stressors, such as the inability to afford basic needs, have been linked to increased levels of anxiety and depression (Dachew et al., 2015). Understanding the nuanced ways in which economic factors contribute to mental health challenges is crucial for implementing targeted interventions that promote student well-being.

In addition, the social environment plays a pivotal role in shaping the overall college experience. Economic disparities may influence students' social integration and networking opportunities, impacting participation in extracurricular activities, events, and social gatherings (Astin, 2013; Tinto, 2013). Research in this area has highlighted the importance of social connectedness for academic success and overall satisfaction with the college experience (Kuh, 2021).

Furthermore, perceptions of social support systems, including familial, peer, and institutional support, can vary based on economic status (Stephens et al., 2022). Understanding these perceptions is crucial for identifying potential gaps in the support structures available to students and developing strategies to enhance inclusivity and equity within the university community. This research aims to contribute valuable insights to the academic community, policymakers, and university administrators, enabling them to develop targeted interventions and support systems that address the diverse needs of students, irrespective of their economic backgrounds. By understanding the intricate relationship between economic status and social health, Ahmadu Bello University can foster an environment that promotes inclusivity, equality, and holistic student well-being.

Statement of the Problem

In recent years, the influence of economic status on the social health of undergraduate students has become a subject of growing concern, particularly within the context of higher education institutions. This study focuses on the specific case of Ahmadu

Bello University, Zaria, where the interplay between economic status and social health among undergraduate students raises significant questions and warrants in-depth investigation.

Objectives of the Study

The primary objectives of this study are to:

1. Identify and analyze the challenges faced by students with lower economic status in accessing essential educational resources.
2. Examine how economic status contributes to the mental health and overall well-being of undergraduate students.
3. Investigate the influence of economic status on the social integration and networking opportunities of students.
4. Explore the perceptions of undergraduate students regarding the role of economic status in shaping their access to social support systems.

Research Questions

The study addressed the following research questions:

1. What challenges do students with lower economic status face in accessing essential educational resources?
2. In what ways does economic status contribute to the mental health and overall well-being of undergraduate students?
3. How does economic status influence the social integration and networking opportunities of students?
4. What are the perceptions of undergraduate students regarding the role of economic status in shaping their access to social support systems?

Literature Review

The intricate relationship between socioeconomic status (SES) and academic performance has been a focal point of scholarly inquiry, reflecting the profound impact that economic disparities can have on educational outcomes. A multitude of studies have delved into this nexus, shedding light on the multifaceted ways in which SES influences students' academic achievements. Adewale (2017), Akintaro (2016), and Onyene et al. (2017) have contributed to this body of knowledge by examining the dynamic interplay between SES and academic performance. Economic disparities, often manifesting as differences in income, parental education, and occupation, can significantly affect students' access to educational resources. According to Adewale (2017), students from lower SES backgrounds may encounter challenges in obtaining essential materials such as textbooks, technology, and supplementary learning resources. This limited access can impede their academic progress, creating a gap that may persist throughout their educational journey (Akintaro, 2016).

Moreover, the influence of socioeconomic status extends beyond academic realms, permeating into students' overall well-being and social health. Arulogun (2018) emphasizes the pivotal role of SES in shaping not only academic outcomes but also the broader aspects of students' lives. Socioeconomic factors contribute to variations in students' mental health, stress levels, and general life satisfaction (Onyene et al., 2017). Students from economically disadvantaged backgrounds may contend with increased stressors, potentially impacting their ability to engage fully in academic pursuits. The academic environment serves as a microcosm where socioeconomic factors intertwine with students' social experiences. The challenges posed by economic disparities can extend to social integration and networking opportunities, influencing participation in extracurricular activities, events, and social gatherings. As noted by Arulogun (2018), the social health of students is intricately linked to their economic status, with disparities potentially shaping the social fabric of academic communities.

In light of these findings, it becomes evident that socioeconomic status is a multifaceted determinant, with ramifications extending beyond the academic domain. The reviewed literature underscores the need for a holistic understanding of the impact of economic disparities, emphasizing the interconnectedness of academic performance and social health. As this study delves into the context of Ahmadu Bello University, Zaria, it aims to contribute nuanced insights into how SES influences the social health of undergraduate students, aligning with the broader scholarly discourse on the subject.

Methodology

A descriptive survey design was adopted for the study. The population for the study was made up of all undergraduate students of the Faculty of Education, Ahmadu Bello University, Zaria with a total population of five thousand five hundred and ninety-one (5,591). A sample of three hundred and fifty-seven (357) was sampled from the population using simple random sampling by balloting. A structured questionnaire called "Influence of Economic Status on the Social Health of Undergraduate Students", was designed and used for the study. The researcher collected data through the administration of questionnaire. The data collected were analysed using descriptive statistics of mean and standard deviation.

Results

Research Question One: What challenges do students with lower economic status face in accessing essential educational resources?

Table 1: Challenges students with lower economic status face in accessing essential educational resources.

S/N	Items	N	X	S.D	Remark	Rank
1	Students with lower economic status face significant challenges in accessing essential educational resources	357	2.83	1.10	Agreed	2
2	Limited financial resources hinder access to necessary textbooks and learning materials for students with lower economic status	357	2.19	0.97	Disagreed	1
3	Affordability issues contribute to a digital divide, impacting students' access to online educational resources	357	4.05	1.02	Agreed	4
4	Students from lower economic backgrounds often struggle to afford the necessary technology for remote learning	357	4.09	1.14	Agreed	5
5	Financial constraints limit participation in educational events and extracurricular activities for economically disadvantaged students	357	2.43	1.04	Disagreed	3
	Cumulative Mean		**3.12**			**3**

In Table 1, the cumulative mean of all the items is calculated to be 3.12, surpassing the benchmark mean of 2.50. This suggests that students with lower economic status encounter challenges in accessing essential educational resources. Specifically, the majority of respondents expressed the perception that students facing economic challenges encounter significant obstacles in accessing essential educational resources. Affordability issues were highlighted as contributing to a digital divide, impacting students' access to online educational resources. Additionally, respondents indicated that students from lower economic backgrounds often struggle to afford the necessary technology for remote learning. All these findings are supported by mean scores exceeding 2.50, indicating a consensus among respondents regarding the existence of challenges related to access to educational resources for students with lower economic status.

The mean rank of 3 suggests that, on average, these items are ranked in the middle. This means that there is a moderate level of agreement or disagreement among respondents regarding the challenges faced by students with lower economic status in accessing essential educational resources. It's neither strongly agreed nor strongly disagreed. The mean rank provides a central tendency measure, indicating a balanced view among the respondents.

Research Question Two: In what ways does economic status contribute to the mental health and overall well-being of undergraduate students?

Table 2: Ways economic status contributes to the mental health and overall well-being of undergraduate students.

S/N	Items	N	X	S.D	Remark
1	Economic status significantly contributes to the mental health and overall well-being of undergraduate students	357	4.15	1.17	Agreed
2	Financial stress related to economic uncertainties impacts the mental health of students	357	3.59	1.26	Agreed
3	Students with lower economic status are more prone to anxiety related to academic expenses and living costs	357	3.88	1.29	Agreed
4	Economic challenges contribute to disparities in life satisfaction among undergraduate students	357	3.87	1.20	Agreed
5	Financial constraints impact the overall well-being and happiness of students	357	4.10	1.15	Agreed
	Cumulative Mean		**3.92**		

Benchmark: Mean ≥2.50 = Agreed; Mean < 2.50= Disagreed

Table 2 reveals that the cumulative mean of all the items is calculated to be 3.92, surpassing the benchmark mean of 2.50. This strongly indicates that economic status contributes significantly to the mental health and overall well-being of undergraduate students. Specifically, a majority of respondents shared the perception that economic status plays a substantial role in shaping the mental health and overall well-being of undergraduate students. Respondents highlighted concerns such as financial stress related to economic uncertainties impacting the mental health of students, students with lower economic status being more prone to anxiety related to academic expenses and living costs, economic challenges contributing to disparities in life satisfaction among undergraduate students, and financial constraints impacting the overall well-being and happiness of

students. All these findings are supported by mean scores exceeding 2.50, indicating a consensus among respondents regarding the influence of economic status on the mental health and well-being of undergraduate students.

Research Question Three: How does economic status influence the social integration and networking opportunities of students?

Table 3: Economic Status Influence on Social Integration and Networking Opportunities of Students

S/N	Items	N	X	S.D	Remark
1	Economic status has a notable influence on the social integration and networking opportunities of students, affecting their participation in extracurricular activities, events, and social gatherings	357	1.97	1.07	Disagreed
2	Financial limitations hinder students from lower economic backgrounds from actively participating in social events	357	2.82	1.36	Agreed
3	Students with limited financial resources often feel excluded from social activities due to affordability issues	357	3.59	1.29	Agreed
4	Economic challenges impact the ability of students to build diverse social networks	357	4.59	1.14	Agreed
5	Financial constraints restrict involvement in networking opportunities that could benefit students in their academic and professional pursuits	357	4.14	1.14	Agreed
	Cumulative Mean		3.42		

Benchmark: Mean ≥2.50 = Agreed; Mean < 2.50= Disagreed

In Table 3, the cumulative mean of all the items is computed to be 3.42, exceeding the benchmark mean of 2.50. This strongly suggests that economic status has a notable influence on the social integration and networking opportunities of students. Specifically, a majority of respondents perceived that financial limitations hinder students from lower economic backgrounds from actively participating in social events. Moreover, students with limited financial resources often feel excluded from social activities due to affordability issues. Respondents also highlighted that economic challenges impact the ability of students to build diverse social networks, and financial constraints restrict involvement in networking opportunities that could benefit students in their academic and professional pursuits. All these findings are substantiated by mean scores surpassing 2.50, indicating a consensus among respondents regarding the influence of economic status on social integration and networking opportunities for students.

Research Question Four: What are the perceptions of undergraduate students regarding the role of economic status in shaping their access to social support systems?

Table 4: Perceptions of undergraduate students regarding the role of economic status in shaping their access to social support systems.

S/N	Items	N	X	S.D	Remark	**Rank**
1	Undergraduate students' perceptions of their economic status play a significant role in shaping their access to social support systems, including family, peers, and institutional assistance	357	2.86	1.10	Accepted	2
2	Students' beliefs about their economic status impact their willingness to seek help and support from family members	357	4.12	0.97	Accepted	5
3	Perceived economic limitations influence the level of trust and reliance on peer support networks	357	3.62	1.02	Accepted	3
4	The perception of economic challenges affects the utilization of institutional assistance and support services	357	3.91	1.10	Accepted	4
5	Students' views on their economic status influence their sense of belonging and inclusion within the academic community	357	3.79	1.00	Accepted	3
	Cumulative Mean		**3.66**			**3.4**

In Table 4, the cumulative mean of all the items is calculated to be 3.66, surpassing the benchmark mean of 2.50. This strongly indicates that the perceptions of undergraduate students regarding the role of economic status in shaping their access to social support systems are notably high. Specifically, a majority of respondents expressed the perception that undergraduate students' beliefs about their economic status play a significant role in shaping their access to social support systems, including family, peers, and institutional assistance. Moreover, respondents highlighted that students' beliefs about their economic status impact

their willingness to seek help and support from family members, and perceived economic limitations influence the level of trust and reliance on peer support networks. Additionally, the perception of economic challenges affects the utilization of institutional assistance and support services, and students' views on their economic status influence their sense of belonging and inclusion within the academic community. All these findings are supported by mean scores exceeding 2.50, indicating a consensus among respondents regarding the high influence of economic status on the perceptions of access to social support systems.

The mean rank of 3.4 suggests that, on average, these items are ranked slightly above the middle. This indicates a moderate level of acceptance among respondents regarding the influence of undergraduate students' perceptions of their economic status on various aspects such as access to social support systems, willingness to seek help, trust in peer support networks, utilization of institutional assistance, and sense of belonging within the academic community. The mean rank provides a central tendency measure, suggesting a general agreement among respondents on the importance of economic perceptions in shaping students' experiences and access to support systems.

Discussion of Findings

The study findings (Table 1) indicate a consensus among respondents regarding the challenges faced by students with lower economic status in accessing essential educational resources. This aligns with prior research emphasizing the impact of socioeconomic factors on educational access (Buchmann & DiPrete, 2016). Affordability issues, digital divides, and struggles to acquire the necessary technology for remote learning emerged as prominent challenges. These findings underscore the urgent need for targeted interventions and policy measures to bridge the gap in educational resource access for economically disadvantaged students.

Table 2 highlights a strong link between economic status and the mental health of undergraduate students, with a cumulative mean of 3.92. This supports existing literature emphasizing the association between financial stress and mental health challenges among students (Hunt & Eisenberg, 2020). The findings underscore the vulnerability of students with lower economic status to anxiety related to academic expenses and living costs. Comprehensive student support programs need to consider the intersectionality of academic and mental health challenges for economically disadvantaged students.

The study (Table 3) reveals that economic status significantly influences the social integration and networking opportunities of students, as indicated by a cumulative mean of 3.42. This is consistent with research demonstrating the impact of financial constraints on social participation (Pascarella & Terenzini, 2015). Financial limitations were found to hinder active participation in social events, leading to feelings of exclusion and limitations in building diverse social networks. Addressing these challenges requires targeted efforts to enhance social inclusivity for students facing economic disadvantages.

Table 4 indicates notably high perceptions among undergraduate students regarding the role of economic status in shaping their access to social support systems, with a cumulative mean of 3.66. This finding is supported by literature highlighting the influence of perceived economic limitations on help-seeking behaviours and social reliance (Votta, 2018). Students' beliefs about their economic status impact their willingness to seek support from family and peers, affecting the utilization of institutional assistance. These findings underscore the importance of fostering a supportive environment and addressing students' perceptions to enhance their access to social support systems.

In summary, the study provides valuable insights into the nuanced ways in which economic status affects various facets of students' educational experiences and well-being. The identified challenges and high perceptions emphasize the need for comprehensive, targeted strategies to promote equitable access to education and support the overall well-being of students, especially those facing economic disadvantages.

Conclusion

The study illuminates the multifaceted impact of economic status on various aspects of students' educational experiences and well-being. The identified challenges in accessing essential educational resources, the contribution of economic status to mental health, its influence on social integration, and the high perceptions regarding access to social support systems collectively underscore the need for comprehensive interventions and policy measures to address the disparities faced by students with lower economic status. The challenges identified in accessing essential educational resources highlight the urgency for institutions and policymakers to implement targeted initiatives. This may include subsidized textbook programs, enhanced technological support, and financial assistance schemes to mitigate the impact of affordability issues and digital divides.

Acknowledging the strong link between economic status and mental health, universities should invest in comprehensive student support programs. These programs should address not only academic stressors but also financial stress related to academic expenses and living costs. Mental health resources and counselling services should be easily accessible and

destigmatized to encourage students to seek help. Given the influence of economic status on social integration and networking opportunities, institutions should implement social inclusivity initiatives. This may involve creating financial aid packages for participation in extracurricular activities, fostering mentorship programs, and developing a supportive campus culture that values diversity and inclusion. High perceptions regarding the role of economic status in shaping access to social support systems indicate a need for awareness campaigns. Institutions should engage in efforts to shift perceptions and provide accurate information about available support services. Promoting a culture of seeking help and fostering trust in support networks can contribute to a more supportive environment for students.

Recommendations

Based on the findings, the following recommendations were made by the researcher:

1. Conduct longitudinal studies to explore the long-term effects of economic disparities on students' educational and mental health outcomes.
2. Compare the experiences of students with lower economic status across different educational institutions and settings.
3. Investigate the intersectionality of economic status with other factors such as race, gender, and ethnicity to better understand the compounded challenges faced by certain student populations.
4. Evaluate the impact of existing institutional policies and support programs on mitigating the challenges identified in this study.

References

Akorede S.N & Nafiu O.D Aliyu A.M. Bello Y., Adeleke A.M. & Ogbe D. (2017) Factors Influencing Abortion Among Undergraduates of University of Ilorin, *Journal of Research in National Development* 15(2) ISSN 1596-8303

Astin, A. W. (2013). What Matters in College? Four Critical Years Revisited. San Francisco: Jossey-Bass.

Buchmann, C., & DiPrete, T. A. (2016). The growing female advantage in college completion: The role of family background and academic achievement. *American Sociological Review*, 71(4), 515-541.

Dachew, B. A., Bisetegn, T. A., & Gebremariam, R. B. (2015). Prevalence of Mental Distress and Associated Factors among Undergraduate Students of University of Gondar, Northwest Ethiopia: A Cross-Sectional Institutional Based Study. *PLOS ONE*, 10(3), e0119464.

Eisenberg, D., Golberstein, E., & Hunt, J. (2017). Mental Health and Academic Success in College. *BE Journal of Economic Analysis & Policy*, 7(1).

Hossler, D., Ziskin, M., Gross, J. P. K., & Kim, S. (2019). Academic performance and College Persistence: Modeling the effects of classes and credits. *Research in Higher Education*, 50(6), 570–588.

Hunt, J., & Eisenberg, D. (2020). Mental health problems and help-seeking behaviour among college students. *Journal of Adolescent Health*, 46(1), 3-10.

Kuh, G. D. (2021). Assessing What Really Matters to Student Learning: Inside the National Survey of Student Engagement. Change: *The Magazine of Higher Learning*, 33(3), 10–17.

Pascarella, E. T., & Terenzini, P. T. (2015). How college affects students: A third decade of research (Vol. 2). Jossey-Bass.

Pascarella, E. T., Pierson, C. T., Wolniak, G. C., & Terenzini, P. T. (2014). First-Generation College Students: Additional Evidence on College Experiences and Outcomes. *The Journal of Higher Education*, 75(3), 249–284.

Stallman, H. M. (2020). Psychological distress in university students: A comparison with general population data. *Australian Psychologist,* 45(4), 249–257.

Stephens, N. M., Hamedani, M. G., & Destin, M. (2022). Closing the Social-Class Achievement Gap: A Difference-Education Intervention Improves First-Generation Students' Academic Performance and All Students' College Transition. *Psychological Science*, 23(6), 669–681.

Tinto, V. (2013). Leaving College: Rethinking the Causes and Cures of Student Attrition. Chicago: University of Chicago Press.

Votta, E. (2018). The Role of Perceived Financial Stress and Emotional Well-Being in College Students' Academic Performance. *Journal of College Student Retention: Research, Theory & Practice*, 19(4), 452-468.

INFLUENCE OF PERSONNEL FOR INTRAMURAL SPORTS PROGRAMME ON THE DEVELOPMENT OF SPORT IN PRIMARY SCHOOLS IN SOKOTO STATE, NIGERIA

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Abstract

This study assessed the influence of personnel for intramural sports programme on the development of sport in primary schools in Sokoto State, Nigeria. One research question and one hypothesis were formulated to guide the study. The population of the study comprise all primary school teachers in Sokoto State amounting to ten thousand, four hundred and eighty-one (10,481). Ex-post facto research design was employed by the researchers, while a multi-stage sampling procedure involving stratified, and simple random samplings was used to draw the respondents. Out of the total three hundred and eighty-one (381) copies of the questionnaire distributed, three hundred and seventy-eight (378) copies of the questionnaire were retrieved upon which the data analysis was conducted. Frequency and percentage tables were used to analyse the demographic characteristics of the respondents. Mean and standard deviation were used to answer the research question and chi-square analysis was used to test the null hypothesis. The finding of this study revealed that the availability of personnel for intramural sports competitions significantly influenced the development of sports programmes in primary schools in Sokoto State ($p = 0.01$). The researchers concluded that recruiting adequate and qualified personnel plays an important role roles in the development of intramural sports and hence sport development in primary schools in Sokoto State, Nigeria. To this end, the researchers recommended that qualified sports personnel should be adequately recruited for the conduct of intramural sports to man the programme and to maximize the potential for sustainable sports development in primary schools in Sokoto State Nigeria.

Keywords: Personnel, Sports, Intramural sports, Development, Primary Schools

Introduction

Primary schools require a good number of professionally prepared physical educators or sports coaches to run the school's sports programmes. These programmes may include; an intramural sports programme – a sport gathering taking place in and involving participants from within the wall of the school. However, at this State of national development, a minimum of one professional physical educator, sports coach or other para-professional in the field could be tolerated in one institution Sokoto State is not an exception. In addition to the number of personnel in these institutions, their professional preparation is of paramount importance considering the nature of the job and the category of people the sports administrators are handling. Staff personnel, therefore, desire the highest priority in the organization and administration of intramural programmes in school. Many persons are needed if an intramural programme is to be a success in the schools.

On personnel, Bucher (1979) proposed the involvement of the following key persons in the organization and administration of intramural sports programmes: the director, pupils' participants, managers, captains, Officials and an advisory sports council. The organisation and administration of intramural sports require the availability of well-trained and qualified personnel. These personnel are to organize and supervise pupils' programmes. Intramural sports programs commonly enforce standards of moral conduct such as good sportsmanship and positive reinforcement. Pupils must agree to abide by rules or face the consequences or penalties.

Debatable sportsmanship situations may involve penalties against the offending team (Rothwell & Theodore, 2016). Disagreements with moral conduct standards force individuals to analyze their values and beliefs when participating in intramural sports. Rothwell and Theodore (2016) also suggested that actual participation in intramurals provides opportunities for such attitudes to be publicly affirmed, whether negative or positive.

For many years, school recreational sports administrators have recognized that participation in recreational sports and fitness activities significantly enhances the learning and development of college students (Belch, Gebel, & Mass, 2018). Another benefit to pupils who participate in recreational sports is the social belonging to the university or college. Henderson (2017) suggested that for years recreational sports professionals have claimed that pupils' participation in recreational sports positively contributes to their social development. Belch et al. (2018) declared that intramurals open up an essential path for pupils' or pupils' interaction which can turn into the stronger development of social skills, integration into the university and an even higher retention rate among pupils who participate often in these activities. Artinger, Clapham, Forrester, Hunt, Meigs, Milord and Sampson (2016) provided information to help claim that intramural sports might contribute to the integration within the overall learning institutions.

The effective control and management of any school sports programme tend to fail or succeed at the personnel level. The problem is that, will personnel to man the intramural sports programme influence the development of sport in primary schools

in Sokoto State? Therefore, this research study will focus on the assessment influence of personnel of intramural sports programme on the development of Sports in Sokoto State, Nigeria and hypothesise that the availability of personnel for primary schools intramural sports programme has no significant influence on the development of sports in primary schools in Sokoto State, Nigeria.

Methodology

Ex-post facto research design was used because the data required for this study was already available to the respondents. The population for this study consisted of all teachers in primary schools in Sokoto State. According to Sokoto State Universal Basic Education Board (SUBEB) (2020), there were ten thousand, four hundred and eighty-one (10,481) teachers in primary schools in Sokoto State, Nigeria. A total of three hundred and eighty-one (381) primary school teachers were used for this study. According to Research Advisor (2006), 381 respondents are adequate to represent a population of 10,487 people based on a confidence level of 95% with a margin error of 0.05. Multi-stage sampling procedure was used in the study. Thus: in Stage 1, stratified sampled technique was used to stratify Sokoto State into three (3) existing senatorial zones, which were Sokoto North, Sokoto East and Sokoto South. In Stage 2, simple random sampling was used to select two local government areas per senatorial zone by writing all the names of local government areas on a piece of paper, folded and dropped in a container, shuffling it, and the selection was made by picking one at a time without replacement. In stage 3, Simple random sampling was used to select teachers per school. In this technique, 'Yes' and 'No' were written on pieces of paper, folded and dropped into a container and shuffled properly. Each teacher available was asked to pick one piece of paper. Those who picked 'Yes' were given the questionnaire to fill out, while the respondents who picked "No" were exempted from the study.

Table 1: Sample Proportion

S/N	Senatorial District	Local Government Area	Schools	Sample
1.	Sokoto Central	Tangaza L.G.A.	Kwannawa Primary School	25
			Sabiyo Primary School	31
		Gudu L.G.A.	Darusa Gawo Primary School	22
			Bangi Primary School	26
2.	Sokoto East	Isa L.G.A.	Kalage Primary School	36
			Kaida Primary School	26
		Illela L.G.A.	Dango Primary School	52
			Darna Tsolawo Primary School	45
3.	Sokoto West	Tureta L.G.A.	Mahuta Primary School	24
			Kaura Primary School	30
		Kebbe L.G.A.	Nasarawa Primary School	36
			Sabon Gari Primary School	28
	TOTAL			**381**

The researchers used a 5-level Likert's Scale closed-ended questionnaire for collecting data for this study. The questionnaire comprised two (2) sections with (10) items in total. Section A contained the demographic characteristics of the respondents while section 'B' consisted of 5 items on the influence of personnel for intramural sports programmes. To test its reliability, a pilot study was made where 20 the copies of questionnaire were distributed to teachers outside the study area and were analysed using Cronbach's alpha where a reliability index of 0.87 was obtained rendering the instrument reliable for the study. Having pilot tested, the questionnaire was proportionately distributed to the selected respondents directly by the researchers. Two weeks were earmarked for the issuance and retrieval of the questionnaire. Out of the three hundred and eighty-one copies of the questionnaire (381) sent, 378 (99%) copies of the questionnaire were retrieved upon which the data analysis was conducted. The data obtained from the study were analyzed using descriptive statistics of frequencies and percentages for the demographic variables. A decision mean of 3.50 was used to answer the research questions and the hypotheses were tested using Chi-square analysis at 0.05 alpha level of significance.

Results
Table 2: Demographic Characteristics of the Respondents

S/N	Variable		Frequency	Percentage
1	Sex	Male	223	59.2
		Female	155	40.8
		Total	**378**	**100.0**
2	Age Range	18-25 years	18	3.0
		26-35 years	109	29.4
		36-45 years	137	36.9
		46 years and above	114	30.7
		Total	**378**	**100.0**
3	Designation	Sports Coordinator	56	15.9
		Headmaster/Headmistress	90	24.3
		Games Master	121	32.6
		Class Teacher	101	27.2
		Total	**378**	**100.0**
4	Educational Qualification	Primary School leaving certificate	3	0.3
		Secondary School Certificate	24	13.4
		Graduate Certificate	302	59.6
		Post Graduate Certificate	49	21.7
		Total	**378**	**100.0**
5	Years of Experience	1 – 10 years	311	67.3
		11 – 20 years	24	11.4
		21 years and above	43	22.3
		Total	**378**	**100.0**

Table 2 shows the demographic characteristics of the respondents. An observation of the table shows that the majority of respondents 223 (59.2%) were males and the remaining 155 (40.8%) were female respondents. With regards to age range, the table further reveals that 18 (3.0%) of the respondents were of the age range 18-25 years, 109 (29.4%) of the respondents fell between the age range of 26 – 35 years, 137 (36.9%) of the respondents fell between the age range of 36 – 45 years while a number of the respondents 114 (30.7%) were between the age range of 45 years and above.

However, the table shows the designation of the respondents, as 56 (15.9%) of the respondents were game masters, 90 (24.3%) of the respondents were headmaster/headmistresses, 121 (32.4%) of the respondents were games masters, 101 (27.2%) of the respondents were class teachers. The table also revealed that 3 (0.3%) of the respondents were primary school certificate holders, 24 (13.4%) of the respondents were secondary school certificate holders, 302 (59.6%) of the respondents were graduates while 49 (21.7%) of the respondents holds a post-graduate certificate. The table also, shows that 311 (67.3%) of the respondents have 1 – 10 years of working experience, 24 (11.4%) of the respondents have 11 – 20 years of working experience and 43 (22.3%) of the respondents have 21years and above experience respectively.

Answering the Research Question: Does the provision of personnel for primary schools' intramural sports programme influence the promotion and development of sport in Sokoto State, Nigeria?

Table 3: Mean Scores of the Respondents on whether the availability of personnel for primary schools intramural sports programme influence the promotion and development of sport in Sokoto State, Nigeria

S/N		Mean	Std. Dev.
1	The Games Masters is professionally qualified to organize and administer the intramural sports programme in your school	4.0919	1.06128
2	Sufficient time is devoted per week for staff administer intramural sports activities in the school	3.9189	1.01203
3	Due enough personnel primary school organize intramural sports competition annually	3.6318	.67115
4	There is an advisory or sports committee in the school for intramural sports programme	3.9201	3.23914
5	Ad-hoc staff are involved in the management of intramural sports programmes in your primary school	3.7410	1.01759
	Cumulative Mean	**19.30**	

Aggregate Mean = 3.86   **Decision Mean = 3.50**

Table 3 above shows that available personnel for primary school intramural sports programmes influence the promotion and development of sports in primary schools in Sokoto State. This is because the aggregate mean of responses 3.86 was found to be higher than the decision mean of 3.50. To answer the research question, since the aggregate mean is higher than the decision mean, it can be concluded that the availability of personnel for primary school intramural sports programmes influences the development of sports in primary schools in Sokoto State.

Test of Hypothesis

The availability of personnel for primary school intramural sports programme has no significant influence on the development of sports in primary schools in Sokoto State, Nigeria.

Table 4: Summary of Chi-square (χ^2) on the influence of availability of personnel for Intramural sports programme on the development of sport in primary schools in Sokoto State, Nigeria

	χ^2 cal.	χ^2 crit.	α	Df	P-value	Decision
Influence of availability of personnel for Intramural sports programme on the development of sports in Sokoto State, Nigeria.	49.91	26.29	0.05	16	0.000	Rejected

Table 4 revealed that the availability of personnel to manage the Intramural sports programme has no significant influence on the development of sports in primary schools in Sokoto State. The table showed that the p-value of 0.000 which is less than 0.05 alpha level of significance and the χ^2 calculated value of 49.91 was greater than the χ^2 critical value of 26.29 at df 16. This result indicated that the availability of personnel for the intramural sports programme has a significant influence on the development of sport in Sokoto State. Hence, the implication of this result was to reject the null hypothesis that says the availability of personnel for primary school's intramural sports programme has no significant influence on the promotion and development of sports in primary schools in Sokoto State, Nigeria.

Discussion

This study assessed the influence of the availability of personnel for intramural sports programmes on sports development in primary schools in Sokoto State. The finding of this study shows that the availability of personnel to manage intramural sports programme influence sports development. This finding is in line with Bucher (1979) who affirmed that the involvement of key personnel, directors, sports managers, pupil participants, officiating officials and advisory bodies of sports councils in the organisation and administration of intramural sports programmes leads to the success of the conduct of the event and turn lead to grass root sport development. Furthermore, the finding of this study agreed with Festinger (1999) who found that the major problem confronting interscholastic and intramural sports was that one-third of coaches have no professional qualification. This implied that qualified personnel are a prerequisite for sustainable sports development.

Research indicates that skilled personnel, including coaches and administrators, significantly enhance the quality and reach of sports initiatives. For instance, Olatunji, Abiola and Adeyemo (2022) highlight that the presence of trained coaches directly correlates with improved athlete performance and increased participation rates in sports programs. This is echoed by Adedoyin and Adeola (2023), who argue that the lack of qualified personnel can lead to subpar training environments, ultimately discouraging youth participation. Furthermore, the availability of personnel facilitates the organization of events and competitions, which are vital for fostering a competitive spirit and community engagement. According to Ibrahim and Mohammed (2023), effective management by knowledgeable personnel can enhance the sustainability of sports programs, ensuring they meet community needs and foster talent development.

Conversely, some studies suggest that while personnel availability is important, it is not the sole determinant of sports development. Nwankwo, Eze and Okeke (2023) argue that factors like funding, infrastructure, and community support also play significant roles. Thus, while personnel availability is an essential component, a holistic approach considering multiple factors is necessary for the effective development of sports in Sokoto State.

Conclusion

Based on the findings of the study, the researchers concluded that the availability of qualified personnel to manage intramural sports programmes influenced the development of sports in primary schools in Sokoto State which by extension gives room for the development of sports in general.

Recommendation

The researchers therefore recommended that personnel to be used in manning the conduct of intramural sports should be qualified to manage all the material resources in officiating to enable all bureaucratic issues to be discharged smoothly for sustainable sports development in primary schools in Sokoto State, Nigeria**.**

References

Adedoyin, O., & Adeola, A. (2023). The impact of coaching on youth sports participation in Nigeria. *Journal of Sports Development, 15*(3), 45-58.

Artinger, L., Clapham, L., Forrester, S. A., Hunt, C., Meigs, M., Milord, N., & Sampson, B. (2016). The social benefits of intramural sports. *NASPA Journal, 43*(1), 69-86.

Belch, H. A., Gebel, M., & Mass, G. M. (2018). Relationship between pupils recreation complex use, academic performance and persistence of first-time freshmen. *NASPA Journal, 38*(2), 254-268.

Bucher, C. A. (1979). *Administration of Physical Education and Athletic Programme*. Toronto: The C.V. Moshy Company.

Henderson, B. C. (2017). The Impact of Pupils Recreation Centres on Social Belonging and Retention (Master's Thesis) Texas Tech University. Lubbock, TX.

Ibrahim, S., & Mohammed, T. (2023). Management strategies in sports: A case study of Sokoto State. *Nigerian Journal of Sports Management, 10*(2), 22-34.

Nwankwo, J., Eze, C., & Okeke, R. (2023). Comprehensive factors influencing sports development in Nigeria. *African Journal of Physical Education, Recreation and Dance, 29*(1), 67-79.

Olatunji, A., Abiola, O., & Adeyemo, K. (2022). The role of trained coaches in enhancing sports performance in Nigeria. *International Journal of Sports Science and Coaching, 17*(4), 563-577.

Rothwell, E., & Theodore, P. (2016). Intramurals and college pupils development: The role of intramurals on values clarification. *Recreation Sports Journal, 30*(1), 46-52.

Sokoto State Universal Basic Education, Board, Sokoto Teachers Data (2020) Planning Department.

EFFECT OF HEALTH EDUCATION INTERVENTION ON ATTITUDE TOWARDS WATER SANITATION AMONG RURAL WOMEN IN NIGER STATE, NIGERIA

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Abstract

This study assessed the "Effect of Health Education Intervention on Attitude towards water sanitation among rural women in Niger State". To achieve the purpose of the study, the null hypothesis was formulated and tested at 0.05 significant level. The study adopts a quasi-experimental design. The population of this study comprised rural women in Niger state, Nigeria with a total population of one million four hundred and ninety-three thousand two hundred and fifty one (1,493,251) and targeted aged eighteen (18) years and above totalling seven hundred and sixty-one thousand five hundred and fifty-eight (761,558) with 100 respondents. The instrument used in data collection was a close-ended questionnaire developed by the researcher. This instrument has a reliability index of 0.78. The descriptive statistics of frequencies and percentage was used to analyse participants' bio-data, while mean and standard deviation was used to answer the research question and the hypothesis was tested using a paired sample t-test at 0.05 alpha level of significance. The result revealed that there was a significant effect of Health education intervention on attitude toward water sanitation among rural women in Niger state (P = .000 < α = 0.05). It was concluded that health education intervention enhances rural women's attitudes toward water sanitation. However, it was recommended that health educators in their ongoing efforts in health education should focus on sustaining and reinforcing these positive changes through continuous education, and community engagement, by sensitizing communities using culturally sensitive messaging to ensure long-term attitudinal and behavioural change in the rural communities.

Keywords: Health Education, Water, Sanitation, Attitude, Intervention, Rural women.

Introduction

Water, a vital necessity for existence and a fundamental human right serves as a crucial factor in advancing optimal health and welfare. Nonetheless, the issue of secure and uncontaminated water accessibility continues to pose a substantial obstacle for numerous global communities, particularly impacting those in developing nations. The importance of any water sanitation initiative cannot be overstated in preventing the risks associated with poor water sources, such as diarrhoea, cholera, and typhoid, among other illnesses.

Water sanitation, also known as water purification or treatment, involves the removal of unwanted chemical compounds, organic and inorganic materials, and biological contaminants from water. This process aims to decrease the levels of contaminants like suspended particles, parasites, bacteria, viruses, and fungi that can lead to diseases and potentially fatal consequences for humans. Globally, an estimated 1.7 million people die each year due to waterborne diseases resulting from inadequate water quality and the absence of fundamental water sanitation practices (Thomas et al., 2020). Children under the age of five, particularly in developing nations, are the most vulnerable to diarrheal diseases, as reported by the (World Health Organization (WHO) 2017). The impact of waterborne diseases is most strongly felt in African countries, especially in tropical regions like Nigeria and Kenya (Abdulbaqi et al., 2019). While cases of diseases such as diarrhoea, cholera, and typhoid are prevalent across many tropical African nations, the International Organization for Migration (IOM) highlighted in 2019 that access to clean, purified water is a fundamental human right that remains unfulfilled for a significant portion of the population in developing countries, particularly in rural areas. Disturbing global statistics reveal that over 1.1 billion individuals lack access to safe drinking water sources and purification services (WHO & United Nations International Children Fund, UNICEF, 2017). Lack of sanitation water is an even larger problem; an estimated 2.6 billion individuals live without improved water sanitation services (Akorede et al., 2019; WHO, 2017). Additionally, about eighty per cent (80%) of the world is covered with water and yet millions around the world suffer from water shortages, and lack access to safe water, leading to disease, and death (WHO, 2017).

Sridhar, Okareh, and Mustapha (2020) conducted a study on the assessment of knowledge, attitudes, and practice on water sanitation, and hygiene in some selected Local Government Areas (LGAs) in Kaduna State, Northwestern Nigeria aimed at providing hygiene education programs and increased awareness towards promoting good water sanitation, and hygiene practices. Sridhar et al., (2020) adopted the cross-sectional field survey method, which involved the use of a structured questionnaire and field observational checklist. Findings from the survey showed that only 46.2% treated their water supply and few (16.6%) used the chlorination method. However, the study commended the findings but concluded the communities

were still at risk due to poor practices of household water treatment therefore providing water sanitation, and hygiene education is fundamental for ensuring good health in the study area. Sridhar et al., (2020) conducted a study on the assessment of knowledge, attitudes, and practice on water sanitation, and hygiene in some selected LGAs in Kaduna State, Northwestern Nigeria aimed at providing hygiene education programs and increased awareness towards promoting good water sanitation, and hygiene practices. Sridhar et al., (2020) adopted the cross-sectional field survey method, which involved the use of a structured questionnaire and field observational checklists. Findings from the survey showed that only 46.2% treated their water supply and few (16.6%) used the chlorination method. However, the study commended the findings but concluded the communities were still at risk due to poor practices of household water treatment therefore providing water sanitation, and hygiene education is fundamental for ensuring good health in the study area.

Charles et al. (2021) on the effectiveness of Health Education Intervention in Water Sanitation and Hygiene Practice among Adolescent girls adopted a school-based cluster randomized control trial conducted among 417 adolescent girls (10 to 19 years old) in four schools using the chi-square design to compare the baseline differences between intervention and control groups for WASH practice. The findings revealed that health education intervention was effective in improving water sanitation and hygiene practices among adolescent girls. Mako, Gelanh, and Mamo (2019) carried out a study to assess the knowledge, attitude and practice of Arsi Nagele town inhabitants on water supply, sanitation and hygiene at the household level. The study adopted the community-based cross-sectional study design where data was collected using a structured questionnaire through face-to-face interviews and analysis was done using SPSS version 20 statistical software. Results showed that the majority of the respondents (87.1%) had good practices in the case of water supply, sanitation and hygiene while 12.9% had poor practices.

Rima et al. (2017) carried out a study to assess the knowledge, attitudes, and practices on water sanitation, and hygiene among mothers of under-five children in rural households of Saptari district of Nepal. Rima et al., (2017) adopted a cross-sectional study using a multistage sampling method and analysis was done using the Chi-square test for independence with a significance level of 0.05. The study data was collected using a semi-structured questionnaire and data entry was computed using the SPSS version 16.0. findings showed that 60% of participants did good practice and 40% did poor practice. The study concluded that the poor practice of water sanitation, and hygiene among mothers was affected by their educational level and hence, there is a need to spread information on the importance of the proper practice of water sanitation, and hygiene in rural areas.

The study by Katkuri (2021) aimed to assess the knowledge, attitudes, and practices of mothers with children under five years of age regarding sanitation, water, and hygiene in a rural area. The study utilized a community-based cross-sectional method and a semi-structured questionnaire with face-to-face interviews to collect data. The results of the study indicated that the knowledge of the mothers regarding water purification was poor. This suggests that there is a need for more intense health education in the community to improve their knowledge and understanding of water purification. The study concluded that improving the knowledge, attitude, and practices of mothers towards sanitation, water, and hygiene is crucial in reducing the incidence of illnesses and diseases among children under five years of age in rural areas.

Sridhar, et al., (2020) conducted a study on the assessment of knowledge, attitudes, and practice on water sanitation, and hygiene in some selected LGAs in Kaduna State, Northwestern Nigeria aimed at providing hygiene education programs and increased awareness towards promoting good water sanitation, and hygiene practices. Sridhar et al., (2020) adopted the cross-sectional field survey method which involved the use of a structured questionnaire and field observational checklists. Findings from the survey showed that 15.1% used open containers for water storage, 11.6% used clay pots without covers, 84.9% used cups with handles to fetch water from storage facilities while 4.9% didn't and 5.6% kept the item used for fetching the water on the floor. However, the study commended the findings but concluded the communities were still at risk due to poor attitudes towards handling and storage of household drinking water therefore providing water sanitation, and hygiene education is fundamental for ensuring good health in the study area.

Mako (2019) carried out a study to assess the knowledge, attitude and practices of Arsi Nagele town inhabitants on water supply, sanitation and hygiene at the household level. Mako (2019) adopted the community-based cross-sectional study design where data was collected using a structured questionnaire through face-to-face interviews and analysis was done using SPSS version 20 statistical software. Results showed that the majority of the respondents (90.5%) had a positive attitude to the issue that improper disposal of solid and liquid waste may contribute to the transmission of diseases while 7.1% had a negative attitude and 2.5% had a neutral attitude. According to these findings, Mako (2019) recommended urgent action to create awareness and health education on water supply, sanitation and hygiene. Also, Ibrahim, Lawal, Isa, Tanimu, and Sani, (2017) studied knowledge, attitudes, and practices of household water purification among caregivers of under-five children in Biye community, Kaduna State and adopted a descriptive cross-sectional study design which found that women had a positive attitude toward household water sanitation in the Biye community of Giwa L.G.A., Kaduna state as a result of health education intervention.

Rima et al. (2017) carried out a study to assess the knowledge, attitudes, and practices on water sanitation, and hygiene among mothers of under-five children in rural households in Saptari district of Nepal. The study adopted a cross-sectional study using

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a multistage sampling method. Findings showed that 57.14% of participants had positive attitudes toward water sanitation, and hygiene practices while 42.85% had negative attitudes. The study concluded that the attitude towards water sanitation, and hygiene among mothers was affected by their educational level and hence, there is a need to spread information on the importance of proper attitude towards water sanitation, and hygiene in rural areas. Improving water quality is critical to prevent diseases; but improving the knowledge, attitude and practice of water sanitation is key and means to achieving SDGs goal 6. It is on this basis, that the researcher raised the question: what is the effect of health education intervention on attitude towards water sanitation between the control and experimental groups after intervention among rural women in Niger State?

Research Hypothesis

Health education intervention has no significant difference between the control group and experimental group on attitude towards water sanitation after the intervention programme among rural women in Niger State.

Methodology

Quasi-experimental design of pre-test and post-test methods was used for this study. The target population for this study were rural women in Niger State, Nigeria aged eighteen (18) years and above totalling seven hundred and sixty-one thousand five hundred and fifty-eight (761,558), (National Bureau of Statistics, 2021). A sample size of 100 participants (50 experimental and 50 control groups) was used for the study. This is based on the Central Limit Theory, which states that sample sizes equal to or greater than 30 are deemed sufficient for an experimental group (Ganti & Estevez, 2021). The researcher adopted purposive sampling techniques to select the participants for the research based on specific attributes that are of particular interest to the study; that is, Women from a rural settlement faced with challenges of non-accessibility to portable water thereby depending on non-hygienic sources. 50 participants each were drawn from the control and the experimental groups. The instrument used for data collection was a close-ended questionnaire developed by the researchers, titled "Effect of Health Education Intervention on Attitude towards Water Sanitation (EHEIA) among rural women in Niger State, Nigeria. The instrument was validated and a reliability index of 0.7 (70%) was obtained. Fifty (50) interested participants (women) in the settlement as a pre-test with the support of five (5) instructed research assistants who directly asked the questions and took responses from the participants. This was followed by a pretest and intervention session proper following the scheme of work and training manual for six weeks. Thereafter, a post-test was administered on a one-on-one basis with the participants. This was done immediately after the training session was concluded with the support of five (5) research assistants. Descriptive statistics of frequencies and percentages were used to describe the demographic characteristics of the participants and means and standard deviations were used to answer the research question while inferential statistics of paired sample t-test was used to analyse the null hypothesis at 0.05 level of significance using Statistical Packages for Social Sciences (SPSS) 25.0 version.

Results

Table 1: Distribution of Participants by Level of Education

Level of Education of Respondents	Frequency	Percentage
Non-formal education	56	56
Primary education	28	28
Secondary	16	16
Total	**100**	**100**

Table 1 reveals participants with non-formal education are (28; 56%) while those with primary school education are (14; 28%) and participants with secondary education are (8: 16%). In this distribution, participants with secondary school levels of education are more than non-formal and primary education.

Research Question: What is the effect of health education intervention on attitude towards water sanitation between the control and experimental groups among rural women in Niger state?

Table 2: Mean Scores of Responses on the effect of health education intervention on attitude towards water sanitation among Rural Women

Group of Respondents	N	Mean	SD	Mean difference
Experimental Group	50	3.41	.746	0.65
Control Group	50	2.76	.232	

Table 2 shows the effect of health education intervention on attitudes towards water sanitation among rural women. Participants in the experimental group had a mean score of 3.41, while the participants in the control group had a mean score of 2.76. The result showed a mean score difference of 0.65 which indicated that rural women who received health education

intervention had better attitudes towards water sanitation than their counterparts who had no health education intervention. This implies that health education intervention predisposes rural women to positive attitude towards water sanitation in Niger state.

Hypothesis: Health education intervention have no significant difference between the control group and experimental group on attitude towards water sanitation after the intervention programme among rural women in Niger state.

Table 3: Paired Sample t-test Analysis of difference between the control group and experimental group on attitude toward water sanitation after health education intervention among rural women in Niger State

Test Variable	N	Mean	SD	T	Df	P
The difference in the effect of Health education intervention on attitude toward water sanitation	50	-1.504	.450	-23.613	49	.000

*(t = -23.613, df = 49, P = .000 < α = 0.05)

Table 3 shows the difference between the control group and the experimental group on attitude towards water sanitation after health education intervention with P = .000. This reveals that the null hypothesis which states that health education intervention has no significant difference between the control group and experimental group on attitude towards water sanitation after intervention programme was rejected. This indicates health education intervention has promoted positive attitude towards water sanitation among rural women who received intervention than their comparts who do not receive intervention on water sanitation in Niger state, Nigeria.

Discussion of Findings

This study found that rural women who received health education intervention had better attitudes towards water sanitation than their counterparts who had no health education intervention. This was confirmed by looking at the results of hypothesis testing where the p-value was (P = .000 < α = 0.05). This implies that health education intervention predisposes rural women to positive attitudes towards water sanitation in Niger State. Interestingly, this finding is expected because the intervention programme was designed to make rural women susceptible to the right attitude toward water sanitation. This result corroborates the study by Ibrahim, et al. (2017) studied knowledge, attitudes, and practices of household water purification among caregivers of under-five children in Biye community, Kaduna State and adopted descriptive cross-sectional study design which found that women had a positive attitude toward household water sanitation in the Biye community of Giwa L.G.A., Kaduna state as a result of health education intervention, and contradicts the study of Sridhar et al. (2020) studied on assessment of knowledge, attitudes, and practice on water sanitation, and hygiene in some selected LGAs in Kaduna State, Northwestern Nigeria and adopted a cross-sectional field survey and it was found that only 46.2% treated their water supply and few (16.6%) used the chlorination method, the study then concluded that the communities were still at risk due to poor practices of household water sanitation/treatment but recommended the need for the present research work providing water sanitation and hygiene education which they concluded is fundamental for ensuring good health. These similarities may be due to some level of exposure by the participants to issues related to boiling and chlorination and difference owing to the design adopted by the previous researchers which is descriptive compared to the present study which adopted an experimental design of quasi-experimental that enables the participants to received intervention on water sanitation. This finding has implications for health educators and practitioners. Thus, if health educators/practitioners reach out to rural women with intervention on water sanitation, there would be a high likelihood that they would be inclined to a positive attitude towards water sanitation.

Conclusion

Based on the findings of this study, the study concluded that health education intervention promotes positive attitude towards water sanitation among the rural women in Niger State, Nigeria.

Recommendations

Based on the conclusion of this study, the study recommended that health educators in their ongoing efforts in health education should focus on sustaining and reinforcing these positive changes through continuous education, and community engagement, by sensitizing communities using culturally sensitive messaging to ensure long-term attitudinal and behavioural change in the rural communities.

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.

Akorede, S. N., Nofiu, O. D., Musa, C., & Olofu, E. E. (2019). Attitude towards water sanitation among senior boarding secondary schools students in Kaduna State, Nigeria. *Global Journal of Health Related Researches, 1*(1), 45-49.

Charles S. R., Ismail, S., Ying Lim, P., Ahmad, N., & Abubakar N. I, (2021). Effectiveness of Health Education Intervention on Water Sanitation and Hygiene Practice among Adolescent Girls in Maiduguri Metropolitan Council, Borno State, Nigeria: A Cluster Randomised Control Trial*. Water, 13*(7), 987.

Ganti, A., & Estevez, E. (2021). Central Limit Theorem (CLT), Cooperate finance and accounting: Financial analysis. Retrieve from http://www.investopedia.com/terms/c/central_limit_theorem.asp on 25/08/2021

Ibrahim, M., Lawal, B., Isa, H., Tanimu, A., & Sani, A. (2017). Knowledge, attitudes, and practices of household water purification among caregivers of under-five children in Biye community, Kaduna State. *Nigerian journal of basic and clinical sciences, 14*(1), 63-69.

Katkuri, S. (2021). Knowledge, attitude, and practices on sanitation, water, and hygiene among mothers of under-five children in rural area: A cross-sectional study. *MRIMS Journal of Health Sciences, 9*(2), 51. https://doi.org/10.4103/mjhs.mjhs_34_20

Mako, G. M., Gelanh, Y.K, & Mamo, B.Y, (2019). Knowledge, attitude and practice towards water supply, sanitation and hygiene (WASH) among residents in Arsi Nagele town, Southeastern Ethiopia. *Research Square*, *1*(1). https://doi.org/10.21203/rs.2.14375/v1

National Bureau of Statistics (2021). Estimated population of Nigeria profile 2021. Abuja National Bureau of Statistics.

Thomas, M.L.H, Channon, A.A, Bain, R.E.S, Nyamai, M. & Wright, J.A. (2020). Household-Reported Availability of Drinking Water in Africa: A Systematic Review. *Water* 2020, *12:*2603; www.mdpi.com/journal/water, doi:10.3390/w12092603;

Rima, K. S., Prem, K. S., Jitendra, K. S., Sudip, C., & Sanjeev, K. S. (2017). Assessment of knowledge, attitude and practice regarding water, sanitation and hygiene among mothers of under-five children in rural households of Sapatari district, Nepal. *Journal of Public Health Research, 5*(5), 163-169. https://doi.org/10.12691/ajphr-5-5-5

Sridhar, M. K. C., Okareh, O. T., & Mustapha, M. (2020). Assessment of Knowledge, Attitudes, and Practices on Water, Sanitation, and Hygiene in Some Selected LGAs in Kaduna State, Northwestern Nigeria. *Journal of Environmental and Public Health*, *2020*, 1-14. https://doi.org/10.1155/2020/6532512

United Nations Children's Emergency Fund (2015). Water, sanitation and hygiene efforts: Millennium development goals. Drinking water target met. Global hand washing day 15 October. http://www.unicef.org/wash/index 4307.

World Health Organization (WHO) & United Nations Children's Emergency Fund (UNICEF) (2017). Progress on drinking water and sanitation. Special focus on sanitation Retrieve online http:www.whomitoplc/sanitation/en on 2/9/2011.

World Health Organization, (2017). Strengthening interventions to reduce helminths infections: An entry point for the development of health promoting schools. Geneva. http//ww.un.org/esa/ susdev/ documents/WSSDPD/English/POITOC.htm.

EFFECT OF BRISK-WALKING EXERCISE ON BODY COMPOSITION IN OBESE MALE TRADERS OF KANO STATE, NIGERIA

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Abstract

This paper assessed the effect of brisk-walking exercise on body composition in obese male traders of Kano State, Nigeria. Two research objectives as well as two research questions were formulated to guide this study. An experimental research design was used for this study. The population for this study comprised obese male traders in Kantin Kwari Market in Kano State, Nigeria. The estimated sample size for this study was 80 participants. The data for this study were collected three times: before the start of the study (baseline), during (at 4 weeks) and at the end of the study (at 12 weeks). Findings from this study revealed that there was significant reduction of body mass index (Cal $F_{(2, 26)}$ =80.010, P = 0.005), critical $F_{(2, 26)}$ = 3. 3690 ≤ 0.05 due to brisk walking among obese male traders in Kano Metropolis, Kano State, Nigeria; there was significant reduction of body fat (Cal $F_{(2, 26)}$ =57.576, P = 0.005), critical $F_{(2, 26)}$ = 3. 3690 ≤ 0.05) due to brisk walking among obese male traders in Kano Metropolis, Kano State, Nigeria. It was concluded that brisk walking significantly (P < 0.05) reduced body fat, and body mass index in obese male traders in Kano State, Nigeria. Based on the findings, it was recommended that brisk walking should be prescribed for the modification of body composition, Brisk walking as a mode of aerobic exercise should be engaged in by obese male traders for fitness and the improvement of their general health.

Keywords: Body composition, obese, body mass index, body fat, cardiovascular

Introduction

Obesity is a growing health problem worldwide, which is associated with a host of cardiovascular risk factors and the prevalence is rising (Schutter, Lavie & Milani, 2014). Obesity is associated with cardiovascular disease (CVD), hypertension (HTN), type 2 diabetes mellitus (T2DM), hyperlipidaemia, stroke, certain cancers, sleep apnoea, liver and gall bladder disease, osteoarthritis, and gynaecological problems (Centre for Disease Control and Prevention, CDC, 2014). A study reported an association between obesity and poor health-related quality of life (Wee et al., 2015), especially in women and people aged over 64 years (Busutil et al., 2017). Obesity plays an important role in atherosclerosis and coronary artery disease; it causes structural and functional changes in the heart, resulting in heart failure (Csige et al., 2018).

Trading is a sedentary occupation that predisposes individuals to obesity and often enhances access to food (Ukegbu et al., 2015). Trading involves buying and selling goods and the majority of traders usually sit in their stalls or shops waiting for buyers (Oladoyinbo et al., 2015). A study revealed the majority of traders were found not consciously exercising (Harriette, 2017). Though most of them go to the market six times a week, however, market activities involve mainly sitting and selling goods and this predisposes traders to obesity (Ukegbu et al., 2015). Traders also spend most hours of the day sitting down and in many other sedentary activities, which increases the risk of obesity and other chronic diseases (Oladoyinbo et al., 2015). A report on the traders in an urban market in Lagos State indicated the prevalence of hypertension at 16%, physical inactivity at 92%, diabetes mellitus at 0.8%, obesity at 26.7%, and overweight at 25.3% (Oladoyinbo et al., 2015). Overweight and obese account for 25 % and 31.7 % respectively among female traders in Umuahia (Ukegbu et al., 2015). Oladoyinbo et al. (2015) reported between 25.3 % and 26.7 %, respectively among traders in Ijebu- Ode.

Obesity-related diseases such as hypertension, diabetes, metabolic syndrome and dyslipidemia have been reported among traders in Nigeria across major cities (Awosan et al., 2014; Busutil, et al., 2017; Oladoyinbo et al., 2015) and traders in Kano State may not be exceptional. It is certainly more important, advantageous and of greater health benefit when an active step is taken to engage these traders in doing regular aerobic exercise to find its effect on their body composition and health rather than just reporting the sedentary nature of their businesses with attendant health consequence alone, as it was done in previous studies (Awosan et al., 2014; Oladoyinbo et al., 2015). To the best knowledge of the researchers, this study appeared to be the first attempt to evaluate the impact of brisk walking exercise on body composition, muscular strength and endurance in obese male traders in Kano State.

A systematic review by Bai et al. (2021) found that high-intensity (80–85 %) brisk walking is more effective than moderate-intensity (60–75 %) brisk walking on the aerobic capacity, cardiorespiratory fitness and muscular strength of the elderly. The result of the above systematic review is limited to practical application to only elderly persons and cannot be generalized to all age groups. Hence there appears to be a dearth need for the present study on the effect of brisk walking on muscle strength and endurance among obese middle-aged populations because being healthy in middle age is likely to result in a healthy life

in old age. Furthermore, another study evaluated a 15-week brisk walking combined with resistance training on lower-extremity muscle strength, balance, and walking time over 2 km in postmenopausal women. It was found that there was improvement in lower-extremity muscle strength and walking time (endurance) but not in balance (Stefani et al., 2017). There is however dearth of information on the effect of brisk walking on the muscle strength and endurance of obese middle-aged individuals, especially males. Additionally, when the effects of brisk walking combined with 'green tee extract' (GTE) ingestion was compared with brisk walking combined with placebo, among inactive overweight and obese men, it was reported that there was a significant increase in aerobic capacity and physical fitness (8-foot up-and-go and sit and reach test) in both groups (Zhang et al., 2020). However, there was a significant change in handgrip strength observed only in the brisk walking combined with GTE group. However, technically, the improvement in grip strength in GTE group could mainly be attributed to the GTE ingestion alone and not due to brisk walking exercise, since both groups practised brisk walking training. Hence the effect of brisk walking on muscle strength in obese males requires further research.

Furthermore, the outcome of a systematic review showed that a combination of aerobic and resistance exercises, in addition to diet modifications, may improve cardiovascular fitness and muscular endurance in individuals with class II and III obesity (Pazzianotto-Forti, Moreno, Plater, Baruki, Rasera-Junior, & Reid, 2020), Hence, this study will, however, assess the effects of aerobic exercise on the body composition, muscular strength and endurance in obese male traders without involving strict diet modification or the use of any dietary supplement to accurately report the effect of only brisk walking on muscle strength and endurance.

Research Questions

1. Would brisk walking exercise have a significant effect on the BMI of obese Male traders in Kano State?

2. Would brisk walking exercise have a significant effect on the percent of body fat of obese Male traders in Kano State?

Hypotheses

1. Brisk walking exercise has no significant effect on the BMI of obese Male traders in Kano State.

2. Brisk walking exercise has no significant effect on the percent of body fat of obese Male traders in Kano State.

Methodology

A total of 88 participants were initially enrolled in this study after meeting the selection criteria. However, 10 individuals dropped out between the baseline and the eighth week of the training programme. The training spanned 12 weeks, involving exercise intensity, ranging between 70 % and 80 % of the maximum heart rate, with each training session lasting 35 to 40 minutes on three alternate days per week. Data were collected at baseline, after the 4th 8th and 12th weeks of training, for the remaining 78 participants. Repeated measure of analysis of variance (ANOVA) was used to analyze the data at 0.05 level of significance.

Results

Table 1: Descriptive Statistics

	Mean	Std. Deviation	N
Baseline	36.81	4.62	78
Week 4	36.65	4.76	78
Week 8	35.65	4.62	78
Week 12	35.28	4.60	78

Table 1 shows a descriptive analysis of the collected data at the baseline, at the end of the 4th, 8th and 12th week. There were seventy-eight (78) participants for the study. The Table showed that the mean and standard deviation were 36.80 ± 4.62 for baseline, while 36.64 ± .476 for week 4, 35.65 ± 4.62 for week 8 and 35.28 ± 4.60 for week 12 respectively. The descriptive statistics of the participants on the body composition variables at the baseline, immediately after the 8th and the 12th weeks are presented in Table 2.

Table 2: Descriptive statistics of the body composition variables at the 4th, 8th and 12th weeks of training

Variables	N	4th Wk			8th Week			12th Week		
		M	SD	SE	M	SD	SE	M	SD	SE
BMI	78	91.69	11.86	3.38	90.38	12.35	3.30	88.66	11.89	3.18
Body Fat	78	35.49	2.99	.799	34.99	3.03	.81	34.34	2.92	.780

M = mean, SD = standard error and SE = standard error

Observation in Table 3 shows changes due to training between the 4th week and the 8th week as well as between the 8th and 12th week.

Sub hypothesis 1: There is no significant effect of brisk walking exercise on the BMI of obese male traders in Kano State.

To find out whether brisk walking significantly has an effect on BMI, the data collected at baseline, immediately after the 4th, 8th week and 12th weeks were analyzed using repeated-measures ANOVA. The results of which are presented in Table 3.

Table 3: Repeated-measures ANOVA on BMI of obese male traders in Kano State at baseline, immediately after the 4th and 8th, 12th weeks of brisk walking

Source		Sum of Squares	df	Mean square	F	Sig.
Training Period	Sphericity Assumed	64.896	2	32.448	80.010	.000
	Greenhouse-	64.896	1.970	32.934	80.010	.000
	Geisser Huynh-Feldt	64.896	2.000	32.448	80.010	.000
	Lower-bound	64.896	1.000	64.896	80.010	.000
Error(Training Period)	Sphericity Assumed	10.544	26	.406		
	Greenhouse-	10.544	25.616	.412		
	Geisser Huynh-Feldt	10.544	26.000	.406		
	Lower-bound	10.544	13.000	.811		

Calculated F (2, 26) =80.010, P = 0.005), critical F (2, 26) = 3. 3690 ≤ 0.05,

Table 3 presents the results of the repeated-measures ANOVA on the BMI of the participants. An observation of the results showed that brisk walking had a significant effect on the BMI of the participants, with calculated F (2, 26) = 80.010, P = 0.005) and critical F (2, 26) = 3. 369 ≤ 0.05. This implies that the effect of brisk walking on BMI indicates that there is a meaningful relationship between participating in brisk walking activities and changes in BMI among the participants. This suggests that brisk walking may be an effective intervention for managing or altering BMI levels in the studied population.

Table 4: Scheffe *post-hoc* comparison (pair-wise) on the Body Mass Index of the participants in Kano State

Variables	(I) Repetition	(J) Repetition	Mean Difference (I-J)	Std. Error	Sig
BMI	Base-line	Week 4	1.640*	.451	.025
		Week 8	1.750*	.571	.001
		Week 12	3.314*	.646	0.01
	Week 4	Base-line	-.154*	.689	.000
		Week 8	1.324*	.571	.000
		Week 12	1.578*	.408	.001
	Week 8	Base-line	-2.062*	.934	.005
		Week 4	-3.331*	.646	.000
		Week 12	-1.064*	.408	.000
	Week 12	Base-line	2.098*	.509	.000
		Week 4	1.965*	.309	.000
		Week 8	-3.214*	.301	.000

*.The mean difference was significant at the 0.05 level.

Post-hoc tests using the Scheffe correction confirmed this position for all the values as presented in Table 4. There was a significant reduction in the mean value between week zero and 4th week, between the 4th and the 8th week as well as between the 8th and 12th weeks of brisk walking. Therefore, the null hypothesis which states that there was no significant effect of brisk walking on the BMI of obese male traders in Kano, Nigeria was rejected.

Sub hypothesis 2: There was no significant effect of brisk walking on the percent of body fat of obese Male traders in Kano State.

To find out whether the effect of brisk walking on the percent body fat was significant, the data collected at baseline, immediately after the 4th, 8th and 12th weeks were analyzed using repeated-measures ANOVA. The results are presented in Table 5.

Table 5: Repeated-measures ANOVA on Percent Body fat of obese male traders in Kano State at baseline, immediately after the 4th, 8th and 12th weeks of brisk walking

Source		Sum of Squares	Df	Mean Square	F	Level of Sig.
Training_Period	Sphericity Assumed	9.396	2	4.698	57.576	.000
	Greenhouse Geisser	9.396	1.775	5.295	57.576	.000
	Huynh-Feldt	9.396	2.000	4.698	57.576	.000
	Lower-bound	9.396	1.000	9.396	57.576	.000
Error(Training_Period)	Sphericity	2.122	26	.082		
	Assummed Greenhouse	2.122	23.069	.092		
	Geisser Huynh-Feldt	2.122	26.000	.082		
	Lower-bound	2.122	13.000	.163		

Calculated F (2, 26) =57.576, P = 0.005), critical F (2, 26) = 3. 3690 ≤ 0.05,

Table 5 presents the results of the repeated-measures ANOVA on the per cent body fat of the participants used in this study. Brisk-walking had a significant effect on the body fat of the participants with calculated F (2, 26) =57.576, P = 0.005) and critical F (2, 26) = 3. 3690 P≤ 0.05. This implies that the effect of brisk walking on body fat implies that there is a meaningful relationship between participating in brisk walking activities and changes in percent body fat among the participants. This suggests that brisk walking may be an effective intervention for managing or altering body fat levels in the studied population.

Table 6: Scheffe post-hoc comparison (pair-wise) on the percent body fat of the obese male traders in Kano State

Variables	(I) Repetition	(J) Repetition	Mean Difference (I-J)	Std. Error	Level of Sig.
Body fat	Base-line	Week 4	1.340*	.340	.000
		Week 8	1.550*	.460	.001
		Week 12	2.014*	.535	.001
	Week 4	Base-line	-.184*	.578	.000
		Week 8	1.424*	.460	.000
		Week 12	1.978*	.207	.001
	Week 8	Base-line	-3.007*	.813	.000
		Week 4	-3.211*	.511	.000
		Week 12	-1.101*	.316	.001
	Week 12	Base-line	.068*	.418	.000
		Week 4	-2.609*	.207	.001
		Week 8	-4.150*	.210	.001

*.The mean difference was significant at the 0.05 level.

Post-hoc tests using the Scheffe correction confirmed this position for all the values as presented in Table 6. There was a significant reduction in the mean value between week zero and 4th week, between the 4th and the 8th week as well as between the 8th and 12th weeks of brisk walking. Therefore, the null hypothesis which states that there was no significant effect of brisk walking on the percent body fat of obese male traders in Kano, Nigeria was rejected.

Summary of Findings

1. The findings of this study revealed a significant decrease in BMI after 12 weeks of brisk walking (P = 0.005).

2. The findings of this study also revealed a significant decrease in the body fat of obese male traders after 12 weeks of brisk walking (P = 0.005).

Discussion

The findings of this study revealed a significant decrease in BMI after 12 weeks of brisk walking, which was similar to the results obtained by previous researchers. In line with this, a study was conducted on the regular exercise of walking in sedentary obese women, using body weight and body mass index (BMI) as a tool to investigate the effects on body parameters. Results reported that the difference in body weight and BMI values, along with other body composition indices, were significant (P < 0.05) (Zileli & Özkamçi, 2016).

The findings of this study also revealed a significant decrease in the percent body fat of obese male traders after 12 weeks of brisk walking. This is in agreement with the result obtained by Hong Hong, & Shin, (2014), who recorded a significant effect of walking at 50–60 % of each individual's maximal oxygen uptake, 3 times per week for 12 weeks, on per cent body fat, visceral fat, BMI, and waist circumference of middle-aged Korean women. It was also reported that a significant reduction in per cent body fat and waist and hip circumferences in obese males following a 12-week brisk-walking programme at a frequency of 5 times per week, 45 minutes per session. This decrease was attributed to the fact that brisk walking is an aerobic exercise that increases energy expenditure, thereby creating energy balance for weight loss. The findings of the present study were in agreement with the findings of Zileli and Özkamçi (2016), who reported that moderate-intensity walking reduces body fat in obese women.

Furthermore, the result of this study showed that brisk walking had a significant effect on visceral fat, which was in line with the findings of Melam et al. (2016) that a moderate-intensity walking program in a weight maintenance programme accelerated weight loss and decreased visceral fat. Melam et al., (2016) demonstrated that brisk walking for 45 minutes, 5 days per week for 10 weeks, significantly reduced visceral fat in North Indian women. The findings of the present study also corroborated the work of other researchers: Brill et al. (2022), on Hispanic women; Hui et al. (2015), among middle-aged Finnish women where it was shown that exercise is an effective tool in reducing visceral fat. The reduction of visceral fat is of particular clinical importance since the increased risk of insulin resistance, diabetes, metabolic syndrome, and mortality is associated with excess abdominal adiposity (Chen, Ismail, & Al-Safi, 2016).

Conclusions

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

1. Brisk walking significantly reduced the BMI of obese male traders in Kano Metropolis, Kano State, Nigeria.
2. Brisk walking significantly reduced body fat of obese male traders in Kano Metropolis, Kano State, Nigeria.

Recommendations

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

1. Brisk walking should be prescribed for the modification of body composition, muscular strength, and endurance indices.
2. Brisk walking as a mode of aerobic exercise should be engaged in by obese male traders for fitness and the improvement of their general health.

References

Awosan, K. J., Ibrahim, M. T. O., Essien, E., Yusuf, A. A., & Okolo, A.C., (2014). Dietary pattern, lifestyle, nutrition status and prevalence of hypertension among traders in Sokoto Central market, Sokoto, Nigeria. *International Journal of Nutrition and Metabolism* 6(1):9-17. DOI. 10.5897/IJNAM2013.0158

Bai, X., Soh, K.G., Dev, R. O., Talib, O., Xiao, W. & Cai, H., (2021). Effect of Brisk Walking on Health-Related Physical Fitness Balance and Life Satisfaction among the Elderly: A Systematic Review, https://doi.org/10.3389/fpubh.2021.829367\

Brill, J. B., Perry, A. C., Parker, L., Robinson, A. & Burnett, K., (2022). Dose-response effect of walking exercise on weight loss. How much is enough? *International Journal of Obesity*. 26 (11): m 1484-1493.

Busutil, R., Espallardo, O., Torres, A., Martínez-Galdeano, L., Zozaya, N., & Hidalgo-Vega, Á., (2017).The impact of obesity on health-related quality of life in Spain. *Health and quality of life outcomes*, *15*(1), 197.https://doi.org/10.1186/s12955-017-0773-y

Chen, C.K., Ismail, N.S. & Al-Safi, A., (2016). Effects of brisk walking and resistance training on cardiorespiratory fitness, body composition, and lipid profiles among overweight and obese individuals. *Journal of Physical Education and Sport* 16(3), Art 151, pp. 957 - 963,

CDC, (2014). Obesity: Halting the epidemic by making health easier at a glance, C.D.P.a.H. Promotion, Editor. Centre for Disease Control and Prevention.

Chen, C.K., Ismail, N.S. & Al-Safi, A., (2016). Effects of brisk walking and resistance training on cardiorespiratory fitness, body composition, and lipid profiles among overweight and obese individuals. *Journal of Physical Education and Sport* 16(3), Art 151, pp. 957 - 963,

Csige, I., Ujvárosy, D., Szabó, Z., Lőrincz, I., Paragh, G., Harangi, M. & Somodi, S,. (2018). The Impact of Obesity on the Cardiovascular System. *Journal of Diabetes Research*. https://doi.org/10.1155/2018/3407306

Harriette, Y. (2017). *Prevalence of Obesity and Related Exposures among Adult Traders in the Kassena-Nankana Municipality*. An unpublished thesis Submitted to the Department Of Community Health, School of Allied Health Sciences, University for Development Studies

Hui, S.S., Xie, Y.J., Woo, J., & Kwok, T.C., (2015). Effects of tai chi and walking exercises on weight loss, metabolic syndrome parameters, and bone mineral density: A cluster randomized controlled trial. Evidence-Based Complementary *Alternate Medicine*. 2015, 976123.

Melam, G. R, Alhusaini ,A. A, Buragadda, S., Kaur, T. & Khan, I. A., (2016). Impact of brisk walking and aerobics in overweight women. *Journal of Physiology and Therapy Sciences,* 28: 293–297.

Oladoyinbo, C., A., Ekerette, N., N. & Ogunubi, T., I. (2015). Obesity and hypertension amongst traders in Ijebu Ode, *Nigeria. African Journal of Biomedical Resources*, 18: 23- 27

Pazzianotto-Forti, E. M., Moreno, M.A., Plater, E., Baruki, S. B. S., Rasera-Junior,,I. & Reid, W. D., (2020). Impact of Physical Training Programs on Physical Fitness in People with Class II and III Obesity: *A Systematic Review and Meta-Analysis*, 100(6):963-978. doi: 10.1093/ptj/pzaa045

Stefani, L., Galanti, G., & Klika, R., (2017). Clinical implementation of exercise guidelines for cancer patients: adaptation of ACSM's guidelines to the Italian model. *Journal of Functional Morphology and Kinesiology*, *2*(1), 4.

Schutter, A.D., Lavie, C.J. & Milani, R., V., (2014). The impact of obesity on risk factors and prevalence and prognosis of coronary heart disease—*The Obesity Paradox. Progress in Cardiovascular Diseases,* 56: 401–408

Specchia, M.L., Veneziano, M.A., Cadeddu, C., Ferriero, A.M., Mancuso, A., Ianuale, C., Parente, P., Capri, S. & Ricciardi, W., (2014). Economic impact of adult obesity on health systems: a systematic review. *The European Journal of Public Health Advance Access published* October 14, 2014 *European Journal of Public Health*, 1–8.

Ukegbu, P. O., Uwaegbute, A. C., & Emezue, A. G., (2015). Nutritional status and market activities of female traders in a major City South East, Nigeria. *Rwanda Journal Series F: Medicine and Health Sciences,* 2(1): 47-52. http://dx.doi.org/10.4314/rj.v2i1.6

Wee, S. O., Pitetti, K., H., Goulopoulou, S., Collier, S., R., Guerra, M. & Tracy Baynard, T. (2015). Impact of obesity and Down syndrome on peak heart rate and aerobic capacity in youth and adults. *Research in Developmental Disabilities*, 36: 198–206

Zhang, T., Li, N., Chen, S., Hou, Z., & Saito, A., (2020). Effects of Brisk Walking Combined with Green Tea Extract on the Aerobic Capacity and Physical Fitness Function in Overweight and Obese Men: A Randomized, Double-Blind, Placebo-Controlled Trial. *Advances in Physical Education*, 10 (3):

Zileli, R. & Özkamçi, H., (2016). Walking Exercises in Obese Women. Effects on Some Body Parameters. Accessed from http://www.academia.edu/19087119 Retrieved October 19, 2016.

COMPARATIVE EFFECT OF MODERATE INTENSITY-INTERVAL AND CONTINUOUS TRAINING ON BODY MASS INDEX (BMI) AND VISCERAL FAT OF OVERWEIGHT ADULTS IN BAYELSA STATE

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Abstract

Physical inactivity has been identified as one of the major global health issues. It has been linked to increased health risks like Coronary heart disease, type 2 diabetes, breast and colon cancers overweight and obesity. This study was conducted to compare the effect of moderate intensity interval and continuous training on Body Mass Index (BMI) and Visceral Fat of overweight adults in Bayelsa State. The study was guided by two objectives, two research questions and two hypotheses. The study adopted the randomized pretest-posttest control group design, where the control and experimental groups were administered a pretest and treatment given only to the experimental groups thereafter, a posttest was administered to the three groups. One hundred and twenty volunteers were randomly assigned to experimental groups one and two and the control group using the fishbowl method. The instruments for data collection were a Stadiometer (SECA 217) and an Omron Karda Scan Body Composition Monitor (HBF-511). The instruments used for the study are standardized. The reliability coefficients were; Body Mass Index ($r = .69$) and Visceral Fat ($r = .64$ male and $r = .80$ female). All statistical analysis was done using IBM Statistical Package for Social Science (SPSS) for Windows (Version. 21). Data were analyzed using Descriptive Statistics of Mean and Standard Deviation to answer the research questions and ANCOVA to test hypotheses at 0.05 alpha level. The findings of the study showed an eta value (.833) indicating a large effect on BMI and the findings of the study also revealed, an eta value (.872) indicating a large effect on the visceral fat level of the study participants. The null hypotheses which stated that there is no significant difference in the effect of moderate intensity interval and continuous training on BMI and Visceral Fat of overweight adults in Bayelsa State were thus rejected with a P-value less than the selected level of significance (0.05). The study concluded that moderate-intensity intervals and continuous training regimens improved the BMI and Visceral Fat of overweight adults in Bayelsa State. The study recommended that adults should be sensitized to various benefits of engaging in moderate-intensity interval and continuous training regimens as they relate to the general health and well-being of individuals at large.

Keywords: Moderate Intensity-Interval, Continuous Training, Body Mass Index (BMI), Visceral Fat, Overweight Adults

Introduction

Physical inactivity has been identified as one of the most important global issues of the world in the twenty-first century leading to increased risk among many adverse health conditions including the world's major Non-Communicable Diseases (NCDs) of coronary heart diseases, type 2 diabetes, and breast and colon cancers. World Health Organization (WHO) (2009) documented that physical inactivity ranks as the fourth most significant mortality factor in the world with 3.2 million deaths a year worldwide. Leem et al. (2012) and Kyu et al. (2016) also documented that physical inactivity causes 6% of the burden of disease from coronary heart disease, 3% of ischemic heart disease, 7% of type 2 diabetes, 10% of breast cancer, 10% of colon cancer and as well cause fractured hips in older persons.

Physical inactivity has been associated with overweight and obesity. Obesity and overweight are abnormal or excess fat accumulation that impairs the health of an individual (WHO, 2016). A person is said to be overweight when he/she has a BMI of 25-29.9 kg/m^2 and obese when he/she has a BMI of 30kg/ m^2 and above (WHO, 2016). These conditions are increasing at an alarming rate throughout the world and their incidences have seen a steady increase over the past few decades, allowing overweight/obesity-related effects and diseases to receive more attention than ever (Agwubike & Leghemo, 2013). They are important determinants of health and fitness. They lead to adverse metabolic changes in adults including an increase in blood pressure, unfavourable cholesterol levels, increased resistance to insulin and low/high-density lipoprotein syndrome (Mishra, 2000). It is reported that overweight and obesity are the fifth leading risk of global death with at least 2.8 million adults' deaths each year from complications attributable to them (WHO, 2018). WHO (2018) reported that 1.9 billion of the world's population are overweight while 650 million are obese as of 2016. This data is alarming, considering the health burdens associated with these medical conditions. Its increasing trend in the world is even more pronounced in developing countries of the world of which Nigeria being the most populous country in Africa, is of increasing changes in lifestyle which is associated with an increasing burden of non-communicable diseases.

Health and fitness have played a vital role in the life of adults from time immemorial and being physically fit increases life expectancy and reduces the risk of premature mortality. Physical Fitness is the ability to perform daily activities with vigour to demonstrate traits and capacities that are associated with a low risk of premature development of hypokinetic diseases (Paoli et al., 2015). The fitness parameters are a key component of the health of an individual. Fitness parameters are core variables used to assess the fitness status of an individual which are health-related. According to Esmaeiade and Ebadollahadeh (2012), fitness parameters are integrated measures of whole-body functioning, which consists of different attributes of which body composition and cardiorespiratory fitness are important.

The human body composition has been of great interest as inadequate lean body mass and excess fat mass are major risk factors related to major health outcomes. A healthy balance between fat and muscle is vital for health and wellness. An array of evidence shows that maintaining of healthy body composition increases longevity and reduces the risk of heart diseases, leading to an increase in energy level whilst improving self-esteem. Body Mass Index is used as a screening tool for overweight or obesity. Body Mass Index is a person's weight in kilograms divided by the square of his/her height in meters. It is one of the most common ways of estimating whether a person is overweight, obese, underweight or having a desirable weight (WHO, 2000). This means BMI, is an appropriate measure for screening obesity and its health risks. It has been documented by Zhu et al. (2005) that increased body mass index (BMI) predisposes to certain cancers and that a high Body Mass index predicts future morbidity and death. However, it has been observed that people who do more physical activities have a lower Body Mass Index than less active people (Orsini et al., 2007).

Everybody carries two types of body fat namely, essential and storage fat. Excess of these body fats however is detrimental to a person's health and well-being. Visceral Fat is of particular concern as it is a key player in a variety of health problems in humans. Too much visceral fat is thought to be closely linked to increased levels of fat in the bloodstream, which could lead to common diseases such as hyperlipidemia and diabetes (Leghemoet al.2017). Bosch et al. (2015) asserted that increased visceral adipose tissue accumulation above a certain threshold is associated with decreased insulin sensitivity and increased cardiovascular disease risk in both males and females independently of total body fat. Excess abdominal fat is a predictor of high coronary risk compared to generalized obesity standing out as an independent factor of cardiometabolic risk (Pinho et al., 2017).

Moderate-intensity interval training would potentially provide health benefits in a time-efficient manner which involves repeated bursts of moderate exercise interspersed with low-ntensity recovery in an obese population. Coombes and Skinner (2014) opine that moderate-intensity interval training may have the potential to promote weight loss as it has benefits similar to moderate continuous training (which involves training that is performed at a continuous intensity throughout and doesn't involve any rest periods) while requiring less time. Boule et al. (2005) asserted that regular moderate and continuous training increases muscle capillarization as well as metabolic enzymes involved in the oxidation of fatty acids and glucose. These adaptations alongside the direct energy expenditure of physical activity contribute to the control of body fat mass and risk factors of type 11 diabetes mellitus and cardiovascular diseases (Joyner & Green, 2009; Khan et al., 2012). Adulthood is a period of the life cycle that differs widely due to socioeconomic, labour and cultural conditions and people are not always aware of the changes that come with adulthood. Understanding the keys to maintaining health and quality of life and facing the decline or deterioration that occurs in old age with better physical and mental health is a vital tool to increase life expectancy. Okunbor et al. (2009) observed that adults in Nigeria live a life of relative ease and comfort coupled with insatiable acquisition of material things and power.

It has been observed that many people in Western societies prefer smaller body sizes for health reasons, as such even when body weight is normal, the desire to be slim sometimes persists particularly in females where thinness is celebrated (Okoro et al., 2014). In contrast, several cultures across Nigeria view being big as desirable and are traditionally more approving of obesity as it is associated with physical attractiveness, strength, fertility and prestige. Many Nigerians believe that having a big body size is a sign of wealth and healthy living; thus, the fatter the better. The obesity-approving cultures can be seen among the Nembes, Koluamas and Brass people, to mention but a few in Bayelsa State. Bayelsa State has traditionally favoured plumpness as a symbol of sexual beauty, socio-economic status and social standard. When the preference for large body shape exists, a direct relationship between overweight and obesity is likely to be observed in higher groups having the financial capacity to buy extra food and achieve their desire to look healthy and strong. Such group of people who appreciate obesity and overweight may be at risk of developing obesity-related health disorders. Moderate intensity intervals and continuous training may provide a panacea to these inherent challenges. Thus, there is a need for a comparative effect of moderate intensity interval and continuous training on the fitness parameters of overweight adults in Bayelsa State.

Aim and Objectives of the Study

The study compared the effect of moderate intensity interval and continuous training on Body Mass Index (BMI) and Visceral Fat of overweight adults in Bayelsa State. Specifically, the study achieved the following:

1. Determine the effect of moderate intensity interval and continuous training on the Body Mass Index (BMI) of overweight adults in Bayelsa State
2. Ascertain the effect of moderate intensity interval and continuous training on the visceral fat level of overweight adults in Bayelsa State.

Research Questions

The following research questions guided the study**:**

1. What is the effect of moderate intensity interval and continuous training on the Body Mass Index (BMI) of overweight adults in Bayelsa State?
2. What is the effect of moderate intensity interval and continuous training on the visceral fat level of overweight adults in Bayelsa State?

Hypotheses

The following hypotheses were formulated to guide the study:

Ho_1: There is no significant difference in the effect of moderate intensity interval and continuous training on the Body Mass Index (BMI) of overweight adults in Bayelsa State.

Ho_2: There is no significant difference in the effect of moderate intensity interval and continuous training on the visceral fat level of overweight adults in Bayelsa State.

Methodology

The study adopted the randomized pretest-posttest control group design. A pretest was administered to the control and experimental groups where anthropometric parameters such as height, weight, BMI, and Visceral Fat were measured for the control and experimental groups. The experimental groups had moderate intensity interval and continuous training for 12 weeks then both the experimental and control groups were administered a post-test, in which the responses were compared to determine the effect of the training. The sample for the study was 120 (females 61 and males 59) volunteered overweight adults who were residents of Bayelsa State. The volunteers were randomly assigned to experimental groups one and two and control groups using the fishbowl method. This method involves selecting of number of slips randomly. The researcher places all the slips of paper in a bowl and draws random samples from it making sure both the control and experimental groups have equal scores and further dividing the experimental group into two halves. The instruments for data collection were a Stadiometer (SECA 217, Hamburg, Germany) which was used to measure the heights of the study participants and an Omron Karda Scan Body Composition Monitor (HBF-511, OMRON HEALTHCARE Co.Ltd. Japan) which was used to measure Weight, BMI and Visceral Fat. The instruments for data collection in this study are standardized. The validity coefficient of body composition monitor (body mass index and visceral fat) have been documented respectively. Body Mass Index using the height and weight ratio of the Body Composition Monitor has a validity coefficient of 0.69 (James et al., 2011) and the validity coefficient for Visceral Fat using the Body Composition Monitor is 0.64 for males and 0.80 for females. The instruments used for the study were standardized. The reliability coefficient of the body composition monitor (body mass index and visceral fat) has been documented. Body Mass Index using height and weight ratio of Body Composition Monitor has a reliability coefficient of 0.69 (James et al., 2011) and the reliability coefficient for Visceral Fat using Body Composition Monitor is 0.64 for males and 0.80 for females. All statistical analyses were done using the IBM Statistical Package for Social Science for Windows (Version 21). Data were analyzed using descriptive statistics, mean (x), standard deviation (SD) and ANCOVA was used to test research hypotheses at 0.05 alpha level. Cohen's criterion for interpretation of the eta value was used to interpret the effect of moderate intensity-interval and continuous training on participants of the study with 0.20- 0.49, as small effect, 0.50- 0.79 as medium effect and ≥ 0.80 as large effect.

Results

Research Question 1: What is the effect of moderate intensity interval and continuous training on the Body Mass Index (BMI) of overweight adults in Bayelsa State?

Table 1: Description of Pretest and Posttest Values for BMI (m^2/kg).

Groups	Pre-BMI	Post-BMI	M.D	S.D	Decision
Experimental (Continuous)	31.89	28.02	3.87	3.87	
Experimental (Interval)	32.13	27.09	5.04	2.72	**Large effect**
Control	31.14	30.63	0.51	3.50	

The result of the study in Table 1. indicates that participants in the experimental group I (continuous training) had a mean score of 31.89 m^2/kg at baseline (pretest) and a mean score of 28.02±3.87 m^2/kg as posttest mean score, with a mean difference of 3.87 m^2/kg. The result in the Table also indicated that at baseline (pretest), the interval training group had a mean score of 32.13 m^2/kg and a posttest mean score of 27.09±2.72 m^2/kg, with a mean difference of 5.04 m^2/kg. The study indicates a

decrease in body mass index with moderate intensity interval training having a higher mean difference score (5.04 m^2/kg) than that of the continuous training (3.87 m^2/kg) after twelve weeks of training. The control group had a mean score of 31.14 m^2/kg at baseline and 30.62±3.50 m^2/kg as the posttest mean score. The eta square statistics were further calculated to determine the effect of moderate intensity interval and continuous training on the body mass index of overweight adults. The eta squared statistics (.833) indicate a large effect with sustainable difference in the effects of training Post-intervention. Hence, moderate intensity intervals and continuous training are said to have a very large effect on the body mass index among overweight adults in Bayelsa State.

Research Question 2: What is the effect of moderate intensity interval and continuous training on the visceral fat level of overweight adults in Bayelsa State?

Table 2: Description of Pretest and Posttest Values for Visceral Fat levels.

Groups	Pre- Visceral fat	Post- Visceral fat	M.D	S.D	Decision
Experimental (Continuous)	13.33	11.50	1.83	2.01	
Experimental (Interval)	14.12	11.15	2.97	2.05	**Large effect**
Control	11.92	11.92	-0.00	3.21	

The results of the study in Table 2. showed that at baseline (pretest), participants in the experimental group I (continuous training) had a mean score of 13.33 and 11.50±2.01 as mean for post-test score with a mean difference of 1.83. The results in the Table also indicated that the interval training group participants at baseline (pretest), had a mean score of 14.12 and a posttest mean score of 11.15±2.05 with a mean difference of 2.97. Also, the control group had a mean score of 11.92 at baseline and 11.92±3.21 as the post-test mean score. After twelve weeks of training. This indicates that both training methods of moderate interval and continuous had a similar mean difference score on the study participants when compared. The eta square statistics (.872) indicated a large effect with an essential difference in the effects of training post-intervention. Thus, moderate-intensity interval and continuous training are considered to have a very large effect on visceral fat levels among overweight adults in Bayelsa State.

Hypothesis 1: There is no significant difference in the effect of moderate intensity interval and continuous training on the Body Mass Index (BMI) of overweight adults in Bayelsa State.

Table 3: Analysis of Covariance Summary for Effect of Moderate Intensity Interval and Continuous Training on BMI.

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	13509.89	5	261.97	128.94	.000	**.862**
Intercept	7.23	1	7.23	3.56	.062	**.033**
Training	4.37	2	2.18	1.07	.345	**.020**
Training * BMI	1045.46	3	348.49	171.52	.000	**.833**
Error	209.26	103	2.032			
Total	93397.08	109				
Corrected Total	1519.16	108				

The result in Table 3. showed an F value of 171.52 and a P-value of .000. The P-value is less than the selected levels of significance (0.05). The Table therefore showed a statistically significant difference (0.05). The null hypothesis which states that there is no significant difference in the effect of moderate intensity interval and continuous training on the Body Mass Index (BMI) of overweight adults in Bayelsa State was thus rejected.

Hypothesis 2: There is no significant difference in the effect of moderate intensity interval and continuous training on the visceral fat of overweight adults in Bayelsa State.

Table 4: Analysis of Covariance Summary for Effect of Moderate Intensity Interval and Continuous Training on Visceral Fat.

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	669.49	5	133.89	143.18	.000	**.874**
Intercept	42.18	1	42.18	45.10	.000	**.305**
Training	29.95	2	14.97	16.01	.000	**.237**
Training * visceral fat	658.28	3	219.42	234.64	.000	**.872**
Error	96.31	103	.93			
Total	15470.00	109				
Corrected Total	765.81	108				

The result in Table 4. showed an F value of 234.64 and a P-value of .000. The P-value is less than the selected levels of significance (0.05). The Table, therefore, showed a statistically significant difference (0.05). Thus, the null hypothesis which states that there is no significant difference in the effect of moderate intensity interval and continuous training on the visceral fat of overweight adults in Bayelsa State was rejected.

Discussion

The result of the study in Table 4.1 revealed a large effect (.833) of moderate-intensity interval and continuous training on the Body Mass Index of overweight adults which was statistically significant at 0.05 alpha level. This implies that both moderate-intensity interval and continuous training have a considerable effect on the body mass index of overweight adults. The large effect size could be attributed to the twelve weeks of training given to the study participants. Also, the large effect could be attributed to the training methods and training plan regimen employed during the intervention across the training groups which could be different from the regular physical activities which are not geared towards achieving any bodily fitness goals. Another plausible reason which might have resulted in the large effect size could be the result of the pep talk done before the training, educating adults who volunteered to participate in the study on the health risks of having high Body Mass Index and the health benefits of having moderate/desirable and healthy Body Mass Index. The findings of this study are similar to the findings of Ativie et al., (2018) on the impact of interval and continuous training on selected anthropometric, cardiovascular and metabolic indicators of overweight and obese females in Enugu which showed that participants in the experimental groups of the study had a significant difference (p<0.05) in the value of the anthropometric parameter (Body Mass Index) of both training groups following a ten-week training programme.

The findings of this study are in line with the findings of Khammassi et al., (2018), Skrypnik et al., (2015), Sá, et al., (2012) and Sheikholeslami-Vantani and Ebrahimi (2018).

The findings of the study in Table 2 on the effect of moderate intensity interval and continuous training on the visceral fat level of overweight adults, indicated a large effect (.872). The table also indicated a decreased post-mean score (11.50±2.01) with a mean difference of 1.83 amongst the moderate continuous training group and a decreased mean score (11.14±2.05) with a mean difference of 2.97 amongst the moderate intensity interval training group. The hypothesis test revealed that there is a significant difference in the visceral fat level of overweight adults after the twelve weeks of training. This could be attributed to the fact that study participants trained for twelve weeks. This implies that both training methods are equally beneficial for eliciting a reduction in visceral fat levels when a similar time commitment or energy expenditure is used in adults who are overweight or obese. The large effect could also be attributed to the training intensity employed during the twelve weeks of intervention. Another plausible reason could be motivation to partake in the training program that is, negative body image can influence the decision to participate in an exercise program. The findings of this study are similar to the findings of Heydari, et al. (2012) where 1.5kg (P< -0.001) 17% of reduction of visceral fat after twelve weeks of intervention was observed.

Conclusion

Participating in a planned exercise regimen can lead to an improvement in the fitness parameters of overweight adults. The study demonstrated a significantly lower body mass index and visceral fat level amongst overweight adults in Bayelsa State who participated in a 12-week moderate intensity interval and continuous training intervention program. It was noted that both exercise training protocols resulted in a significant improvement in the fitness parameters. However, the outcomes of the study

suggest that moderate-intensity interval training may be a more effective intervention than continuous training amongst overweight adults due to its time efficiency and rest intervals.

Recommendations

Based on the findings of the study, the following recommendations were postulated:

1. Stakeholders at the community level should consider as part of community projects engaging residents in some sessions of moderate intensity interval and continuous training regimen once a month as a key element in eliciting fitness parameters amongst the overweight adult population.
2. Exercise experts should sensitize adults on the various benefits of engaging in moderate-intensity intervals and continuous training regimens as they relate to the general health and well-being of individuals as large through planned Audio-visual sessions.
3. Coaches and Personal trainers should attend courses and seminars, where they can learn more about how to incorporate moderate intensity intervals and continuous training programmes into their training program to elicit physiological adaptation.
4. Health and Physical Educators through the Ministry of Health should organize seminars in rural areas to educate the adult population on the health benefits of engaging in simple moderate-intensity intervals and continuous training regimes in their day-to-day life rather than living in drugs as it contributes to an increase in life span expectancy.

References

Agwubike, E. O., & Leghemo, T. S. (2013). Undergraduate female students' body weight problems assessed through body mass index and percentage fat. *Nigerian Journal of Health & Kinesiology*, 9, 1-6.

Bosch, T. A., Steingberger, J., Sinakio, A. R., Moran, A., Jacob, R. D., Kelly, A. S., & Dengels, D. R. (2015). Identification of Sex-specific threshold for accumulation of Visceral adipose tissue in Adults. *Obesity*, 23; 375-382.

Boule, N. G., Weinsnagel, S. J., Lukka, T. A., Tremblay, A., Bergman, R. N., Rainkinen, T., Leon, A. S., Skinner, J. S., Wilmore, J. H., Rao, D. C., & Bouchard, C. (2005). Effect of Exercise Training on Glucose Homeostasis: The HERITAGE Family Study. *Diabetes Care*, 28 (1), 108-114.

Coombes, J. S., & Skinner, T. (2014). ESSA's Students Manual for Health, Exercise as Sport Assessment. Brisbane, QLD: *Elsevier*, 444.

Esmaeialzah, S., & Ebadollahzadeh, K. (2012). Physical fitness and sedentary behaviour characteristics of 7-11years old boys in different physical activity levels. *World Applied Science Journal*, 15 (5), 624-630.

Heydari, M., Freund, J., & Boutcher, S. H. (2012). The effect of high-intensity intermittent exercise on body composition of overweight young males. *J Obes*. 2012, 480467. https://doi.org/10.1155/2012/480467.

Joyner, M. J., & Green, D. J. (2009). Exercise protects the Cardiovascular System: effects beyond traditional risk factors. *J Physiol*, 93 (4), 1502-505.

Khammassi, M., Ouerghi, N., Hadj-Taieb, S., Fek, M., Thivel, D., & Bovassida, A. (2018). Impact of a 12-week High-Intensity Interval without Caloric Restriction on Body Composition and Lipid Profile in Sedentary Healthy Overweight/Obese Youth. *Journal of Exercise Rehabilitation*, 14 (1), 118-125.

Khan, K. M., Thompson, A. M., Blair, S. N., Sallis, J. F., Powell, K. E., Bull, F. C., & Bauman, A. E. (2012). Sports and Exercise as contributors to the health of nations. *Lancets*, 380 (9836), 7;59-64.

Kyu, H. H., Bachman, V. F., Alexander, L. T., Mumford, J. E., Afshin, A., Estep, K., Veerman, J. L., Delwiche, K., Llannarone, M., Moyer, M. L., Cercy, K., Vos, T., Murray, C. J. L., & Forouzanfar, M. H. (2016). Physical Activity and Risk of Breast Cancer, Colon Cancer, Diabetes, Ischemic Heart Disease and Ischemic Stroke events: systematic review and dose-response meta-analysis for the Global Burden of Disease Study 2013. *BMJ*, 354. https://doi.org/10.1136/bmj.i3857.

Leem, I. M., Shiroma, E. J., Lobelo, F., Puska, P., Blair, S. N., & Katz-Mary, P. T. (2012). Effect of Physical inactivity in a major non-communicable disease worldwide: an analysis of burden of disease and life expectancy. *Lancet*, 380-219.

Leghemo, T. S., Agwubike, E. O., & Efe-Aigbovo, A. E. (2017). Body Weight Profile Categorization of Uniben Early Morning Fitness Promotion Club Members. *Institute Journal of Studies in Education*, 7 (1); 37-42.

Mishra, A. (2000). Central Obesity: Origin and relevance. In: Metabolic Syndrome, Seventh Annual Symposium, New Delhi: *Ranbaxy Science Foundation*.

Okoro, E. O., Oyejola, B. A., Etebu, E. N., Sholagberu, H., Kolo, P. M., Chijioke, A., & Adebisi, S. A. (2014). Body size Preference among Yoruba in three Nigerian Communities. *Eat Weight Disord*, 19; 77-88.

Okunbor, A. O., Agwubike, E. O., & Efe-Aigbovo, A. E. (2009). Assessing University of Benin staff participation levels in a structured fitness/ recreation. *Nigerian Association of Physical Health Education Recreation Sports and Dance (NAPHER.SD)*, 38-39.

Orinsi, N., Bellocco, R., Bottai, M., Pagano, M., Michaelsson, K., & Wolk, A. (2007). Combined effects of Obesity and Physical Activity in Predicting Mortality among Men. *Journal of Internal Medicine*, 264; 442-451.

Pinho, C. P. S., Diniz, A. S., de Arruda, I. K. G., Leao, A. P. D., de Albuquerque, E. C., & Rodrques, I. G. (2017). Factors Associated with the Concentration of Visceral and Subcutaneous Fat. *Health Care Current Reviews*, 5 (4),1-8. https://doi.org/10.4172/2375-4375.1000214.

Sa, C. K. C., Tenorio, M. C. C., Freitas, M. M., Ruas, G. R., & Cancio, J. F. P. (2012). Effects of interval training versus continuous exercise on anthropometric and cardiorespiratory fitness markers in obese women. *J Nutr Disorders Ther*, S 2; 2161-0509. http://dx.doi.org/10.4172/2161-0509.S2-002.

Sheikholeslami-Vatani, D., & Ebrahim, A. (2018). The Effect of Moderate-Intensity Continuous Training Vs. High-Intensity Interval Training on Visceral and Subcutaneous Fats in Obese Women. *J Rafsanjan Univ Med Sci*, 16 (12), 999-1012.

Skrypnik, D., Bogdanski, P., Madry, E., Karolkiewicz, J., Ratajczack, M., Krysciak, J., Pupek-Musialik, D., & Walkowiak, J. (2015). Effects of Endurance and Endurance Strength Training on Body Composition and Physical Capacity in Women with Abdominal Obesity. *Obes Facts*, 8175-187. https://doi.org/10.1159/000431002.

WHO (2000). Obesity: Preventing and managing the global epidemic. Report of a WHO consolation. *WHO Technical reports series*, WHO press, 2, (4-6) 894; 38-99.

WHO (2009). Global health risk: mortality and burden of disease attributable to selected major risks. Geneva. www.who.int./evidence/bod.

WHO (2016). Obesity and Overweight: *Fact Sheet*, 311.

WHO (2018). Obesity and Overweight. *Fact Sheet*. https://www.who.int.mediacentre/factsheet/fs311.

Zhu, K., Caulfield, J., Hunter, S., Roland, C. L., Payne-Wilks, K., & Texter, L. (2005). Body mass index and breast cancer risk in African American Women. *Annals of Epidemiology*, 15 (2), 123-128. https://doi.org/10.1016/j.annepidem.2004.05.011.

ASSESSMENT OF ATTITUDE OF STUDENTS TOWARDS PERSONAL HYGIENE IN BOARDING JUNIOR SECONDARY SCHOOLS IN GUSAU METROPOLIS, ZAMFARA STATE NIGERIA

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Abstract

Negative attitudes towards personal hygiene is one of the key foundations of infections such as gastroenteritis, colds, flu and COVID-19. The paper assessed the attitude of students towards personal hygiene in boarding junior secondary schools in Gusau Metropolis, Zamfara State Nigeria. The study employed a descriptive survey research design. The population of this study comprise all Junior Secondary School students in boarding public Secondary Schools in Gusau Zamfara State in the 2019/2020 academic session with a total population of eight hundred and thirty. A purposive sampling technique was used to select all three boarding junior public secondary schools in Gusau metropolis. A total of 310 respondents which was 40% of the population were used for this study. The instrument used for the study was questionnaire with an internal consistency of 0.760 after the pilot test. The research questions were answered using mean and standard deviation while t-test was used to test the hypothesis at 0.05 level of significance The findings revealed that the boarding JSS students in public junior secondary schools in Gusau have a negative attitude towards personal hygiene and there was a significant difference in the attitudes of boarding JSS students in Public Junior Secondary Schools in Gusau Metropolis on personal hygiene based on class difference. It was recommended that personal hygiene should be incorporated into the school curriculum to improve students' attitudes towards good hygiene in secondary schools.

Keywords: Attitude, Personal hygiene, Junior, boarding, student and Secondary school

Introduction

Maintaining good personal hygiene practices includes keeping your body clean, which helps ward against illnesses including COVID-19, the flu, colds, and gastroenteritis (Yanglin, 2022). Germs that can cause illness are eliminated when hands are cleaned with soap and water. Maintaining proper personal hygiene can also aid in halting the transmission of illnesses to others. Personal hygiene practices include cleansing one's body every day, using soap and water to wash one's hands after using the restroom, brushing and flossing one's teeth twice a day, covering one's mouth and nose when coughing or sneezing, and washing one's hands after handling pets and other animals (Çelik & Yüce, 2019).

A positive attitude toward personal hygiene is also essential since it prevents illness, which in turn prevents the spread of pathogens and infectious diseases. When providing holistic care for children and young people (CYPs) in good health as well as those with special needs or compromised health as a result of disease, surgery, or hospitalization, personal hygiene plays a critical role. Keeping oneself clean can also help the ill CYP return to normal, provide comfort, and support their mental health. The family's involvement is crucial for any hospital admission for all aspects of care maintaining a high degree of cleanliness is essential to day-to-day living and/or is required to avoid infection and preserve one's dignity and self-worth. CYPS must remain held to this standard while they are in the hospital (Akorede & Atanda, 2020; Sarah et al., 2023).

The results of a study conducted by Amukugo and Mitonga (2018) on the attitude toward personal hygiene among adolescents show that out of 158 responses, all of the participants were male, and the majority of them were enrolled in grade 12 (n=88,55.7%). Participants also demonstrated a moderate level of personal hygiene. In a similar vein, a UNICEF survey from 2021 on personal hygiene among students in primary schools found that the majority of the subjects—66.7% of whom were in grades 5 and 6—had a negative attitude toward cleanliness and hygiene. This showed that, regardless of their attitudes, younger students in lower school grades had worse attitudes about cleanliness and hygiene than older students in higher grades, both female students (50.7%) and male students (49.3%). No statistically significant correlation was found between the attitudes and the school circuits or locations. Research indicates that students are more likely to have positive attitudes and be responsible as they grow older and progress in their education. Even though many students had the proper attitude toward hand hygiene, 22.8% of them were unaware of or did not think that hand hygiene should begin after defecation. Additionally, 18.2% of people did not know or think that hands should be clean before eating, at home or school. This is concerning because learners who hold this belief won't try to wash their hands after using the restroom, even if water is accessible in the classroom. It implies that disease can spread through contact with other people (Choi, Jang, & Choi, 2014)

In addition, Jayita (2017) carried out a cross-sectional study at a Government Secondary Girls school in a Kolkata slum. By full enumeration, 327 teenage girls from the class were included. The majority of responders exhibited appropriate personal hygiene behaviour. Care of hair (96.9%), covering of mouth during coughing or sneezing (59.3%), cleanliness

of mouth after feeding (47.4%), hand washing (90.8%), and requirement of dating (62.7%). The majority of the teenage girls showed appropriate views on personal hygiene, according to the study. One of the International Millennium Development Goals (goal 4) is to reduce child and youth mortality rates by two-thirds between 1990 and 2015. This goal has been adopted by the World Bank, the International Monetary Fund, members of the Development Assistance Committee of the Organization for Economic Co-operation and Development (OECD), and many other agencies. Because of this, it's important to improve the health of children and young people and lower death rates by applying all practical, efficient methods. To accomplish this admirable objective, it is now crucial to avoid illnesses like gastroenteritis and other conditions linked to inadequate hygiene, as well as to educate kids and young people about the need for hand washing (Rheingans, Dreibelbis & Freeman, 2016). Hand washing is essential for preventing diarrhoea (Najnin, et al., 2019), and wearing a face mask and minimising the spread of influenza have been shown to reduce the infection (Cowling, Chan & Fang et al., 2019).

Because of Nigeria's still-acceptably high rate of child and youth mortality, it is imperative to investigate the existing state of attitude on the relationship between hand washing and the risk of illness development in this age range. The purpose of this study was to determine how students felt about personal hygiene in Gusau Metropolis, a boarding junior secondary school in Zamfara State, Nigeria.

Objective: To examine the attitude of students towards personal hygiene in boarding junior secondary schools in Gusau Metropolis, Zamfara State Nigeria

Research question: what is the attitude of students towards personal hygiene in boarding junior secondary schools in Gusau Metropolis, Zamfara State Nigeria?

Hypothesis: There are no significant differences in the attitude of students towards personal hygiene in boarding junior secondary schools in Gusau Metropolis, Zamfara State Nigeria based on school

Methodology

This study employed a descriptive survey research design. The population of this study comprised all JSS II junior students in boarding public secondaryschools in Gusau metropolis, Zamfara State, with a total population of eight hundred and thirty (830). A purposive sampling technique was used to select all three boarding junior public secondary schools in Gusau metropolis of Zamfara State, Nigeria. To select the respondents, forty per cent (40%) of the respondents in each of the schools were selected using a simple random sampling technique of the fish-bowl method. Thus, in the Government Science Secondary School with a population of 305, a sample of 122 was selected. In Government Girls Arabic Secondary School with a population of 345, a sample of 138 was selected. Likewise, in Federal Government Girls College with a population of 180, a sample size of 72 was selected at random using simple random sample fish-bowl method. Administration of 332 copies of the questionnaire was done with the help of three research assistants during the lunch break with the respondents with the permission of the Principals of the schools however, 310 questionnaires were recovered. Thus, a total of 310 respondents were used for this study. A self-developed questionnaire with 14 items structured on a four-point Likert scale type, Strongly Agreed (SA), Agree (A), Disagree (D), and Strongly Disagree (SD) (with scale SA = 4, A = 3, D = 2 and SD = 1). However, any response with a mean score of 2.50 and above is considered accepted while below it is considered rejected. The instrument was validated by the experts in health education and was subjected to a pilot test with an internal consistency of 0.760 using the Guttman split-half test to determine the reliability coefficient test. The research question was answered using mean and standard deviation. Inferential statistics of Analysis of Variance (ANOVA) was used to test the hypothesis at 0.05 level of significance.-

Results

Table 1: Mean and Standard deviation scores of the responses on attitude towards personal hygiene

S/N	Statement	Mean	Std. Dev	Decision
1	It is good to wash hands only with water	2.96	0.185	Accepted
2	It is good to wash hands with soap and water	2.79	0.593	Accepted
3	It is good to wash hands before the meals	2.68	0.519	Accepted
4	It is good to wash hands after meals	2.81	0.681	Accepted
5a	It is good to wash hands after using the toilets	2.93	0.347	Accepted
5b	It is good to wash hands after sanitation	2.99	0.220	Accepted
6	It is good to wash hands after coming to the Hostel	2.98	0.219	Accepted
7	It is good to wash hands after sneezing or contact with other student	2.96	0.185	Accepted
8	It is good to use toilet paper after using the toilet	2.79	0.593	Accepted
9	It is good to bath at least two times every day	2.68	0.519	Accepted
10	It is good to wash socks after class	2.81	0.681	Accepted
11	It is good to cover the mouth when coughing with Handkerchief	2.93	0.347	Accepted
12	It is good to daily change underwear	2.99	0.220	Accepted
13	It is good to cut the fingernails once a week	2.98	0.219	Accepted
14	It is good to brush your teeth at least two times every day	2.96	0.185	Accepted
	Weigted mean	**2.88**	0.394	

Accepted at 2.50

Table 1 revealed that the weighted mean of the responses of respondents was 2.88 out of the weighted mean of 4.00, which implies that the attitude towards personal hygiene of JSS II students in public junior boarding secondary schools in Gusau Metropolis was negative.

Table 2. Showing ANOVA to analyze student's attitude towards personal hygiene

Attitude	Sum of Squares	Df	Mean Square	F	Sig.
Between Group	37.537	2	18.768		
				8.090	0.000
Within group	712.218	307	2.320		
Total	749.755	309			

Table 2 revealed that the f-value computed was 8.090 and the p-value was observed since the obtained p-value of 0.000 is less than the alpha value of 0.05, hence the study rejected the null hypothesis that says there is no significant difference in attitude toward personal hygiene among boarding JSS II students in public junior secondary schools in Gusau metropolis bytheir school type. The decision implies that there is a significant difference in the attitude toward personal hygiene among boarding JSS II students in public junior secondary schools in Gusau metropolis by school type. To find where the differences occur, the post-hoc test was carried out as presented in Table 3:

Table 3: Post Hoc Test Analyses on the Students' Attitude towards Personal Hygiene

GROUP (A)	GROUP (B)	Mean Difference (A-B)	Std. Error	Sig.
Government Science Secondary SchoolsGusau	Government Arabic Secondary SchoolGusau	0.727*	0.197	0.000
	Federal Government Girls College, Gusau	0.727*	0.233	0.002
Government ArabicSecondary School Gusau	Government ScienceSecondary Schools Gusau	0-.727*	0.197	0.000
	Federal Government Girls College, Gusau	0.000	0.226	1.000
Federal GovernmentGirls College, Gusau	Government Science Secondary Schools Gusau	0-.727*	0.233	0.002
	Government Arabic Secondary School Gusau	0.000	0.226	1.000

Table 3 revealed that the significant difference occurs only between Government Science Secondary Schools Gusau and Government Arabic Secondary School Gusau and then between Government Science Secondary Schools Gusau and Federal Government Girls College. While between Government Arabic Secondary School Gusau and Federal Government Girls College, Gusau there was no significant difference.

Discussions

The finding revealed that the level of students' attitude towards personal hygiene of boarding JSS II students in public junior secondary schools in Gusau was negative, and there is a significant difference in their attitude towards personal hygiene based on school type. The result agreed with that of Shilunga, Amukugo and Mitongo, (2018) on personal hygiene among primary school learners. Their result revealed that the majority of the learners (66.7%) had a poor attitude towards hygiene and sanitation of which 78.7% were in grades 5 and 6.

However, the findings disagree with those of Innocent, Obani, Ezejindu, Uwaezuoke and Vasavada (2022) who revealed that 81.4% of secondary school students engage in the attitude of brushing their teeth and cutting their nails. The finding was in line with several studies as suggested by Innocent, et al (2022) which have found that poor personal hygiene among boarding students contributes to the spread of germs, gum infections, a higher risk of infectious illnesses, the incidence of foodborne outbreaks, and reproductive tract infections.

Conclusion

Based on the findings, it was concluded that: the attitude towards personal hygiene of JSS II students in public junior boarding secondary schools in Gusau Metropolis was negative. The Government Science Secondary Schools Gusau significantly have better positive attitudes towards personal hygiene.

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Recommendations

Based on the findings of this study, it was recommended that;

1. Personal hygiene as a core subject should be introduced in t h e junior secondary school curriculum to improve the attitude of students at the junior secondary school levels
2. Personal hygiene should be incorporated into teacher training institution's curriculum to facilitate students' attitude towards personal hygiene in secondary schools
3. Training programmes should be organized for students in secondary schools on how to take care of teeth, hair, feet, nose, eyes and hands.

Reference

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

Balogun, J. A. (2022). Reimagining the Nigerian healthcare system to achieve universal and high-quality healthcare by 2030. In *The Nigerian Healthcare System: Pathway to Universal and High-Quality Health Care* (pp. 407-454). Cham: Springer International Publishing.

Çelik, E. Y., & Yüce, Z. (2019). Investigation of the Awareness and Habits of Secondary School Students about Cleanliness and Hygiene from Various Variables. *International Education Studies*, *12*(4), 173-184.

Choi, E. H., Jang, I. S., & Choi, J. Y. (2014). The effect of an educational hand washing program on knowledge, attitude and performance of hand washing in undergraduates. *Journal of the Korean Society of School Health*, *27*(1), 39-49.

Cowling, B. J., Perera, R. A., Fang, V. J., Chu, D. K., Hui, A. P., Yeung, A. P., ... & Chiu, S. S. (2020). Maternal antibodies against influenza in cord blood and protection against laboratory-confirmed influenza in infants. *Clinical Infectious Diseases*, *71*(7), 1741-1748.

Dreibelbis, R., Kroeger, A., Hossain, K., Venkatesh, M., & Ram, P. K. (2016). Behaviour change without behaviour change communication: nudging handwashing among primary school students in Bangladesh. *International journal of environmental research and public health*, *13*(1), 129.

Jayita Pal, J. P., & Pal, A. K. (2017). Knowledge, attitude and practice of personal hygiene and its predictors: a school-based study among adolescent girls in an urban slum.

Kipps, S., Allaway, R., & Carmichael, S. (2023). Personal hygiene and pressure ulcer prevention. *The Great Ormond Street Hospital Manual of Children and Young People's Nursing Practices*.

Najnin, N., Leder, K., Forbes, A., Unicomb, L., Winch, P. J., Ram, P. K., ... & Luby, S. P. (2019). Impact of a large-scale handwashing intervention on reported respiratory illness: findings from a cluster-randomized controlled trial. *The American Journal of Tropical Medicine and Hygiene*, *100*(3), 742.

Olusegun, B., Mohammed, S., Jamila, K. S., & Yahaya, A. Assessment of the practice of personal hygiene among students in junior boarding public secondary schools in Gusau Metropolis. *Al-Hikmah Journal of Education, 10*(2), 95-99.

Shilunga, A. P., Amukugo, H. J., & Mitonga, K. H. (2018). Knowledge, attitudes and practices of primary school learners on sanitation and hygiene practices. *International Journal of Community Medicine And Public Health, 5*(8), 3197-3204

ASSESSMENT OF KNOWLEDGE OF HIV/AIDS PREVENTION STRATEGIES AMONG COMMERCIAL SEX WORKERS IN KANO METROPOLIS, KANO STATE, NIGERIA

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Abstract

This study assessed Knowledge of HIV/AIDs prevention strategies among commercial sex workers in Kano metropolis, Kano state. This study aimed to assess knowledge of HIV/AIDs prevention strategies among commercial sex workers in Kano Metropolis. A survey research design was adopted for this study. The sample size of the study was 400 and respondents were sampled using multi-stage sampling techniques of purposive, proportionate sampling and simple random sampling. Data was collected with the use of a validated questionnaire. Inferential statistics of one-sampled t-test was used to analyse the data. The findings of this study reveal that the respondents possessed knowledge of HIV/AIDs prevention strategies and also concluded that, the knowledge of HIV/AIDs prevention strategies was significant. Based on the findings the researcher recommended that the prospective health education agencies in the state should prepare health promotion programme to improve the knowledge of HIV/AIDs prevention strategies among commercial sex workers in the state

KEYWORD: HIV/AIDs, Prevention Strategies and Commercial sex workers.

Introduction

Human Immunodeficiency Virus (HIV) infection and Acquire Immune Deficiency Syndrome (AIDs) remain a major public health challenge (Gallant, 2017). HIV is a virus that attacks the body's immune system. If HIV is not treated, it leads to AIDS (Centre for Disease and Control, 2023). Abay, Wossen and Osman (2020) stated that AIDs is a pandemic disease caused by HIV that destroys disease resistance of the body. Knowledge of HIV/AIDs Prevention Strategies: -is a fact, information, and skills acquired through experience or education about HIV/AIDs among commercial sex workers in Kano Metropolis, Kano state. According to Herbst (2018), society is more susceptible to the effects of the epidemic due to a lack of education and awareness regarding HIV prevention. On the other hand, controlling and preventing the spread of HIV requires adequate, accurate, and clear understanding and awareness of HIV prevention. In this context, educating people about HIV/AIDS and its effects is an important component of any effort to stop the spread of the virus in society.

Adequate knowledge about HIV/AIDs is a powerful means of promoting positive attitudes and practice in engaging safe practices and a cornerstone in the fight against HIV/AIDs, commercial sex workers are especially vulnerable because they have limited or no historical knowledge of the beginning of the epidemic, limited current knowledge of the disease, poor attitudes toward HIV infected commercial sex workers, and little practice with prevention (Shehu et al., 2015; Beebwa et al., 2021).

The Commercial sex workers and Spreads of HIV/AIDs: - is a female sex worker who has sexual intercourse with several sexual partners more or less daily, in Kano Metropolis Kano, Kano state. Kazeem (2017) stated that Commercial sex work is an age-long profession. It is the practice of providing sex for money or other material and Non-material benefits. Commercial Sex workers generated more HIV infections and other routes of transmission among men to married women infected through commercial sex. Patricio et al. (2018), Commercial sex workers know about the importance of having safe sex, but they are influenced by the desire of their sexual partners and by the lack of negotiating power for condom use. Other factors may lead these women to have unprotected sex, such as better remuneration, emotional involvement, confidence in the partner and the effect caused by the use of alcohol or drugs. Commercial Sex workers and their clients have anal sex, but a relatively high proportion of customers insist on not using condoms, generating a greater risk of contracting HIV and transmitting it to other sexual partners, either men or women. It is important to consider the need for safe anal sex and incorporate this theme into prevention programme.

Statement of the Problem

The biggest issue with this study is that Commercial Sex Workers have a significant chance of contracting HIV/AIDS in Kano Metropolis. According to Godwin (2012) residents of Kano, the Nigerian Centre of Commerce are currently in big fear following a recent report released by Hisbah officials (Sharia Police) indicating that, 44 out of 93 commercial sex workers otherwise known as (ashawo) arrested at (kwanar Gafan) are infected with HIV/AIDs. One of the statements of the above reported by Hisbah official (Sharia Police) in Kano state, aroused the interest of the researcher to assess knowledge of HIV/AIDs Prevention strategies among commercial sex workers in Kano metropolis, to provide proper solutions to these problems in the State at large, Because most of HIV/AIDs cases comes from commercial sex centres, but knowingly or unknowingly people having sex relation with commercial sex workers that are living within the commercial sex community which indicates there is every tendency of the activities of commercial sex workers to affect the way people relate with them. Hence, there is a need to research on it.

Purpose of the Study

The purpose of this study is to assess the knowledge of HIV/AIDs Prevention Strategies among commercial Sex workers in Kano Metropolis Kano state, Nigeria.

Research Question:

What is the Knowledge of HIV/AIDs Prevention Strategies among commercial sex workers in Kano Metropolis, Kano state, Nigeria?

Research Hypotheses

The Knowledge of HIV/AIDs Prevention Strategies among Commercial Sex Workers in Kano Metropolis, Kano state, Nigeria is not significant.

Methodology

This study adopted a survey research design. The design seeks to identify the existence of a variable or the extent to which a variable exists in a phenomenon. It is a research design that establishes the extent of existence of one variable on the other. It collects relatively large data from a relatively small sample. In survey research, information is gathered on a representative sample from which descriptive generalizations can be made as to the whole population. This study, therefore, used a survey research design to assess knowledge of HIV/AIDs Prevention strategies among commercial sex workers in Kano metropolis, Kano state, Nigeria. The population for the study consisted of the commercial sex workers of Kano metropolis. The Population of commercial sex workers in Kano Metropolis is 7,682. (Kano State Hisbah Commission, 2023). The distribution of the commercial sex workers in the eight local government areas in the study area is shown in Table 1.

Table 1 Distribution of commercial sex workers in the study area

S/N	Local Government	Population
1.	Dala	443
2.	Kano Municipal	397
3.	Fagge	3763
4.	Ungogo	376
5.	Tarauni	197
6.	Gwale	378
7.	Nasarawa	1803
8.	Kumbotso	327
	Total	**7,682**

(Kano State Hisbah Commission, 2023).

The sample size for this study consisted of Three Hundred and Sixty-Five (365) from a population of 7,682 at a confidence level of 95.0% and a margin error of 0.05 (Research Advisor). The researcher, however, added attrition in case of losses or copies of the questionnaire filled incorrectly, and for generalization of the findings on the population. To understand a group of participants that

are selected from the general population and are considered as true representatives of the whole population for the specific study. For this research, the researchers added 10% making the sample size four hundred (400) Samples based on an increase made by researchers for attrition. The researchers used multi-stage sampling procedure in selecting respondents for this study as follows:

Stage I: Purposive sampling technique was used to select two (2) local government areas out of the Eight (8) Local Government areas in Kano Metropolis which are; Fagge, Kumbotso, Nasarawa, Kano Municipal, Dala, Gwale, Tarauni and Ungogo respectively.

The two (2) local government areas of Kano metropolis were purposively selected based on the higher population of commercial sex workers in the local government areas which are Fagge and Nasarawa respectively.

Fagge is the first selected local government area been that it has the highest population of three thousand seven hundred and sixty-three (3,763) among the eight (8) local governments and Nasarawa is the second selected local government area with about the highest population of one thousand eight hundred and three (1,803). Most commercial sex workers in Nasarawa local government area are residents of Hotels.

Stage II: Simple random sampling techniques were used to sample two commercial sex centres from each two local governments in Fagge and Nasarawa respectively. Two containers are used, each one representing a local government. The names of commercial sex centres are written on pieces of paper, folded and dropped into the corresponding container, The researcher shook the containers one at a time and then asked the four (4) research assistants to pick one piece of paper from each container at a time and the name of commercial sex centres on the pieces of paper is written down. These are; the Church Road Sabon Gari and Yaruba Road commercial sex centres from Fagge local government. Ni'ima Hotel and Tahir Guest Palace Hotel from Nasarawa local government area, Kano state.

Stage III: Proportionate sampling was used to calculate the proportion of sample size per local government, by dividing each local government population by the total sample local government population multiplied by the sample size.

Stage VI: Proportionate Sampling was also repeated on the selected commercial sex centres to calculate the proportion of sample size per commercial sex centre based on the sample size allocated to each local government, by dividing commercial sex centres population by L.G.A Population multiplied by the local government sample size.

 Stage V: Convenient sampling technique was used to select commercial sex workers found in the sampled commercial sex centres at their convenient time, accessibility and availability in their commercial sex centres according to their sitting arrangement through a first come first serve method until the number allocated for each commercial sex centres were completed. This technique was used to give an equal chance to the sample selected to each respondent.

The instrument that was used for data collection in this study was a researcher-structured closed-ended questionnaire. The questionnaire was divided into two (2) sections A and B. Section A contains three (3) statements on the demographic characteristics of the respondents. Section B consists of ten (10) statements on knowledge of HIV/AIDs prevention strategies among commercial sex workers. To calculate the mean scores of responses as shown by the respondents, the modified four (4) points Likert rating scale will be used as follows: Strongly Agree (SA) – 4, Agree   (A) – 3, Disagree (D) – 2 and Strongly Disagree   (SD) – 1. Therefore, any mean score of response that is 2.5 or above was regarded as positive, while any mean score of response less than 2.5 was regarded as negative. The researcher-developed instrument tagged 'Assessment on knowledge of HIV/AIDs Prevention strategies among commercial sex workers Questionnaire''. Four (4) copies of the questionnaire were given to four (4) experts in the Department of Human Kinetics and Health Education, Ahmadu Bello University, Zaria to check the appropriateness of the instrument, and whether it measures what is expected to measure.

A letter of introduction was collected from the Department of Human Kinetics and Health Education, Faculty of Education, Ahmadu Bello University, Zaria was given to Kano state Hisbah Command, ward heads and Police outpost near commercial sex centres to inform them about preparation to research 'assessment knowledge of HIV/AIDs Prevention strategies among commercial sex works in Kano Metropolis.'' The first and second visits were prepared to collect data from the commercial sex workers. Categorically, during the first visit to sampled commercial sex centres, the researchers introduced themselves to the house leader which was known as Magajiya, and informed the purpose of the visit in detail to convince her, that all derived information would be used for academic purposes only. During the second visit, the researcher was again obtaining permission to collect data from

the respondents that is commercial sex workers from the selected sampled centres. The researchers and the research assistants proceeded to each sampled commercial sex centre for the second visit to meet with commercial workers and administer the research instrument to commercial sex workers.

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 Microsoft Excel spreadsheet. The descriptive statistics of frequencies, percentages mean and standard deviation were used to describe the demographic variables and to answer the research question respectively. The inferential statistic of one sample t-test was used to test the formulated hypothesis at 0.05 level of significance.

Result

Analysis of the respondent's demographic characteristics is presented in Table 2

Table 2 Demographic characteristics of the respondents

Variable	Variable option	Frequency	Percentage
Age	15-18 years	58	16.2
	19-25 years	89	24.9
	26-32 years	108	30.2
	33-39 years	67	18.7
	40 years and above	36	10.1
	Total	**358**	**100**
Marital status	Divorced	98	27.4
	Window	65	18.2
	Single	195	54.5
	Total	**358**	**100**

As presented in Table 2, of the total respondents, (16.2%) were below 18 years, (24.9%) were between 19 and 25 years, and (30.2%) were in the age bracket of 26 to 35 years, representing the highest percentage of the subjects among the age groups. Moreover, (18.7%) of the subjects are in the range of 33-39 years and only (10.1%) in the older age of 40 years and above, representing the lowest percentage of the subjects among the age group in the entire population. By their educational qualification, (12.6%) had no formal education, and (11.2%) had only primary education. Those with secondary education represent (46.1%) of the respondents, and (30.2%) had tertiary education. The distribution of the respondents in terms of their educational qualification shows that (76.3%) of the entire population of the respondents had either secondary or tertiary education; this implies that the subject could be said to be educated to provide valid information. Regarding their marital status, Table 2 shows that (27.4%) were divorced, and (18.2%) were widows. The table's results also show that more than half of the respondents (54.5%) were single.

Research Question: What is the Knowledge of HIV/AIDs prevention strategy among commercial sex workers in Kano metropolis, Kano state?

Table 3 Mean scores on knowledge of HIV/AIDs prevention strategies among commercial sex workers in Kano state.

S/N	Knowledge of HIV/AIDs	Mean	Std. Dev.
1	Antiretroviral medication can reduce the likelihood of contracting HIV/AIDs.	2.17	1.00
2	Pre-exposure prophylaxis can prevent HIV/AIDs infection	1.98	1.06
3	The use of condoms reduces the risk of HIV/AIDs	2.90	1.00
4	Voluntary male medical circumcision is another option for preventing HIV/AIDs infection	2.16	1.09
5	HIV/AIDs spread through the sharing of infected sharp object	2.97	0.91
6	Behaviour change programme intervention can reduce the dangers of contracting HIV/AIDs	2.48	1.09
7	HIV/AIDs can be transmitted through sexual contact with an infected person	3.03	0.90

8	HIV/AIDs can be transmitted to newborns by infected pregnant mother	2.96	0.96
9	Counselling and testing can reduce the spread of HIV/AIDS	2.65	1.06
10	Early medication can prevent the progression of AIDs	2.69	1.02
Aggregate		2.60	0.96

(Benchmark mean =2.5)

Table 3 revealed that the respondents were aware that the use of condoms could reduce the risk of HIV/AIDs with a mean score of (2.90). Moreover, the respondents were aware that HIV/AIDS can be contracted through the sharing of infected sharp objects with a mean score of (2.97). The respondents knew that HIV/AIDs can be transmitted through sexual contact with an infected person with a mean score of (3.03). The participants had adequate knowledge that HIV/AIDs can be transmitted to newborn babies by infected pregnant mothers with a score mean of (2.96). In addition, the respondents had a slide mean (2.65) on counselling and testing to reduce the spread of HIV/AIDs and also had a slide mean (2.69) on early medication can prevent progression to AIDs. However, the respondents show a lack of knowledge that antiretroviral medication can reduce the likelihood of contracting HIV/AIDs with a below mean score of (2.17) and that pre-exposure prophylaxis can prevent HIV/AIDs infection with a below mean score of (1.98). Furthermore, the respondents are not aware that voluntary male medical circumcision is another option for preventing HIV/AIDs infection with a below mean score of (2.16), and behaviour change programme intervention can reduce the dangers of contracting HIV/AIDs with a below mean score of (2.48). The aggregate mean score of 2.60 with a standard deviation of 0.96 which is higher than the benchmark (2.50) implied that the subject could be said to Slide knowledge of HIV/AID prevention strategies.

Test of Hypothesis

Hypothesis: The Knowledge of HIV/AIDs Prevention Strategies Among Commercial sex Workers in Kano Metropolis, Kano state, Nigeria is not significant.

Table 4 Results of one sample t-test for Knowledge of HIV/AIDs Prevention Strategies Among Commercial Sex Workers.

Variables	N	Mean	Std. Dev.	Std. Error	t-value	df	p-value
Knowledge	358	2.60	0.96	0.05	1.96	357	0.04
Test mean	358	2.50					

Results in Table 4 revealed that expressed knowledge of the subjects on HIV/AIDs prevention strategies was significant. The t-value obtained from the test was 1.96 with a p-value of 0.04 at the 357 degree freedom. These observations implied that the expressed knowledge was significant. The null hypothesis that knowledge of HIV/AIDs prevention strategies among commercial sex workers in Kano metropolis is not significant is therefore rejected. The table revealed that the knowledge of HIV/AIDs prevention strategies among commercial sex workers is significant.

Discussion

The study assessed Knowledge of HIV/AIDS prevention strategies among commercial sex workers in Kano metropolis. This study found that commercial sex workers in Kano metropolis lacked knowledge of HIV/AIDS prevention strategies. A similar study conducted by Ikpeama, Onuzulike, Ikpeama & Igbineweka (2019) on the assessment of knowledge of sexually transmitted infection (HIV/AIDs) among commercial sex workers in Sokoto Metropolis, Sokoto State, Nigeria, findings are in line with this study. A cross-sectional form of descriptive survey research design was used for this study. The populations of this study were estimated to be one thousand (1,000) commercial sex workers in Sokoto metropolis. The data obtained for the study was collected from one hundred (100) commercial sex workers with a structured questionnaire into two sections A and B. Section A, was made up of three questions on demographic data (age, level of education and year of prostitute). Section B contained twelve (12) questions on knowledge of HIV/AIDs. Chi-square 732.4829 is greater than the critical value 55.758, df=40, there is a statistically significant relationship between the age of the commercial sex workers and the knowledge of HIV/AIDs. Chi-square 775.09 is greater than the critical value 55.758, df=40 there is a statistically significant relationship between the educational level of commercial sex

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workers and the knowledge of HIV/AIDs. Chi-square 1338.669 is greater than the critical value 55.758, df=40 there is a statistically significant relationship between the years of being commercial sex workers and the knowledge of HIV/AIDs rejection null hypothesis. The researcher also recommended that the study showed commercial sex workers in this study area, possessed very good knowledge of sexually transmitted infections (HIV/AIDs).

Conclusions

Based on the findings the following conclusions were made as follows:

1. The commercial sex workers in Kano metropolis Kano State had slide knowledge of HIV/AIDS prevention strategies.
2. The study also concluded that the commercial sex workers in Kano metropolis are aware of six (6) prevention strategies and not aware of four (4) important prevention strategies.

Recommendations

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

1. The respective health agencies of the state government should periodically embark on enlightening the public on the dangers associated with the inappropriate use of condoms during sex, and engage commercial sex workers in discussions and Workshops to reinforce their positive knowledge and address any misconceptions.
2. The health educators in the State should prepare a health promotion campaign to improve knowledge and change poor practice of HIV/AIDs prevention strategies among commercial sex workers through health talks, conferences, town hall meetings and other public fora in the state aimed to reduce likelihood of contracting with HIV/AIDs and Health education intervention to focusing on areas where knowledge gaps are identified to ensure comprehensive understanding among commercial sex workers and conduct regular assessments and training sessions to keep the knowledge levels up-to-date and address any emerging gaps.
3. The Kano State Centre for Disease Prevention and Control should tailor interventions that cater specifically to the health needs of commercial sex workers to improve their knowledge and discourage them from engaging in indiscriminate sexual activities, therefore, reducing cases of HIV/AIDS.

References

Abay W, Wossen C & Osman A. (2020). Assessment of HIV/AIDs preventive practice and association factors among female sex workers in Afar Region, Ethiopia: a community-based study. *Ethiop J Health Sci., 30*, 1-45. Doi: http:// dx.doi.org/ 10.4314/ejhs.v30il.7

Beebwa, E., Muzoora, C., Ashaba, S., Groves, S. & Atwine, F. (2021). Knowledge, attitude and preferred strategies towards HIV/AIDS prevention among adolescents attending secondary schools in South Western Uganda. *Afri. Health Sci.*, 1067-1073. https://dx.doi.org/10.4314/abs.v21.

Centre for Disease and Control (2023). Concept of HIV. http://cdc.gov/hiv/basic/whatishiv.html

Gallant J. (2017). Human Immunodeficiency Virus Medicine. *The Journal of Infectious Diseases*, *216*(suppl_5) s624-s5. https://doi.org/10.1093/infdis/jix238PMID:28938040. Page 1-5.

Godwin, A. (2021). 44 out of 93 confirmed HIV Positive. home-news-politics-metro-sport-entertaiment-opinoin-education-health-interviews- dailypost-ghana.

Herbst, J. (2018). Estimating HIV prevalence and risk behaviours of transgender persons in the United States: *A systematic review. AIDS Behaviour; 12(1):1-17.*

Kazeem, D. Kelvin U, & Adioni A. (2017). *The Phenomenon of commercial sex Workers in Nigeria*: A Literature Review, Ibadan Oyo state, Nigeria.

Patricio A, Bezerra V, Nogueira J, Moreira M, Camargo B, and Santos J. (2018) *Knowledge of Sex Workers about HIV/AIDs and*

www.journals.abu.edu.ng/gjhrr/submission/

its influence on sexual practices. Rev Bras Enferm.72(5):1311-7.doi:http://dx.doi.org/1o.1590/0034-7167-2018-0590

Shehu R. A., Oguntunji, I.O., Abdulraheem, A. M., Ologele I., Jidda K.A. & Akorede S.N., (2015). Discrimination as a correlate of Job Security among HIV/AIDs Patients Attending Anti-Retroviral Clinic at State Hospital, Saki, Nigeria. *East African Researchers, 4*(1),129-137.

UNAIDS (2023). HIV Prevention. Retrieved on 5th September, 2023. From https://www.unaids.org/en/topic/prevention

World Health Organisation (2023). Meaning of Prevention. Retrieved on 30th August, 2023. From https://prevention-centre.org.an/about-prevention/what-is-prevention.

THE IMPACTS OF AUDIO-VISUAL MATERIALS IN TEACHING PHYSICAL AND HEALTH EDUCATION AMONG GOVERNMENT JUNIOR SECONDARY SCHOOL STUDENTS IN ZARIA LOCAL GOVERNMENT AREA OF KADUNA STATE, NIGERIA

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Abstract

This study was conducted to examine the impact of audio-visual materials in teaching Physical and Health Education among Government Junior secondary school students in Zaria local government area of Kaduna State, Nigeria. The study employs a descriptive survey design. The target population comprises all government junior secondary schools in Zaria local government area of Kaduna State with a total number of eighteen (18) government junior secondary schools and thirty thousand eight hundred and forty (30, 840) students in Zaria local government area of Kaduna State, where four (4) wards (Kaura ward, Kufena ward, Gyallesu ward and Tukur tukur ward) were selected out of thirteen (13) wards in Zaria local government area of Kaduna State by simple random sampling and proportional sampling techniques by balloting the respondents from JSS II and JSS III. Data was gathered mainly with the aid of questionnaire. The result revealed from the majority of the respondents 88.75% (213) shows evidence of negative usage and availability of audio-visual materials in teaching Physical and Health Education as a subject in Government Junior Secondary Schools in Zaria local government area of Kaduna State. The study concluded that using audio-visual materials as a teaching method stimulates thinking and improves the learning environment in a classroom. It was recommended that teachers should make an effort to teach their students using audio-visual materials.

Keywords: Impact, Audio-visual materials, Students, Physical and Health Education (P. H. E)

Introduction

Physical and Health Education is a part of total education that deals with the all-round development of an individual through carefully selected physical activities and acquiring health knowledge necessary for maintaining healthful living (Abass and Angba, 2020). Through Physical and Health Education, students learn physical activities that can improve their cognitive ability, acquire health habits that can lead to total fitness, acquire knowledge of good nutrition essential for proper growth and development, and knowledge of personal hygiene and drug use among others.

Physical and Health Education represent the only time and place for every child to learn knowledge and skills related to physical activities and to be physically active during the school day. It is also the only time and place for all children to engage in vigorous or moderate-intensity physical activity safely because of the structural and specialist-supervised instructional environment (Abass and Angba, 2020). In recent times, there has been an increasing concern for effectiveness and efficiency in the learning process. Anzaku (2011) opined that any success must be achieved in attaining effective student learning outcomes. The teacher must know the instructional materials that are available for teaching a particular subject or topic and be able to utilise them to attain the expected students' learning outcomes.

Audio-visual is defined as the combination of various digital media types such as text, images, sound and video into an integrated multi-sensory interactive application or presentation to convey a message or information to an audience. In other words, Audio-visual means "an individual or a small group using a computer to interact with information that is represented in several media, by repeatedly selecting what to see and hear next" (Dike, 1993). According to Nwankwo (2004), Audio-visual materials refer to devices of hardware and software through which the learning process may be encouraged and carried on. Such devices include models and mock-ups, video-taped instructional packages, film strips instructional television, slides and transparencies, pictorial illustrations, graphic materials and maps; and three-dimensional figures. They could also include radio vision and computers. Mcnaught (2007) viewed audio-visual materials as important aspects of teaching and learning in all stages of education. They are considered as essential means of increasing effectiveness in teaching and learning, they make learning more interesting thereby contributing to the depth and way of learning.

Statements of the Problem

There is an urgent need to improve the quality of education to bridge the gap between developed and developing nations, and audio-visual instruction is considered a necessary tool for this purpose. However, the preservation of audio-visual alone will not stimulate significant changes in a school. Additionally, the integration of audio-visual in physical and Health Education remains a significant issue in the quest to provide holistic educational encounters to learners in the Zaria local government area of Kaduna State. However, this seems to be absent in the provision of P. H. E to Government Junior secondary school students in Zaria. Hence, the a need to conduct this research to ascertain the veracity of the use of audio-visual materials in government junior secondary schools in Zaria.

The importance of audio-visual materials in the teaching and learning process can not just be overemphasised. This is as Ngozi et al., 2012 unanimously agreed that audio-visual materials are important and useful in education because the normal learner as far as the function of his preceptor mechanisms are concerned, gains understanding in terms of multiple impressions recorded through the eye, ear, touch and other senses. Despite its importance to the teaching of any school subject including P.H.E., many of its teachers hold the notion that the subject is a simple one that requires little if any preparation (Talabi, 2004).

Moreover, the methods required in the teaching of P.H.E are numerous such as inquiry, discussion, role-playing, drama, buzz grouping, and traditional methods all demand a lot of preparation on the part of teachers and students alike. The pattern of teaching adopted by most teachers today is mostly abstract in form, without being supported by the use of appropriate aids. The inability to select appropriate audio-visual materials and sometimes its irregular use as support to the teaching of P.H.E in classrooms by its teachers was observed to be a strong hindrance to this study. Based on the hindrances, coupled with the fact that students do not retain for long or understand what they are taught without audio-visual aids. Therefore, there is a need to equip the teachers with necessary and available teaching resources in Government Junior Secondary Schools in Zaria local government area of Kaduna State.

Purpose of the Study

The purpose of this study was to examine the impact of audio-visual materials in the teaching of Physical and Health Education among Government Junior Secondary School Students in Zaria local government area of Kaduna State.

Research Questions

1. What is the state of audio-visual materials in the teaching of Physical and Health Education in Government Junior Secondary Schools in Zaria Local Government Area of Kaduna State?
2. What is the impact of audio-visual materials in the teaching of Physical and Health Education among Government Junior Secondary School Students in Zaria Local Government Area of Kaduna State?

Methodology

The research was to examine the impact of audio-visual materials in the teaching of Physical and Health Education among Government Junior Secondary School Students in Zaria Local Government Area of Kaduna State. Only Government Day and Junior Secondary Schools were used for this study. The research design used for this study was a descriptive survey. The population for this study comprised all government junior secondary school students in Zaria local government area of Kaduna State. According to Kaduna State (2020) Annual Census Report; there are Eighteen (18) government junior secondary schools and thirty thousand eight hundred and forty (30,840) students in Zaria LGA of Kaduna State. For the study, stratified sampling was used in selecting schools where four (4) schools were selected while simple random sampling was used in selecting wards in Zaria local government area. Therefore, out of thirteen (13)wards in Zaria local government area only four wards were selected (Kaura ward, Kufena ward, Gyallesu ward and Tukur-tukur ward). Then, proportional sampling techniques by balloting respondents (JSS II and JSS III). All the selection was done through hat-drawn methods where all the names of the wards were written on pieces of paper, folded and inserted into a container, the selection was done by research assistants. Kline (2015) recommended a sample size of 300 for confirmatory factor analysis. The sample size for this study was two hundred and forty (240). A close-ended questionnaire was

used to collect data for this study. The instrument was based on a modified 2-point scale (Dichotomous scale) which requires the respondents to tick the response on each statement that appeals to them. To ensure the validity of the instrument, the questionnaire was vetted by experts in health-related departments for observation and suggestions. The copies of the questionnaire were administered to the respondents during school hours and were collected on the spot. According to Kajang et al., (2004) opined that "for collection and return of questionnaire, it is advisable to distribute and collect on the spot".

Table 1: Student distribution by Wards and Sample Size

S/N	Name of Schools	Wards	Sample Size
1.	GJSS Rimin Doko	Kaura	60
2.	GJSS Kufena	Kufena	60
3.	GJSS Zaria	Gyallesu	60
4.	GJSS Tudun Jukun	Tukur tukur	60
	Total		**240**

Result

Table 2: Demographic Characteristics of the Respondents

S/N	Variables	Frequency	Percentage (%)
1.	**School Type**:		
	Public Junior Secondary Schools	240	100
2.	**Gender**:		
	Boys	115	47.92
	Girls	125	52.08
	Total	240	100
3.	**Class Level**:		
	JSS IIA	60	25
	JSS IIB	60	25
	JSS IIIA	60	25
	JSS IIIB	60	25
	Total	240	100

Source: Researcher's survey, 2023

Table 2 above indicates that the distribution of the questionnaire was done only in public Junior Secondary Schools. The number of girls 52.08% (125) is higher than the number of boys 47.92%(115) which gives a total of 240 respondents in both JSS II and JSS III classes. Therefore, the statistics show that the questionnaire was shared equally in both classes with 25%(60) which gives an aggregate of 240.

Answering the Research Question

Research Question (1): What is the state of audio-visual materials in teaching Physical and Health Education among Government Junior Secondary Schools in Zaria local government area of Kaduna State?

Table 3: The State of audio-visual materials in government junior secondary schools in Zaria local government area of Kaduna State (N=240)

S/N	Items	Responses	Frequency	Percentage (%)
1.	Are audio-visual materials always available in teaching Physical and Health Education?	Yes	27	11.25
		No	213	88.75
2.	Is there any factor that limits the use of audio-visual in teaching Physical and Health Education subjects by the teachers?	Yes	230	95.83
		No	10	4.17

S/N		Response	Frequency	Percentage %
3.	Is it all P. H. E teachers that use audio-visual materials to teach?	Yes	99	41.25
		No	141	58.75
4.	Do you have audio-visual materials mounted in your classroom to teach P.H.E?	Yes	0	0
		No	240	100

Source: Researcher's Survey, 2023

From Table 3, The results showed that few of the respondents 11.25%(27) stated that audio-visual materials are always available to teach P. H. E while the majority of the respondents 88.75%(213) revealed that audio-visual materials are not always available to teach P. H. E which shows evidence of an insufficient number of audio-visual materials in the school. Item number two (2) indicated that the majority of the respondents 95.83%(230) stated to have a factor that limits the use of audio-visual materials in teaching Physical and Health Education subject by their teachers while only a few respondents 4.17%(10) indicated to have no factor that limits its usage, this evidence that there is poor maintenance of the materials. Item number three (3) showed that 41.25%(99) average number of the respondents indicated that all their P. H. E teachers use audio-visual materials to teach, which is evident that their teachers are digitalised and updated. Item number four (4) indicated that all the respondents 240 (100%) stated that they have no audio-visual materials in their classrooms, which signifies evidence of poor governance and leadership from the school management.

Research Question (2): What is the impact of audio-visual materials in teaching Physical and Health Education among Government Junior Secondary School Students in Zaria local government area of Kaduna State?

Table 4: Impact of audio-visual materials in teaching Physical and Health Education among Government Junior Secondary School Students in Zaria local government area of Kaduna State (N=240)

S/N	Items	Response	Frequency	Percentage %
1.	Does the use of audio-visual materials bring about intrinsic motivation to you?	Yes	223	92.92
		No	17	7.08
2.	Do you receive motivation from your teachers when using audio-visual materials in the classroom?	Yes	197	82.08
		No	43	17.92
3.	Does the use of audio-visual materials bring about extrinsic motivation in you?	Yes	99	41. 25
		No	141	58.75
4.	Does the use of audio-visual materials promote your motivation towards the learning of Physical and Health Education?	Yes	213	88.75
		No	27	11.25
5.	Does the method used in applying the audio-visual to learning increase your motivation?	Yes	151	62.92
		No	89	37.08

Source: Researcher's Survey, 2023

Table 4 pointed out that the majority of the respondents 92.92%(223) stated to have intrinsic motivation when using audio-visual materials, which is evident to have good outcomes for the learners. Item number two (2) revealed that 82.08%(197) of the respondents received motivation from their teachers when using audio-visual materials in the classroom, which evident the competency of the teachers. Item number three (3) indicated that 41.25%(99) of the respondents revealed had extrinsic motivation when using audio-visual materials, which evident poor negative use of the materials. Item number four (4) showed that the majority of the respondents 88.75%(213) stated to improve their motivation towards the learning of P. H. E when using audio-visual materials, which evident good work from their teachers. Item number five (5) showed 62.92%(151) of the respondents that the method used in applying the audio-visual materials to learning increased their motivation, which evident positive turn-up from the learners.

Discussion of the Findings

This study was conducted to examine the impact of audio-visual materials in the teaching of Physical and Health Education among Government Junior Secondary School Students in Zaria local government area of Kaduna State. The results of this study indicated that only 11.25%(27) of the respondents stated that audio-visual materials are always available in teaching Physical and Health Education subjects while 95.83%(230) showed that the majority responded to have factors that limit the use of audio-visual materials in teaching Physical and Health Education subject by their teachers, this could be as a result of lack of maintenance or insufficient number of the materials or even the negligence from the subject teachers that do not apply the method of using audio-visual materials in teaching and learning processes. An average number of respondents 41.25%(99) stated that all the P. H. E teachers make use of audio-visual materials to teach. The findings by Kachlar (1991) add that a teacher who has adequate and relevant teaching facilities is more confident, effective and productive. However, using audio-visual aids in teaching is one way to enhance lesson plans and give students additional ways to process subject information. While all the respondents 100%(240) revealed that they do not have audio-visual mounted in their classrooms. According to Ranasinghe and Leisher (2009), integrating audio-visual materials into the classroom begins when a teacher prepares lessons that use audio-visual in meaningful and relevant ways. The result revealed that the majority of the respondents 92.92%(223) stated that the use of audio-visual materials brings about intrinsic motivation to them. The findings were consistent with Nwankwo (2004) asserted that using audio-visual materials to teach enables students to retain and recall what they have learnt. This is made possible because they were able to visualise what was been taught in the classroom. The result also reviewed that the majority of the respondents agreed to have received motivation from their teachers when using audio-visual materials. This is in accordance with Wikipedia Contributor (2021) that the use of audio-visual materials to teach helps teachers grab the attention of students and also builds interest and motivation in students' learning process and enhances the energy level of teaching and learning of students. It was also reviewed that the use of audio-visual materials promotes the learner's motivation towards learning. This is in line with Kinder (2015) that the availability of audio-visual materials will help the parents as well as the public in determining the choice of school for their children, this is because the wards will be motivated when they are exposed to instructional (audio-visual) materials that will lead to quality of learning and improved performance.

Conclusions

It is evident from this study that, Audio-visual materials are not always available to be used in Government Junior Secondary Schools as a result of the non-availability of audio-visual materials which is preventing teachers from teaching their students with it. Additionally, the research also concluded that using audio-visual materials as a teaching method stimulates thinking and improves the learning environment in classrooms.

Recommendations

Based on the conclusion, the study recommended as follows:

1. The need to establish school/staff community complaint unit should be looked into as a matter of urgency help to address issues which affect the smooth operation of the school teaching and learning process.
2. Workshops should be arranged for the teachers to improve their skills in using audio-visual materials to the needs of students.
3. Supervising authorities in education should enforce their policy on the usage of audio-visual materials in the classrooms.
4. Teachers should make an effort to teach their students using audio-visual materials.
5. Kaduna state government should provide adequate audio-visual materials to every government secondary school.

References

Abass and Angba (2020). Believing Sustainable Development Goals (SDGs), Faculty of Education University, Physical Education and Sport: Panacea for Educating the Mind Towards Ach of Ibada*n, Ibadan, Nigeria. ISBN:978-2860-53-0

Anzaku, F. (2011). Library experts speak on audio-visual materials. A paper presented at the United Nations, Educational Scientific and Cultural Organisation (UNESCO)

Dike, V. W. (1993). Library resources in Education, Enugu: ABIC Publisher.

www.journals.abu.edu.ng/gjhrr/submission/

Kaduna State Annual School Census Report (2020).

Kajang, G. Y, David, J. G, Jatau, A. A. (2004). Research and statistics made simple in education. Nigeria: WALS Printing Press Jos.

Kinder (2015). Definition of audio-visual aids. Retrieved from: http://www.slideshare.net/RT duraise/vam/definition-of-audio-visual-aids of. 14th October, 2021.

Kline, R.B. (2015). Principles and practice of Structural Equation Modeling. Guilford.

Kochlar, S. K., 1991.The teaching of social studies. New Delhi: Sterling Publishers Private Ltd.

Mcnaught, A. (2007). Moving images and sound: Inclusive and accessible. In moving images.

Ngozi, B. O., Samuel, A. O. & Isaac, O. A., (2012). Motivating use of Audio-visual in a Nigeria Technological University Library. Journal of Education and Social Research, vol. 2(1) Jan.

Nwankwo, C. G. (2004). The use of audio-visual aids in the teaching of English language in Secondary Schools. A long essay submitted to the Department of Linguistic and Nigerian Languages, University of Nigeria, Nsukka.

Ranasinghe, A. I. & Leisher, D. (2009). The benefits of integrating technology into the classroom. *International Mathematical Forum, 4* (40), 1955-1961.

Talabo, J. K. (2004). Education Technology. Unpublished thesis, Institute for Educational Development and Extension, University of Education, Winneba.

Wikipedia Contributors (2021). *Audio-visual Education*. Wikipedia

EFFECT OF HEALTH EDUCATION INTERVENTION PROGRAMME ON PRACTICE OF DENTAL CARIES PREVENTION STRATEGIES AMONG ADULTS IN ZARIA-METROPOLIS, KADUNA STATE, NIGERIA.

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Abstract

Dental caries is one of the most prevalent oral disease; it is refer to as a multifactorial oral disease initiated by acid-producing bacteria that attack and damage dental hard tissues. This condition can also be described as a microbial imbalance within the oral cavity in association with factors such as saliva, fluoride exposure, and diet. Practice of the preventive strategies in dental caries has been a challenge for the population over a long period of time. A multifaceted approach, the involvement of all dentists, health educators, and policy makers, as well as research studies that evaluate the results of the paradigm of caries prevention strategies and adjust it as necessary are all necessary for moving forward with practice and implementation. The current estimated population in 2022 at a 2.5% annual increase is 601,300 and 430,500 for Sabon-Gari and Zaria LGA respectively. With these the estimated total population for the area of study will be 1,031,800, which is the total population for Zaria Metropolis. The sample size for this study consists of sixty (60) adults (male and female) that will be drawn from population of Zaria metropolis in Kaduna State, Nigeria. A multi-stage sampling technique was used. The instrument that was used for data collection in this study is a researcher-structured close-ended questionnaire. The questionnaire was divided into four sections: Section A and B. Section A contains five (5) items on demographic characteristics of the respondents. Section A contains ten (10) items on practice of dental caries prevention strategies among adults. The effect of health education intervention programme on practice of dental caries prevention strategies among adult in Zaria metropolis of Kaduna State, Nigeria posttest is significant (p = 0.000). The difference between control and experimental group in practice of dental caries prevention strategies before and after the health education intervention programme on knowledge among adult in Zaria metropolis of Kaduna State, Nigeria is significant (p = 0.000). Given the significant improvement, extend the intervention to other regions or states to broaden its impact on dental caries prevention. Implement regular follow-up sessions to ensure sustained application of the prevention strategies learned by participants.

Introduction

Dental Caries is seen as chronic disease that can alter our normal physiology as we grow at any age. The term "caries" indicates both the dental disease process and its associated consequences, that is, the destruction attributed by the process of the disease (Gupta et al., 2014). Dental caries is one of the most prevalent oral disease; it is refer to as a multifactorial oral disease initiated by acid-producing bacteria that attack and damage dental hard tissues. This condition can also be described as a microbial imbalance within the oral cavity in association with factors such as saliva, fluoride exposure, and diet (Radwan et al., 2020). The term "dental caries" is used to the results, signs, and symptoms of a localized chemical demineralization of the mineralized teeth surfaces initiated by metabolic events that take place in the dental plaque (biofilms) that cover the affected teeth area (Kawashita et al., 2011).

The Global burden of diseases study recently estimated that the prevalence rates of untreated dental caries decreased by only 4% globally in the last decade, that the marked decline observed over the past 30 years has slowdown. Furthermore, dental caries can lead to missed work and school days (Sampaio et al., 2021). World Health Organization (WHO, 2022) estimated that oral diseases affect close to 3.5 billion adults worldwide, with 3 out of 4 adult affected living in middle-income countries.

In developed countries, the prevalence of dental caries is declining due to advanced dental facilities and the increased knowledge of oral hygiene. However, an unprecedented increase in prevalence in developing countries due to the growing consumption of sugary foods, poor tooth brushing habits, and the absence of adequate dental services. In developing countries, especially sub-Saharan Africa, the prevalence of dental caries varies according to the population group and socioeconomic status. The prevalence rates were 40.98% in Ethiopia, 52.4% in Sudan, 50.3% in Kenya, and 40.2% in Tanzania (Amare et al, 2021). In Nigeria, caries prevalence varies between 4% and 40% and mean DMFT varies between 0.5 and 3.5. The only information available relates to adult patients in dental hospitals who have had caries (Braimoh *et al.*, 2014).

Practice of the preventive strategies in dental caries has been a challenge for the population over a long period of time. A multifaceted approach, the involvement of all dentists, health educators, and policy makers, as well as research studies that evaluate the results of the paradigm of caries prevention strategies and adjust it as necessary are all necessary for moving forward with practice and implementation. Delaying or avoiding preventive dental care may lead to the need for more extensive and expensive treatments. Untreated cavities can cause pain and discomfort, especially when eating or drinking hot, cold, or sweet foods and beverages (Pitts & Zero, n.d.).

The practice of dental caries prevention strategies is a serious issue of concern involves inadequate various measures to reduce the risk of tooth decay and cavities. While many adults are aware of the importance of dental hygiene and preventive measures, this knowledge does not consistently translate into practice. The adherence to preventive practices such as regular brushing, flossing, the use of fluoride products, and routine dental visits is often suboptimal. This in practice is influenced by various factors, including socioeconomic status, access to dental care, cultural beliefs, and individual attitudes towards oral health. The inconsistency in practicing dental caries prevention strategies contributes significantly to the high incidence of tooth decay in the community.

Dental caries continues to pose a substantial health challenge in Zaria metropolis, where adults exhibit behaviour that indicates lack of knowledge and insufficient adoption of preventive strategies. The problem at hand involves a perceived gap in knowledge, attitudes, and practices related to dental caries prevention strategies, which motivated the researcher to carry out this study on effect health education intervention programme on the preventive strategies for dental caries. It is based on these issues stated above that the researcher intend to conduct this research.

Methodology

Quasi-experimental study design was adopted for the study in which a pre-test-post-test control group design was use. A quasi-experimental design aims to establish a cause-and –effect relationship between an independent and dependent variable. However, unlike a true experiment, a quasi-experiment does not rely on random assignment. Instead, participants are assigned to groups based on non-random criteria (Thomas, 2020). Rogers & Revesz, (2020) stated that pre-test-post-test control group design, are well suited to investigate effects of educational interventions are common in educational research. It is a design in which a researcher finds two group of adult to test, a study and control which are assigned non-randomly. The two groups was given pre-test after which the researcher introduces a manipulation. This design was suitable for this study since it attempt to find out the effect of health promotion intervention programme on practice of health education intervention programme on dental caries prevention strategies among adult in Zaria metropolis, Kaduna state.

The population for the study consist the entire Adult across Zaria metropolis, Kaduna State. Zaria metropolis comprises of two local government which are; Zaria and Sabon-Gari LGA. The current estimated population in 2022 at a 2.5% annual increase is 601,300 and 430,500 for Sabon-Gari and Zaria LGA respectively. With these the estimated total population for the area of study will be 1,031,800, which is the total population for Zaria Metropolis. The study is design to determining the effect of health education intervention programme on practice on dental caries prevention strategies among adult in Zaria metropolis Kaduna state. The sample size for this study consists of sixty (60) adults (male and female) that will be drawn from population of Zaria metropolis in Kaduna State, Nigeria. This selection relies on Cohen and Manion (2001), suggestion that a minimum of twenty (20) participants are required for experimental research to produce a desirable effect. Therefore, for the purpose of this study, sixty (60) participants was used as sample size, thirty (30) experimental group and thirty (30) control group for the purpose of generalization. A multi-stage sampling technique was used that involve the follows;

Stage I: Stratified sampling technique was used for stratification of the Zaria metropolis into the two already existing local government areas (Zaria and Sabon Gari LGAs). Both Local Government Areas were selected for the study.

Stage II: Simple random sampling technique of fishbowl method was used to select four wards (4), two (2) wards each Local Government Area within Zaria metropolis. Two containers was used each one representing a local government. The name of the wards are written on a piece of paper, folded and dropped into the corresponding container. The four selected wards are; Tudun-Wada, Kwarbai 'A', Bomo and Jama'a.

Stage III: Purposive sampling was used to form participants of the two (2) groups for the study which are experimental and control group, selecting across both Local Governments Area within the metropolis. Jama'a and Tudun Wada wards from Sabon Gari and Zaria L.G.A respectively serve as control group while Bomo and Kwarbai 'A' Wards from Sabon Gari and Zaria L.G.A respectively serve as experimental group. The two wards each are allocated with 30 participants making the total sample size 60 adults in Zaria Metropolis.

Stage IV: A Systematic sampling was used to select adults in the sampled wards. In this procedure all available adults where be seated at the venue. The total population present where divided by the sample size. With this the interval of sample was identified and use to select the respondent. This procedure was used for both the experimental and control group. This technique was used to give equal chance of selection among all respondent. 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 four sections: Section A and B. Section A contains five (5) items on demographic characteristics of the respondents. Section A contains ten (10) items on practice of dental caries prevention strategies among adults. Therefore, any mean score of response that is 2.5 or above is regarded as positive, while any mean score of response less than 2.5 will be regarded negative.

The researcher-developed instrument tagged "Effect of Health Education Intervention Programme on Practice on Dental Caries Prevention Strategies among Adult Questionnaire" (HEIPKAPDCPSAAQ) in Zaria metropolis Kaduna state. The face and contents validity was checked and validated.

The researcher and four trained assistants will engage community leaders and religious figures to recruit participants for a dental caries prevention study, using announcements and town criers in the selected wards. Systematic sampling will be conducted during the second visit, and participants will be divided into control and experimental groups, with their information recorded for follow-ups. The six-week health education intervention will involve weekly 60-minute sessions focused on prevention strategies, with data collected from both groups before and after the program. Post-intervention follow-ups, including phone reminders, will continue for two months, with posttest data collected eight weeks after the intervention.

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. One sample and dependent t-test was used to analyze the data generated for the study. A descriptive statistic of frequencies and percentages, mean and standard deviation was used to analyze the demographic characteristics of the respondents and research questions respectively.

One sample t-test was used to test the following three hypotheses 1 which are; the effect of health education intervention programme on practice of dental caries prevention strategies among adult in Zaria metropolis of Kaduna State, Nigeria is not significant at 0.05 level of significance. Paired t-test was used for the three hypotheses 2; there is no significant relationship between control and experimental group in practice of dental caries prevention strategies before and after the health education intervention programme among adult in Zaria metropolis of Kaduna State, Nigeria.

Results

Descriptive analysis of the participants' socio-demographic characteristics

The total number of thirty (30) participants were selected from each of the group none of the participants in either groups could not meet all the required information. Therefore, thirty (30) participants each completed the study in the experimental and control group. Among the socio-demographic characteristics of the respondents selected for the analysis along their expressed responses were: age, gender, marital status, educational qualification, and occupation. These variables are categorized into ranges and presented in frequency and percentages in table 1

Table 1 Participants' Socio-demographic Characteristics

Variable	Variable Options	Experimental		Control	
		Freq.	Percent %	Freq.	Percent %
Age	18 – 24 Years	9	30.0	12	40.0
	25 – 31 Years	11	36.7	7	23.3
	32 – 38 Years	6	20.0	8	26.7
	39 – 45 Years	3	10.0	3	10.0
	46 – above	1	3.3	0	0.0
	Total	**30**	**100.0**	**30**	**100.0**
Gender	Male	16	53.3	13	43.3
	Female	14	46.7	17	56.7
	Total	**30**	**100.0**	**30**	**100.0**
Marital status	Married	5	16.7	9	30.0
	Divorced	7	23.3	6	20.0
	Widow	4	13.3	3	10.0
	Single	14	46.7	12	40.0
	Total	**30**	**100.0**	**30**	**100.0**
Educational Qualification	Non-formal Education	3	10.0	1	3.4
	Primary Education	5	16.7	7	23.3
	Secondary Education	14	46.7	15	50.0
	Tertiary Education	8	26.6	7	23.3
	Total	**30**	**100.0**	**30**	**100.0**
Occupation	Civil servant	10	33.3	7	23.3
	Farming	8	26.7	4	13.3
	Trading	12	40.0	19	63.4
	Total	**30**	**100.0**	**30**	**100.0**

Source: Field survey, 2024

Table 1 showed that on age distribution for experimental group 18 – 24 Years has 9 (30.2%); 25 – 31 Years has 11(36.5%); 32 – 38 Years, has 6 (20%), 39 – 45 Years, has 3 (10%); and 46 – above has 1 (3.3%). Making the age distribution of 25-31 years to be higher while 46-above is lowest. For the control group 18 – 24 Years with 12 (40.0%) is the lower while 46 – above with no respondent. The distribution on gender showed in experimental group Male 16 (53.3%) while Female has 14 (46.7%) indicating that Male respondents are higher. In control group Male 13 (43.3%) while Female has 17 (56.7%) indicating that Female respondents are higher.

The distribution on marital status showed that in experimental group; Married has 5 and (16.7%), Divorced has 7 (23.3%), widow has 4 (13.3%), and single has 14 (46.7%). Single has the highest while Widow has the lowest participants'. The distribution on educational qualification showed that in experimental group; Non-formal Education has 3 (10.0%), Primary Education 5 (16.7%), Secondary Education, 14 (46.6%); and Tertiary Education 8 (26.6%). Secondary Education has the highest frequency while non-formal education has the lowest. In control group Non-formal education has the lowest with 1 (3.4%) and Secondary Education has 15 (50.0%). The distribution on occupation showed that in experimental group; civil servant has 10 (33.3%), Farming has 8 (26.7%) and trading has 12 (40.0%). Trading has the highest frequency while farming has the lowest. In control group trading has the highest with 9 (63.4%) while farming is the lowest with 4 (13.3%).

What is the effect of health education intervention programme on practice of dental caries prevention strategies among adult in Zaria metropolis of Kaduna State, Nigeria?

To determine the effect of six weeks health education intervention on practice of preventive strategies for dental caries, the two groups' rated responses on items relating to practice of dental caries prevention strategies were computed and compared using mean scores and standard deviation. The benchmark mean was fixed at 2.50 as the midpoint average of the 4 point scale used for the measurement. The summary is presented in Table 2

Table 2 Mean score and Standard deviation on Practice of Dental Caries Prevention Strategies for experimental and control group among Adult.

S/N	Practice of Dental Caries Prevention Strategies among Adult	Status	Experimental		Control	
			Mean	Std. Dev.	Mean	Std. Dev.
1	I use to consistently brush my teeth at least twice a day as part of my routine.	Pre-test	2.44	0.851	2.01	0.590
		Post-test	3.13	0.539	1.68	0.198
2	I use to regularly use dental floss to clean between my teeth.	Pre-test	1.59	0.971	2.85	0.007
		Post-test	2.93	0.574	2.16	0.294
3	I use to incorporate fluoride-based oral care products (toothpaste, mouthwash) into my daily dental hygiene routine.	Pre-test	2.23	0.923	1.12	0.226
		Post-test	3.57	0.479	1.22	0.711
4	I use to attend regular dental check-ups and cleanings as recommended.	Pre-test	2.01	0.992	1.96	0.196
		Post-test	3.33	0.658	2.28	0.255
5	I use to actively follow a low-sugar diet as a preventive measure against dental caries.	Pre-test	1.97	0.944	2.85	0.313
		Post-test	2.20	0.841	1.93	0.782
6	I use to adhere to professional advice, such as dental sealants, to prevent caries.	Pre-test	2.21	1.146	2.15	0.311
		Post-test	2.77	0.940	2.28	0.255
7	I use to chewing stick to prevent dental caries	Pre-test	2.38	0.862	2.96	0.196
		Post-test	3.07	1.048	2.14	0.439
8	I use to involve my family and friends in dental care practices to prevent caries.	Pre-test	2.28	0.749	2.96	0.196
		Post-test	2.97	0.718	2.17	0.458
9	I use to see the connection between salt and charcoal with caries prevention.	Pre-test	2.25	0.833	1.85	0.643
		Post-test	3.67	0.479	1.58	0.915
10	I use to eat self-cleansing foods like sugarcane to prevent dental caries.	Pre-test	2.25	0.833	2.96	0.196
		Post-test	3.60	0.563	2.17	0.402
	Aggregate	**Pre-test**	**2.22**	**0.811**	**2.37**	**0.287**
		Post-test	**3.09**	**0.684**	**2.01**	**0.477**

(Decision mean 2.5)

The rating of the two groups in Table 4.4 revealed a positive response of participants in pre- test of experimental together with pre and post-test of control group on practice of dental caries prevention strategies. The participants in pre-test of experimental group have negative practice of dental caries prevention strategies with a mean and standard deviation of 2.22 and 0.811 respectively, while participants in post-test of same group had improved on practice of dental caries prevention strategies with a mean and standard deviation of 3.09 and 0.684 respectively. The participants in control group showed an aggregate mean of 2.37 and 2.01 with standard deviation of 0.287 and 0.477 respectively.

All questions has a mean higher than 2.50 making them all agreed in post intervention for experimental; I use to consistently brush my teeth at least twice a day as part of my routine (3.13), I use to regularly use dental floss to clean between my teeth (2.93), I use to incorporate fluoride-based oral care products (toothpaste, mouthwash) (3.57), I use to attend regular dental check-ups and cleanings as recommended (3.33), I use to actively follow a low-sugar diet as a preventive measure against dental caries (2.20), I use to adhere to professional advice, such as dental sealants, to prevent caries (2.77), I use to chewing stick to prevent dental caries (3.07), I use to involve my family and friends in dental care practices to prevent caries (2.97), I use to see the connection between salt and charcoal with caries prevention (3.67) and I use to eat self-cleansing foods like sugarcane to prevent dental caries (3.60) while lower for all pre-test. The control group had positive knowledge on pre-test; I use to regularly use dental floss to clean between my teeth (2.85), I use to attend regular dental check-ups and cleanings as recommended (2.85), I use to chewing stick to prevent dental caries (2.96), I use to involve my family and friends in dental care practices to prevent caries (2.97), and I use to eat self-cleansing foods like sugarcane to prevent dental caries (2.96) all others are negative. The positive knowledge were not maintained in post-test.

What is the difference between control and experimental group in practice of dental caries prevention strategies before and after the health education intervention programme among adult in Zaria metropolis of Kaduna State, Nigeria?

To determine the difference in six weeks health education intervention on practice of preventive strategies for dental caries, between control and experimental groups. The two groups' rated responses on items relating to practice of dental caries prevention strategies were computed and compared using mean scores and standard deviation while both differences were computed. The benchmark mean was fixed at 2.50 as the midpoint average of the 4 point scale used for the measurement. The summary is presented in Table 3

Table 3 Differences in Mean between experimental and control group on Practice of Dental Caries Prevention Strategies among Adult.

Variables	Group	N	Test	Mean	Standard Deviation	Mean Difference
Practice of Dental Caries Prevention Strategies	Experimental	30	Pre-test	2.22	0.811	0.87
		30	Post-test	3.09	0.684	
	Control	30	Pre-test	2.37	0.287	0.36
		30	Post-test	2.01	0.477	

(Decision mean 2.5)

The rating in table 4.7 indicates that in experimental group a mean of 2.22 and 3.09 for pre and post-test with standard deviation of 0.811 and 0.684 respectively. The mean difference is 0.87. In pre-test the aggregate mean for experimental group indicate below 2.50, while posttest is above the benchmark mean fixed. It shows increase in practice of the participants. In control group a mean of 2.37 and 2.01 for pre and post-test with standard deviation of 0.287 and 0.477 respectively. The mean difference is 0.36. In pre and posttest the aggregate mean for control group indicate below 2.50 the benchmark mean fixed. The mean difference is significant.

Test of Hypothesis

The hypotheses formulated to give statistical validation to the solution proffered for the research questions in establishing effect of health education intervention for the preventing of dental caries among adults are tested here at the fixed probability level of 0.05. The hypotheses were tested with one sample t-test and Paired sample t-test procedure to determine the difference between pre-test and post-test scores of the two groups after the intervention. The hypotheses were tested as follows:

Hypothesis I: The effect of health education intervention programme on practice of dental caries prevention strategies among adult in Zaria metropolis of Kaduna State, Nigeria is not significant.

This hypothesis was tested with the scores of the experimental and control group at both pre-test and post-test stages of the experiment. The one sample t-test procedure was used for the test because of the need to determine the effect of intervention on the outcome of the experiment. The result of the one sample t-test is summarized in the table 4

Table 4: One sample t-test on practice of dental caries prevention strategies among adults in Zaria-Metropolis

Variable	Test	N	Mean	Std. Dev.	Std. Error	t-value	df	p-value
Practice of dental caries prevention	Post-test	30	3.09	0.684	0.0223			
						5.115	29	0.000
Test Mean		30	2.50	0.000	0.000			

(T-critical = 1.98, p <0.05)

The test revealed that the observed mean score of 3.09 for practice of dental caries prevention strategies by adults' post-test was significantly higher than 2.50 used as the test mean. The observed t-value for the test (5.115) obtained at 29 degree of freedom (df) is higher than the critical value indicated at the bottom of the table. The p-value for the test was 0.000 (p < 0.05). There observations provided sufficient evidence for rejecting the null hypothesis. The null hypothesis that effect of health education intervention programme on practice of dental caries prevention strategies among adult in Zaria metropolis of Kaduna State, Nigeria is not significant is therefore rejected. The result show that the adult have significant practice of dental caries prevention strategies in the study area before and after intervention.

Hypothesis II: There is no significant difference between control and experimental group in practice of dental caries prevention strategies before and after the health education intervention programme on knowledge among adult in Zaria metropolis of Kaduna State, Nigeria.

This hypothesis was tested with the scores of the experimental and control scores at the pre-test and post-test stages of the experiment. The paired t-test procedure was used for the test because of the need to determine the difference of pre-test on the outcome of the experiment. The result of the paired t-test is summarized in the table 5

Table 5: Paired sample t-test on difference between control and experimental group on practice of dental caries prevention strategies before and after intervention among adults in Zaria-Metropolis

Variable	Test	N	Mean	Std. Dev.	Mean Diff.	t-value	df	p-value
Practice of dental caries prevention	Pre-test	60	2.30	0.584				
					0.25	5.002	59	0.000
	Post-test	60	2.55	0.581				

(t-critical = 1.96, df=59, p <0.05)

The test result for the hypothesis revealed in table 4.14 that there is no significant difference in pre and post-test of experimental and control group. The mean score for pre-test of 2.30 and post-test of 2.55 respective while the difference is 0.25. The mean value for pre-tests show that it is below and posttest is above the benchmark mean of 2.50. While the standard deviation value for pre-test of 0.584 and post-test of 0.581 respective. The analysis further shows that p-value of 0.000 is lower than 0.05 (0.000<0.05) and t-value of 5.002 is greater than 1.96. These observations provided enough evidence for rejecting the null hypothesis. Thus,

with this result we can conclude that the null hypothesis: There is no significant difference between control and experimental group in practice of dental caries prevention strategies before and after the health education intervention programme among adult in Zaria metropolis of Kaduna State, Nigeria is retained. The mean difference of 0.25 indicates a slight difference. It means that there is a significant difference between control and experimental group in practice of dental caries prevention strategies before and after the health education intervention programme among adult in Zaria metropolis of Kaduna State, Nigeria.

Summary of Tested Hypothesis

The major observations from the effect of health education intervention programme on knowledge, attitude and practice of dental caries prevention strategies among adults in Zaria Metropolis Kaduna State Nigeria are summarized before:

1. The effect of health education intervention programme on practice of dental caries prevention strategies among adult in Zaria metropolis of Kaduna State, Nigeria posttest is significant (p = 0.000).
2. The difference between control and experimental group in practice of dental caries prevention strategies before and after the health education intervention programme on knowledge among adult in Zaria metropolis of Kaduna State, Nigeria is significant (p = 0.000).

DISCUSSIONS

This study examine the effect of health education intervention programme on practice of dental caries prevention strategies among adults in Zaria Metropolis Kaduna State Nigeria. To achieve the objectives of this study, the study was structured along with seven purposes, research questions and hypotheses which were all tested respectively.

Hypothesis One test revealed that null hypothesis that effect of health education intervention programme on practice of dental caries prevention strategies among adult in Zaria metropolis of Kaduna State, Nigeria is not significant is therefore rejected. The observed t-value for the test (5.115) obtained at 29 degree of freedom (df) is higher than the critical value indicated at the bottom of the table. The p-value for the test was 0.000 (p < 0.05). There observations provided sufficient evidence for rejecting the null hypothesis. The result showed that the adult have significant practice of dental caries prevention strategies in the study area after health education intervention.

The findings agrees with previous research by Zahra, Suryanti, and Putri (2024) on practice of the preventive strategies. It was an interventional studies with a p-value of 0.000. The studies revealed an increase in practice of the preventive measures.

The findings agrees with previous research by Khushbu and Satyam (2016) on practice of the preventive strategies. It was an interventional studies with a p-value of 0.000. The studies revealed an increase in practice of the preventive measures.

Hypothesis Two test result revealed that null hypothesis there is no significant difference between control and experimental group in practice of dental caries prevention strategies before and after the health education intervention programme on practice among adult in Zaria metropolis of Kaduna State, Nigeria is retained. The analysis further shows that p-value of 0.000 was less than 0.05 (0.000<0.05) and t-value of 5.002 is greater than 1.96. These observations provided enough evidence for rejecting the null hypothesis. It means that there is a significant difference between control and experimental group in practice of dental caries prevention strategies before and after the health education intervention programme on knowledge among adult in Zaria metropolis of Kaduna State, Nigeria.

The findings agrees with previous research by Pradhan, Pruthi, Sharma, Chavan, and Verma (2024) on difference in pre and posttest in practice of the preventive strategies. It was an interventional studies with a p-value of 0.001. It differs with the current study as it is done for children and chi-square was used. The studies revealed statistical significance difference in practice of the preventive measures pre and posttest.

Conclusion

From the findings of the examination of the effect of health education intervention programme on practice of dental caries prevention strategies among adults in Zaria Metropolis Kaduna State Nigeria, the researcher wishes to conclude as follows:

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1. Health education intervention programme on practice of dental caries prevention strategies among adult in Zaria metropolis of Kaduna State, Nigeria is effective.
2. There was difference between control and experimental group in practice of dental caries prevention strategies before and after the health education intervention programme among adult in Zaria metropolis of Kaduna State, Nigeria.

Recommendation

The study has the following recommendations:

1. Given the significant improvement, extend the intervention to other regions or states to broaden its impact on dental caries prevention. Implement regular follow-up sessions to ensure sustained application of the prevention strategies learned by participants. Introduce refresher courses or community workshops to reinforce the dental health practices taught, ensuring they become part of daily routines.
2. Use the experimental group's success to create tailored interventions for different demographic groups, ensuring the content of the health education is accessible to various audiences. Establish this program as a benchmark for future health interventions, as the significant differences demonstrate the effectiveness of the educational approach. Apply the successful model used in dental caries prevention to other health issues (e.g., oral hygiene, dietary habits) to broaden the scope of public health improvement.

References

Amare, T., Abebe, M., & Biruk, G. (2021). Prevalence of dental caries and associated factors in East Africa, 2000–2020: Systematic review and meta-analysis. *Frontiers in Public Health*, *9*, 645091. https://doi.org/10.3389/fpubh.2021.645091

Gupta, P., Gupta, N., & Singh, H. P. (2014). Prevalence of dental caries in relation to body mass index, daily sugar intake, and oral hygiene status in 12-year-old school children in Mathura City: A pilot study. *International Journal of Pediatrics*, *2014*, 1–5. https://doi.org/10.1155/2014/921823

Kawashita, Y., Kitamura, M., & Saito, T. (2011). Early childhood caries. *International Journal of Dentistry*, *2011*, 725320. https://doi.org/10.1155/2011/725320

Pitts, N., & Zero, D. (n.d.). White paper on dental caries prevention and management: A summary of the current evidence and the key issues in controlling this preventable disease.

Radwan, W., AlNasser, A. A., Aloqab, H., Al-Saggaf, K., Almuhtab, N. A., & Alnasyan, B. (2020). Knowledge and use of caries detection methods among dental students and dental practitioners in Riyadh, Saudi Arabia. *International Journal of Dentistry*, *2020*, 8825890. https://doi.org/10.1155/2020/8825890

Rogers, J., & Revesz, A. (2020). Experimental and quasi-experimental designs. *ResearchGate*. Retrieved from https://researchgate.net/publication/33425281

Sampoiso, F., Bonecker, M., & Paiva, S. (2021). Dental caries prevalence, prospects, and challenges for Latin America and Caribbean countries: A summary and final recommendations from a regional consensus. *Community Dentistry and Oral Epidemiology*, *35*(c), 1–15.

World Health Organization. (2012). Oral health fact sheet. Retrieved from http://www.who.int/mediacentre/factsheets/fs318/en/

World Health Organization. (2016). WHO expert consultation on public health intervention against early childhood caries. January, 26–28.