



PERCEIVED EFFECT OF NON-COMPLIANCE TO PUBLIC HEALTH SAFETY MEASURES AMONG WORKERS IN GENERAL HOSPITAL IN ONDO TOWN.

^{*1}A. E. Ajayi, ²U. D. Mohammed, ³I. O. Adebayo, ⁴O. F. Fadero, ⁵F. Temitope and ³J. O. Bankole

¹Department of Human Kinetics and Health Education, Ahmadu Bello University, Zaria

²Niger State College of Health Technology, Minna, Niger State

³African Oasis College of Health Technology, Ondo

⁴Department of Public Health, Ahmadu Bello University, Zaria, Nigeria

⁵Department of Medical Laboratory Science, University of Benin, Benin

*Corresponding author: edwardajayi@gmail.com

Abstract

This study was carried out to investigate the perceived effect of non-compliance with public health safety measures among workers in General Hospital in Ondo Town. Descriptive research of the survey type was adopted for this study. 455 respondents were sampled for the study (including doctors, nurses, laboratory scientists, and hospital attendants) and were selected using purposive sampling. A structured questionnaire validated by experts was used for data collection. Data were analysed using inferential statistics of Chi-square (χ^2) at 0.05 alpha level. The findings of the study revealed the following: Biological hazards were significantly perceived as effects of non-compliance (Cal $\chi^2 = 207.03 > \text{Tab } \chi^2 = 16.92$); Chemical hazards were significantly perceived as effects of non-compliance (Cal $\chi^2 = 282.33 > \text{Tab } \chi^2 = 16.92$); Physical hazards were also significantly perceived as effects of non-compliance (Cal $\chi^2 = 282.33 > \text{Tab } \chi^2 = 16.92$). Based on these findings, it was concluded that health workers in Selected Hospitals in Ondo Town are at increased risk of exposure to various occupational hazards due to non-compliance with public health safety measures. It is therefore recommended that the hospital management should ensure strict enforcement of safety protocols, provide regular training on hazard prevention, and make personal protective equipment (PPE) readily available and mandatory for use. Establishing a strong culture of safety within the hospital will help safeguard health workers and enhance quality patient care.

Keywords: safety, non-compliance, public health, health worker

Introduction

Deuffic-Burban et al. (2011) reported that compliance with standard precautions (a set of guidelines that can protect health care professionals from being exposed to microorganisms) is low among health workers. Additionally, high rates of exposure to microorganisms among health workers through several modes (needlesticks, hand contamination with blood, exposure to air-transmitted microorganisms) occur. These occupational exposures can occur in different modes (Muhammed et al., 2025). These modes include contact (direct and indirect) transmission, droplet transmission, airborne transmission, percutaneous exposure, and mucus membrane exposure. The standard precautions, proposed by the United States Centers for Disease Control and Prevention (CDC) in 1996, are guidelines for reducing the risk of transmission of blood-borne and other pathogens in hospitals.

Roy and Robillard (2018) opined that health workers are at risk of exposure to hazardous medications during several different procedures for example, when priming IV tubing, transferring a medication to a different container, removing syringes from a port, touching equipment that has been contaminated by the medication, or coming in contact with the urine or feces of a patient who has taken the medication. Exposure to hazardous drugs such as antivirals, hormone therapy, or those used for cancer treatment can cause acute and chronic health effects such as rashes, infertility, and possibly cancer (Akorede et al, 2018; Akorede et al., 2022; Akorede, 2020; Akorede, 2021). Wearing gloves and other types of protective gear (such as masks and eyewear) as well as following the appropriate protocol every time the nurse may come into contact with the hazardous medication will decrease the exposure risk. Okechukwu and Motshedisi (2012) reveal that compliance with precautions among health workers to avoid exposure to microorganisms is low. More specifically, compliance was found inadequate concerning hand hygiene guidelines, use of gloves when exposure to body fluids was anticipated, eye protection, mouth and nose protection (mask use), wearing a gown when required, avoiding recapping the needle after it was used for a patient, and provision of care considering all patients as potentially infectious (Akorede & Toyin, 2020).

In a prevalence survey conducted by the World Health Organization (WHO) (2017) in 55 hospitals across 14 countries, it was found that 8.7% of inpatients acquire infections in hospital. According to Mao (2019), the incidence of clinic nurses being pierced with sharp instruments potentially contaminated with infected blood is high. They reported the incidence rate of needle stick injury in nurses to be 80.6%. Standard precautions protect patients as well as medical workers and help to control the occurrence of hospital infections. As the incidence of infectious blood diseases has increased and with the spread of non-blood infectious diseases such as avian influenza and severe acute respiratory syndrome worldwide, there has been increased

emphasis on standard precautions for medical workers, and research into standard precautions has been carried out in many countries (Kabiru et al., 2024).

Furthermore, Efstathiou et al. (2011) reveal that workplace safety greatly depends on the enforcement of occupational safety policy and inspection of the workplace environment to ensure compliance with health and safety standards. Amin et al. (2024) and Ogoina et al. (2015) submitted that the use of personal protective equipment (PPE) such as sterile surgical gloves and gowns, and sterile equipment, hygiene practices such as antiseptic hand washing, and safe instrument and waste disposal procedures can keep the health workers safe from blood-borne infections. Gershon (2000) reported that workers who perceive a strong organization-wide commitment to safety are significantly more likely to adhere to safety protocols than those who lack such perceptions, and that they were half as likely to have experienced an occupational exposure incident. Lawali et al. (2024) and Punia et al. (2014) findings revealed that the factors that contribute to non-compliance with Standard Precautions and also Reports that the factors were lack of knowledge, lack of time, forgetfulness, lack of means, negative influence of the equipment on nursing skills, uncomfortable equipment, skin irritation, and lack of training, conflict between the need to provide care and self-protection and distance to necessary equipment or facility.

Mailu (2016) noted that hand hygiene was suboptimally practised, regular hand hygiene is very crucial in infection control, and that the present finding is significantly lower than the previous report from South India, in which the practice of hand hygiene was 95%. The probable reason for the poor practice could be irregular access to materials for hand hygiene. On the other hand, it could be due to nonchalance on the part of Health workers who may believe that hand hygiene before patient care is irrelevant. Doctors and nurses were more likely to be exposed to patients' body fluids. This could be because they work in proximity with the patients than laboratory scientists, but it could also be as a result of the lower likelihood of using PPEs by the doctors and nurses. Thus, strict compliance with the Standard Procedure is of utmost importance in the prevention of health workers' contact with patients' body fluids.

Risk of exposure to biological hazards (Needlesticks) includes potential exposures to allergens, infectious zoonotics (animal diseases transmissible to humans), and experimental agents such as viral vectors. Allergens, ubiquitous in animal research facilities, are one of the most important health hazards, yet they are frequently overlooked. The final category contains the physical hazards associated with research facilities (Ahmed et al., 2021; Charney, 2004). An estimated 600,000 to 800,000 needlestick injuries occur annually, about half of which go unreported. Henry and Campbell (2018) reiterate that it is estimated that each year more than 1,000 health care workers will contract infection, such as hepatitis B or C virus or HIV, from a needlestick injury. An estimated 50 to 247 health care workers are infected with the hepatitis C virus (HCV) each year from work-related needlesticks. At an average hospital, workers incur approximately 30 needlestick injuries per 100 beds per year. Nursing staff incur most needlesticks; 54 per cent of reported needlestick and sharp object injuries involve nurses. Henry and Campbell (2018) submitted that the risk of transmission from a positive source for hepatitis C is between 0.4 per cent and 1.8 per cent, and the average risk of transmission of HIV is 0.3 per cent. Risk of transmission increases if one is injured by a device visibly contaminated with blood, if the device is used to puncture the vascular system, or if the stick causes a deep injury. Sreedharan, Muttappillymyalil, and Venkatramana (2011) reiterate that the main diseases with risk of transmission into the environment are hepatitis B and C, herpes virus, and HIV. Glove contamination during venipuncture procedures occurs in 18% of cases, which represents a high risk of exposure to infectious agents if gloves are not used.

There are thousands of chemicals and other toxic substances to which nurses are exposed in practice. Hazardous chemical exposures can occur in a variety of forms, including aerosols, gases, and skin contaminants from medications used in practice (Sepkowitz & Eisenberg, 2018). Matz (2016) noted that exposures can occur on an acute basis, up to chronic long-term exposures, depending upon practice sites and compounds administered; primary exposure routes are pulmonary and dermal. Substances commonly used in the health care setting can cause asthma or trigger asthma attacks, according to a recent report. Volatile organic compounds (VOCs) are chemicals that readily evaporate at room temperature, thus allowing the chemicals to be easily inhaled. Formaldehyde and artificial fragrances are two such sources that have a ubiquitous presence in hospitals. Strong odours, fumes, and perfumes are also potent triggers of asthma. Formaldehyde, a known carcinogen, is used in pathology and lab settings and is contained in bedding, drapes, carpets, acoustic ceiling tiles, and fabricated furniture. Artificial fragrances are used to address unpleasant odours. As an example, ethylene oxide (EtO) and glutaraldehyde are commonly used in medical settings for sterilisation. Nurses and other medical staff are exposed while cleaning equipment and work surfaces. Although both of these chemicals are powerful and effective, they are associated with serious human health risks. Glutaraldehyde is associated with respiratory irritation, including asthma, skin irritation and dermatitis, and eye irritation and conjunctivitis.

Research facilities inherently have significant physical hazards present that include electrical safety hazards, ergonomic hazards associated with manual material handling and equipment use, handling sharps, and basic housekeeping issues (Sepkowitz & Eisenberg, 2005). National Occupational Research Agenda (2001) opined that many operations in the lab can result in lab workers assuming sustained or repetitive awkward postures. Examples are eluting a column in a fume hood, working for extended periods in a biosafety cabinet, or looking at slides on a microscope for extended periods. What is found acceptable for brief or occasional use may become problematic if performed for long durations or very frequently. Pain is a good indicator that something is wrong. Conduct work with a neutral, balanced posture. Mailu (2016) noted that many injuries stem from poor laboratory and facility keeping. Slips, trips, and falls are very common but easily avoided. Start with safe and organised storage areas. Material storage should not create hazards. Bags, containers, bundles, stored in tiers, should be stacked, blocked, interlocked, and limited in height so that they are stable and secure against sliding or collapse. Keep storage areas free from an accumulation of materials that could cause tripping, fire, explosion, or pest harborage.

Statement of the Problem

Health care professionals and particularly nurses are often exposed to microorganisms, many of which can cause serious or even lethal infections. According to the WHO (2016), an estimated 59 million people work in healthcare facilities globally, accounting for roughly 12% of the working population. The WHO also reports that all healthcare workers, including healthcare professionals, are exposed to occupational hazards (Muhammed et al., 2025). The International Labour Organization (ILO) (2017) reported that millions of healthcare workers suffer from work-related diseases and accidents, and many succumb to occupational hazards. The researchers observed that healthcare workers in Selected Hospitals in Ondo Town continue to face several hazards in their workplaces. The factors associated with experiencing hazards include not wearing all necessary protective equipment, experiencing work-related pressures, working in multiple facilities, and complacency in adhering to protective measures, poor attitude towards hand washing by both patients and clients. Therefore, the researchers examined the perceived effect of non-compliance with public health safety measures among workers in selected hospitals in Ondo town.

Research Questions

1. Will the risk of exposure to biological hazards be a perceived effect of non-compliance with public health safety measures among workers in General Hospital in Ondo Town?
2. Will the risk of exposure to chemical hazards be a perceived effect of non-compliance with public health safety measures among workers in General Hospital in Ondo Town?
3. Will the risk of exposure to physical hazards be a perceived effect of non-compliance with public health safety measures among workers in General Hospital in Ondo Town?

Hypotheses

1. Risk of exposure to biological hazards will not be a perceived effect of non-compliance with public health safety measures among workers in General Hospital in Ondo Town.
2. Risk of exposure to chemical hazards will not be a perceived effect of non-compliance with public health safety measures among workers in General Hospital in Ondo Town.
3. Risk of exposure to physical hazards will not be a perceived effect of non-compliance with public health safety measures among workers in General Hospital in Ondo Town.

Methodology

The study adopted a descriptive research design of the survey type, which is appropriate for assessing the perceptions of a large population on a specific health issue, in this case, the perceived effect of non-compliance with public health safety measures among workers in General Hospital in Ondo Town. The population for the study comprised all workers in General Hospital in Ondo Town, Nigeria, with a total population of 1,256 (including doctors, nurses, laboratory scientists, students in training, and hospital attendants). Given the size of the population, it was neither feasible nor necessary to study every individual. Instead, a representative sample was drawn. A multi-stage sampling technique was employed to select the sample for the study. This procedure was chosen to ensure representativeness and manageability: Stratified Sampling: the hospital was first divided into strata based on its operations. Purposive Sampling: Within the selected units, respondents were chosen purposively based on eligibility criteria such as doctors, nurses, laboratory scientists, students in training, and hospital attendants. This ensured the participants had relevant experience and knowledge about the subject of study. A total of 455 respondents were sampled for the study. This sample size was considered sufficient to allow for meaningful statistical analysis and generalisation of findings to the entire hospital workforce. The instrument used for data collection was a researcher-developed questionnaire, which was validated by three experts in the related field and tested for reliability. Test re-test method was used to obtain the reliability of the instrument. Pearson Product-Moment Correlation was used to obtain a correlation coefficient result of $r = 0.68$. The instrument was administered by the researcher and two trained research assistants. Inferential Statistics was used to test the three research hypotheses set for the study at the 0.05 alpha level.

Results

Table 1: Chi-square analysis showing the Risk of exposure to biological hazards be a Perceived Effect of Non-Compliance with Public Health Safety Measures Among Workers in General Hospital in Ondo Town.

Items	SA	A	D	SD	Cal χ^2	df	Crit. Value	Remarks
Exposure to the blood of patients without adequate protection, such as the use of gloves, can result in infection with viral, fungal, and bacterial infections	198 (43.5%)	151 (33.2%)	28 (6.2%)	78 (17.1%)				
Needlesticks mishap can lead to transmission of infections	121 (26.6%)	70 (15.4%)	81 (17.8%)	183 (40.2%)	207.03	9	16.92	Rejected
Sweat and spume from patients are considered infectious, and without adequate precaution, infections can be contracted	103 (22.6%)	73 (16.0%)	56 (12.3%)	223 (49.0%)				
Eating while attending to patients increases the risk of infections	136 (29.9%)	54 (11.9%)	56 (12.3%)	209 (45.9%)				
0.05 alpha level								

Table 1 above shows that 349 (76.7%), 191 (42%), 176 (38.6), and 190 (41.8%) of the respondents believed that the risk of exposure to biological hazards would be a perceived effect of non-compliance with public health safety measures among

workers in General Hospital in Ondo Town. The findings from the analysis in Table 1 show the calculated Chi-square (χ^2) value of 207.03 against the table value of 16.92 at 0.05 alpha level with degree of freedom 9. Since the calculated χ^2 value of 207.03 is greater than the table value of 16.92, thus, the null hypothesis was rejected, which means the risk of exposure to biological hazards will be a perceived effect of non-compliance with public health safety measures among workers in General Hospital in Ondo Town.

Table 2: Chi-square Analysis Showing Risk of exposure to chemical hazards be a Perceived Effect of Non-Compliance with Public Health Safety Measures Among Workers in General Hospital in Ondo Town.

Items	SA	A	D	SD	Cal χ^2	df	Crit. Value	Remarks
Abnormal use of hand sanitiser and cleaning reagents could lead to chemical burns	75 (16.5%)	173 (38.0%)	169 (37.1%)	38 (8.4%)	282.33	9	16.92	Rejected
Accidental exposure to corrosive reagents and certain drugs could lead to certain injuries	75 (16.5%)	173 (38.0%)	169 (37.1%)	38 (8.4%)				
Poor ventilation in a laboratory can trigger an asthma crisis among the staff or clients	84 (18.5%)	177 (38.9%)	151 (33.2%)	43 (9.5%)				
Improper labelling of drugs and chemicals could result in dispensing errors.	50 (11.0%)	204 (44.8%)	157 (34.5%)	44 (9.7%)				

@ 0.05 alpha level

Table 2 above shows that 248 (54.5%), 248 (54.5%), 261 (57.4%), and 254 (55.8%) of the respondents believed that the risk of exposure to chemical hazards would be a perceived effect of non-compliance with public health safety measures among workers in General Hospital in Ondo Town. The findings from the analysis in Table 2 show the calculated Chi-square (χ^2) value of 282.33 against the table value of 16.92 at 0.05 alpha level with degree of freedom 9. Since the calculated χ^2 value of 282.33 is greater than the table value of 16.92, thus, the null hypothesis was rejected, which means the risk of exposure to chemical hazards is a perceived effect of non-compliance with public health safety measures among workers in General Hospital in Ondo Town.

Table 3: Chi-square Analysis Showing Risk of exposure to physical hazards being perceived. Effect of Non-Compliance with Public Health Safety Measures Among Workers in a General Hospital in Ondo Town.

Items	SA	A	D	SD	Cal χ^2	df	Crit. Value	Remarks
Mishandling of medical equipment can result in mechanical error, which in turn affects patients' medical results	75 (16.5%)	173 (38.0%)	169 (37.1%)	38 (8.4%)	282.33	9	16.92	Rejected
Improper storage of material for laboratory and theatre work could harm staff and patients	75 (16.5%)	173 (38.0%)	169 (37.1%)	38 (8.4%)				
A nonchalant attitude towards hazard preventive measures could lead to workplace accidents	84 (18.5%)	177 (38.9%)	151 (33.2%)	43 (9.5%)				
Non-availability of sand bucket and fire extinguishers could affect fire emergency Management	50 (11.0%)	204 (44.8%)	157 (34.5%)	44 (9.7%)				

@ 0.05 alpha level

Table 3 above shows that 248 (54.5%), 248 (54.5%), 261 (57.4%), and 254 (55.8%) of the respondents believed that the risk of exposure to physical hazards is a perceived effect of non-compliance with public health safety measures among workers in General Hospital in Ondo Town. The findings from the analysis in Table 2 show the calculated Chi-square (χ^2) value of 282.33 against the table value of 16.92 at 0.05 alpha level with degree of freedom 9. Since the calculated χ^2 value of 282.33 is greater than the table value of 16.92, thus, the null hypothesis was rejected, which means the risk of exposure to physical hazards is a perceived effect of non-compliance with public health safety measures among workers in General Hospital in Ondo Town.

Discussion of findings

The study examined the perceived effect of non-compliance with public health safety measures among workers in General Hospital in Ondo Town. Hypothesis one indicated that the Risk of exposure to biological hazards will be a perceived effect of non-compliance with public health safety measures among workers in General Hospital in Ondo Town. This corroborates the findings of Roy and Robillard (2018) opined that health care workers continue to be exposed to the serious and sometimes life-threatening risk of blood-borne infections in a wide variety of occupations and health care settings, and that an estimated 600,000 to 800,000 needlestick injuries occur annually, about half of which go unreported. Also, Henry and Campbell (2018) reiterate that it is estimated that each year more than 1,000 health care workers will contract infection, such as hepatitis B or C virus or HIV, from a needlestick injury. Sreedharan, Muttappillymyalil, and Venkatramana (2011) also reiterate that the main diseases with risk of transmission into the environment are hepatitis B and C, herpes virus, and HIV. Glove contamination during venipuncture procedures occurs in 18% of cases, which represents a high risk of exposure to infectious agents if gloves are not used.

Hypothesis two indicated that the risk of exposure to chemical hazards will be a perceived effect of non-compliance with public health safety measures among workers in General Hospital in Ondo Town. The findings supported the report of Matz (2016) noted that exposures can occur on an acute basis, up to chronic long-term exposures, depending upon practice sites and compounds administered; primary exposure routes are pulmonary and dermal. Substances commonly used in the health care setting can cause asthma or trigger asthma attacks, according to a recent report. Isara and Ofili (2010) noted that there are hundreds of hazardous chemicals, including immune agents, dermatologic agents, carcinogens, neurotoxins, and reproductive toxins. Asthmagens, sensitizers, and systemic toxins are also hazardous chemicals; long-term exposure to chemicals such as silica dust, engine exhausts, tobacco smoke, and lead (among others) has been shown to increase the risk of heart disease, stroke, and high blood pressure. Okechukwu and Motshedisi (2012) opined that nurses and other medical staff are exposed while cleaning equipment and work surfaces. Although both of these chemicals are powerful and effective, they are associated with serious human health risks. Glutaraldehyde is associated with respiratory irritation, including asthma, skin irritation and dermatitis, and eye irritation and conjunctivitis.

Hypothesis three indicated that the risk of exposure to physical hazards is a perceived effect of non-compliance with public health safety measures among workers in General Hospital in Ondo Town. Mailu (2016) noted that many injuries stem from poor laboratory and facility keeping. Slips, trips, and falls are very common but easily avoided. Start with safe and organised storage areas. Material storage should not create hazards. Bags, containers, bundles, etc., stored in tiers should be stacked, blocked, interlocked, and limited in height so that they are stable and secure against sliding or collapse. Keep storage areas free from an accumulation of materials that could cause tripping, fire, explosion, or pest harborage. Research facilities inherently have significant physical hazards present that include electrical safety hazards, ergonomic hazards associated with manual material handling and equipment use, handling sharps, and basic housekeeping issues (Sepkowitz & Eisenberg, 2005). National Occupational Research Agenda (2001) opined that many operations in the lab can result in lab workers assuming sustained or repetitive awkward postures. Examples are eluting a column in a fume hood, working for extended periods in a biosafety cabinet, or looking at slides on a microscope for extended periods. What is found acceptable for brief or occasional use may become problematic if performed for long durations or very frequently. Pain is a good indicator that something is wrong. Conduct work with a neutral, balanced posture.

Conclusion

1. Risk of exposure to biological hazards will be an effect of non-compliance with public health safety measures among workers in General Hospital in Ondo Town.
2. Risk of exposure to chemical hazards will be an effect of non-compliance with public health safety measures among workers in General Hospital in Ondo Town.
3. The risk of exposure to physical hazards will be a result of non-compliance with public health safety measures among workers in General Hospital in Ondo Town.

Recommendation

Based on the conclusion drawn from the study, the following recommendations were made: Hospital Management should intensify health education campaigns focusing on the prevention of hospital-acquired infection to raise more awareness about infection prevention, hygiene practices. The study further recommends that hospitals must be adequately stocked with essential PPEs such as respirators and goggles, and that stringent adherence measures be taken to store chemicals safely and ensure proper ventilation when working with chemicals. Implementation of engineering control, such as the use of physical barriers, ventilation systems, reduction in the quantity of hazardous materials handled, regular machine inspection to prevent malfunction, and ensuring safe operations.

References

- Ahmed, M., Suleiman, M. A., Akorede, S. N., Musa, U., & Hassan, A. I. (2021). Assessment of clinical constraints to ending preventable deaths of newborns as perceived by community health workers in North East Zone, Nigeria. *Global Journal of Health Related Researches*, 3(1), 17-23. <http://journals.abu.edu.ng/index.php/gjhr/article/view/261>
- Akorede, S. N. (2020). Influence of Knowledge on Attitude and Practice of Cancer prevention Strategies among Staff in Federal Universities of North-Central Zone, Nigeria. *Kampala International University Journal of Humanities*, 5(1), 241-247.
- Akorede, S. N. (2020). Practice of Cancer Prevention Strategies among Staff of Federal Universities in North Central Zone, Nigeria. *Journal of Health Education JHE*, 4(2).
- Akorede, S. N. (2021). Influence of demographic characteristics on knowledge of cancer prevention. *Journal of Physical Education Research*, 8(3), 41-47. https://www.joper.org/JOPER/JOPERVolume8_Issue3_7_9_2021_249.pdf
- Akorede, S. N., & Toyin, A. (2020). Knowledge of Personal Hygiene among Undergraduates. *JHE (Journal of Health Education)*, 5(2), 66-71. <http://dx.doi.org/10.15294/jhe.v5i2.38383>

- Akorede, S. N., Getso, A. S., Abdulfatah, H. A., Nofiu, O. D., & Oladipupo, L. T. (2018). Knowledge of cancer prevention strategies among staff of federal universities in North Central Zone, Nigeria. *Ghana Journal of Health, Physical Education, Recreation, Sports and Dance (GJOHPERSD)*, 11(2), 88-97.
- Akorede, S. N., Isyaku, A. M., Getso, A. S., Imam, R. A., & Aliyu, M. (2022). Assessment of cancer prevention practices among staff of Federal Colleges of Education in North West Zone, Nigeria. *Global Journal of Health Related Researches*, 4(1), 139-147.
- Amin, A., Abdulrauf, A., & Isiaq, A. T. (2024). Strategies for the implementation of environmental protection regulations towards sustainable waste management in Oyo State. *Gusau International Journal of Management and Social Sciences*, 7(2), 83-104. <https://doi.org/10.57233/gijmss.v7i2.05>
- Charney, W. (2004). Reducing back injury in nursing: A case study using mechanical equipment and a hospital transport team as a lift team. *Journal of Healthcare Safety, Compliance & Infection Control*, 4, 117-120. https://weastmedical.com/wp-content/uploads/2015/02/reducing_back_injury_in_nursing.pdf
- Deuffic-Burban, S., Delarocque-Astagneau, E., Abiteboul, D., Bouvet, E., & Yazdanpanah, Y. (2011). Blood-borne viruses in health care workers: Prevention and management. *Journal of Clinical Virology*, 52(1), 4-10. <https://doi.org/10.1016/j.jcv.2011.05.016>
- Efstathiou, G., Papastavrou, E., Raftopoulos, V., & Merkouris, A. (2011). Factors influencing nurses' compliance with standard precautions in order to avoid occupational exposure to microorganisms: A focus group study. *BMC Nursing*, 10(1), Article 1. <https://doi.org/10.1186/1472-6955-10-1>
- Gershon, R. R. M., Pearson, M. F., Sherman, M. F., Samar, S. M., Canton, A. N., & Stone, P. W. (2009). The prevalence and risk factors for percutaneous injuries in registered nurses in the home health care sector. *American Journal of Infection Control*, 37(7), 525-533. <https://doi.org/10.1016/j.ajic.2008.10.022>
- Isara, A. R., & Ofili, A. N. (2010). Knowledge and practice of standard precautions among health care workers in the Federal Medical Centre, Asaba, Delta State, Nigeria. *Nigerian Postgraduate Medical Journal*, 17(3), 204-209. https://journals.lww.com/npmj/Abstract/2010/17030/Knowledge_and_practice_of_standard_precautions.5.aspx?
- Kabiru, A., Akorede, S. N., Aminu, Y., Yusuf, B., Shehu, S., & Sani, M. A. (2024). Assessment of awareness, attitude and practice of non-pharmaceutical protocols in prevention of severe acute respiratory tract infections among non-civil servants in northern Nigeria. *Global Journal of Health Related Researches*, 6(1), 57-62. <https://journals.abu.edu.ng/index.php/gjhrr/article/view/244/110>
- Lawali, Y., Muhammad, A., Gomma, H. M., Akorede, S. N., Sani, D. K., & Kombo, A. S. (2024). Effects of clinical coaching on clinical performances of nursing students at nursing schools in North-West Nigeria. *International Journal of Evidence Based Coaching and Mentoring*, 22(1), 164-176. DOI: 10.24384/bx88-fg06
- Muhammed, Y., Isiaq, A. T., Suleiman, M. A., & Ningi, A. U. (2025). Awareness of occupational hazards among healthcare workers in teaching hospitals in Nigeria. *Global Journal of Health Related Researches*, 7(1), 1-5. <http://journals.abu.edu.ng/index.php/gjhrr/article/download/615/285/458>
- National Institute for Occupational Safety and Health. (2001). *National occupational research agenda for musculoskeletal disorders: Research topics for the next decade*. U.S. Department of Health and Human Services. <https://www.cdc.gov/niosh/docs/2001-117/pdfs/2001-117.pdf>
- Ogoina, D., Pondei, K., Adetunji, B., Chima, G., Isichei, C., & Gidado, S. (2015). Knowledge, attitude and practice of standard precautions of infection control by hospital workers in two tertiary hospitals in Nigeria. *Journal of Infection Prevention*, 16(1), 16-22. <https://doi.org/10.1177/1757177414558957>
- Okechukwu, E. F., & Motshedisi, C. (2012). Knowledge and practice of standard precautions in public health facilities in Abuja, Nigeria. *International Journal of Infection Control*, 8(3). <https://doi.org/10.3396/ijic.v8i3.10003>
- Punia, S., Nair, S., & Shetty, R. S. (2014). Healthcare workers and standard precautions: Perceptions and determinants of compliance in the emergency and trauma triage of a tertiary care hospital in South India. *International Scholarly Research Notices*, 2014, Article ID 685072. <https://doi.org/10.1155/2014/685072>
- Sepkowitz, K. A., & Eisenberg, L. (2005). Occupational deaths among healthcare workers. *Emerging Infectious Diseases*, 11(7), 1003-1008. <https://doi.org/10.3201/eid1107.041038>
- Sreedharan, J., Muttappillymyalil, J., & Venkatramana, M. (2011). Knowledge about standard precautions among university hospital nurses in the United Arab Emirates. *Eastern Mediterranean Health Journal*, 17(4), 331-334. <https://doi.org/10.26719/2011.17.4.331>