



FACTORS INFLUENCING STANDARD PRECAUTION PRACTICES AMONG NURSES IN LAGOS STATE UNIVERSITY TEACHING HOSPITAL, IKEJA, LAGOS STATE, NIGERIA

Julius Olatade Maitanmi^{1*}, Salamat Olanike Abdulkareem¹,
Bukola Titilope Maitanmi², Joshua Oluwafemi Ogungbesan¹
and Deborah Foluke Onisile³

¹Department of Community/Public Health Nursing, School of Nursing, Babcock University, Ilishan-Remo, Ogun State, Nigeria

²Department of Mental Health/Psychiatry Nursing, School of Nursing, Babcock University, Ilishan-Remo, Ogun State, Nigeria

³Department of Nursing Science, Redeemers University, Ede Akoda, Osun State, Nigeria

*Corresponding Email: maitanmij@babcock.edu.ng

Cite this article:

Julius O.M., Salamat O.A.,
Bukola T.M., Joshua O.O.,
Deborah F.O. (2021), Factors
Influencing Standard
Precaution Practices Among
Nurses in Lagos State
University Teaching Hospital,
Ikeja, Lagos State, Nigeria.
African Journal of Health,
Nursing and Midwifery 4(5),
14-25. DOI:
10.52589/AJHNM-
IX3L8VO0.

Manuscript History

Received: 10 June 2021

Accepted: 30 July 2021

Published: 26 July 2021

Copyright © 2020 The Author(s).

This is an Open Access article distributed under the terms of Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0), which permits anyone to share, use, reproduce and redistribute in any medium, provided the original author and source are credited.

ABSTRACT: Introduction: Nurses are known to be at the frontline of risks and victims to occupational hazards within the healthcare system. These hazards include exposure to infections that may arise from injuries from sharps and contacts with body fluids. Standard precautions are taken to mitigate and minimize hazards in hospitals. This study assessed the factors influencing standard precaution practices among Nurses in Lagos State University Teaching Hospital, Ikeja, Lagos State, Nigeria. **Method and material:** This study involved a descriptive cross-sectional study which was carried out among 305 nurses in Lagos State University Teaching Hospital, Ikeja. A self-structured instrument was employed for this study and data were gathered from consented respondents. The data collected were analyzed using Statistical Package for the Social Sciences (SPSS) software version 25. The research questions were answered using descriptive statistics of mean, frequency and percentage. **Results:** The mean age of the respondents was 41.64 ± 10.1 years and many (68.5%) had more than 10 years of work experience. The respondents had above average level of knowledge (24.69 ± 2.16) and close to two-third (59.7%) had a positive attitude towards standard precaution practices. The most reported factors influencing the practice of standard precautions were non-availability of personal protective equipment (PPE) (92.1%), lack of regular training on standard precautions (91.1%) and lack of good policy on standard precautions (81.5%). **Conclusion:** Majority of the respondents had above average level of knowledge and positive attitude towards standard precaution. There is a need for continued sensitization and monitoring of standard precaution practices by nurses to sustain the high level. Also, healthcare institutions should ensure the availability of PPE for standard precautions and regular in-service training of nurses on standard precaution practices.

KEYWORDS: Attitude, Knowledge, Practice, Standard Precautions.



INTRODUCTION

Background to the Study

It is generally known that healthcare workers (HCWs) often come in contact with blood-borne pathogens and other microorganisms, which make them vulnerable to healthcare-associated infections (HAI). These exposures commonly occur during major or minor surgical procedures, during routine clinical nursing services like physical examination, handling laboratory specimens, disposal of hospital wastes as well as during accidents and life-saving emergency procedures. On exposure, HCWs can equally transmit HAI to patients and patients' relations, to families and the community at large. Occupational exposure to HAI is of great concern in developing countries where there are higher risks of exposure to blood-borne pathogens, frequent contacts with patients' body fluids and little or no protection against airborne infections (Arinze-Onyia, Modebe, Aguwa, Ndu & Nwamoh, 2018; Quan, Wang, & Li, 2015).

HAI poses a real and serious threat to both patients and healthcare workers especially nurses in the clinical areas, thus resulting in dangers that may threaten and claim lives. Nevertheless, there are incidents of accidental exposure to blood-borne infections, particularly viral pathogens of hepatitis B virus (HBV), hepatitis C virus (HCV), human immunodeficiency virus (HIV), Ebola virus and Lassa virus that often cause diseases and may be devastating in the healthcare settings (Poudel, Bhandari, Uprety, Chaudhari, Giri, Yadav, & Baral, 2015) in particular to the care providers and care recipients, even the immediate others that might likely come in contact with them if not optimally protected. A 2015 data estimate reveals that there are about 35 million healthcare workers worldwide, in which an accounted 3 million of them experience percutaneous exposures to blood borne viruses annually. It comprises hepatitis B virus (2 million), hepatitis C virus (900,000) and human immunodeficiency virus (300,000) (Nakagawa, 2015; Poudel, Bhandari, Uprety, Chaudhari, Giri, Yadav & Baral, 2015). Though HAI are preventable, more than 90% of the infections still occur and they often affect low-income countries (Alwabr, 2017).

Generally, pathogens may transmit from healthcare workers' hands, equipment, supplies and other unhygienic practices (Gichuhi, 2015). Invariably, healthcare workers should use appropriate protective precautionary measures as barriers to protect skin and mucous membrane contact with any infected media (body/blood fluids, air droplets, airborne) of the patients, immediate others and other health team members (Alwabr, 2017). Since identification of patients infected with pathogens cannot be reliably made known or traced by medical history and physical examination, the Center for Disease Control (CDC) then recommended that a standard of cautions is to be taken and used in the care of all patients, regardless of the knowledge of their infection status (Abdulraheem, Amodu, Saka, Bolarinwa & Uthman, 2012). Standard precautions are sets of measures formulated to prevent/protect transmission of pathogens when providing healthcare services within the healthcare sector. However, the components of standard precautions include hand hygiene, injection safety, use of personal protective equipment and environmental cleanliness, waste management, and respiratory hygiene and cough etiquette (Ogboina, 2015).

Standard precaution is also known as a universal precaution developed by the Center for Disease Control and Prevention (1996), as one of the infection control practices that should be used by healthcare workers and clients in all healthcare settings to prevent the transmission of blood-borne and other pathogens (Boskey, 2019). Hand hygiene—one of the standard



precautions—though the cheapest, easiest and the most important of all in preventing infection within the healthcare has reduced the infection transmission chain cycle to the barest minimum (Almoghrabi, Aldosari, Bakhsh, Al Garni, Alseragi & Omer, 2018). A study conducted by Johnson, Assi, Bakpo, Harrison, Angba and Okon (2018) reported that poor practices like recapping of needles (54%), faulty sharps disposal (13%) and not immunizing against hepatitis B (39.3%) pose imminent dangers. Also, those who were trained on standard precautions were more likely to have good practice than those who were not (Punia, Nair & Ranjitha, 2014).

In general, occupational hazards are inevitable and imminent in healthcare settings especially low-resources centres where there are more exposures and higher risks of healthcare associated infections (Projectchampionz, 2018; PAHO, 2017). However, it has been observed that there are factors influencing the standard precaution practices (Zhu, Kahsay, & Gui, 2019). So, the identification of these factors would be important so that they could be worked on in order to reduce HAI. This study therefore assessed the factors influencing standard precaution practices among nurses in Lagos State University Teaching Hospital, Lagos, Nigeria.

Statement of the Problem

Knowledge, attitude and perception concerning standard precaution guidelines by healthcare workers have been highlighted to majorly influence occupational hazards (Ubokobong, Harrison, Freda, Angba & Martin, 2019; Oden, 2018). However, despite the establishment of detailed standard precaution guidelines for healthcare workers, implementation issues remain a major concern. Literature have documented the knowledge, attitude and perception regarding standard precautions to be low among health workers in developing countries especially Nigeria (Ogoina, Pondei, Adetunji, Chima, Isichei & Gidado, 2015; Alice, Akhere, Ikponwonsa & Grace, 2013). Although a study conducted in Southeast Nigeria reported that knowledge, attitude and perception regarding standard precautions were good, the practice is suboptimal (Arinze-Onyia, Ndibuagu & Ozor, 2018).

An explorative study done by Jacob, Newson-Smith, Murphy, Steiner and Dick (2010) in the United Arab Emirates found that poor compliance with standard precaution doubles the risk factor for sharp injuries. However, several factors have been implicated in cases of non-compliance with standard precautions (Angaw, Gezie & Dachew, 2019; Okhiai, Nwaopara & Blackies, 2014). The justification of the behavior of non-adherence encompasses many factors including the working environment such as material, human resources and management of the institution and individual factors such as the knowledge, attitude and perception about the measures of standard precaution while professional factors include the code of conduct, negligence and other ethical issues (Munro, Lewin, Smith, Engel, Fretheim, & Volmink, 2007). The personal factors that influence the desired behavior of professionals include self-efficacy, beliefs related to measures of standard precaution and diseases, the knowledge about the standard precaution and the attitudes in function of adherence to standard precaution. Studies have also demonstrated that knowledge, attitude and perception of workers are part of the factors influencing the adherence to standard precautions in the establishment of health assistance (Ritchie & McIntyre, 2017; Haridi, Al-Amman & Al-Mansour, 2016; Valim, de-Morais, Marziale & Palucci, 2016).

Available reports on hospital personnel becoming infected with HIV or other blood borne infections after a needle accident or skin exposure to patient's blood, have raised concerns on the urgent need for new and better measures to protect personnel against patient transmission



of infection (DeCarli, Abiteboul & Puro, 2014; Deuffic-Burban, Delarocque-Astagneau, Abiteboul, Bouvet & Yazdanpanah, 2011; Singhal, Bora & Singh, 2009). Even recent incidents associated with the Lassa outbreak in parts of Nigeria have heightened this fear (Malik, Mahjour & Alwan, 2014). In an anecdotal observation, there is increase in HAI among healthcare providers especially nurses and this has been linked with the inadequate standard precaution practices which are invariably influenced by different factors, hence the need for this study to find out the factors influencing standard precaution practices among nurses in Lagos State University Teaching Hospital, Ikeja, Lagos State.

Objective of the Study.

The main objective of the study was to assess the factors influencing standard precautions practices among nurses in Lagos State University Teaching Hospital, Ikeja, Lagos State. The specific objectives of the study were to:

1. assess the level of knowledge of standard precautions among nurses in Lagos State University Teaching Hospital, Ikeja.
2. determine the attitude of nurses towards standard precautions practice among healthcare workers in Lagos State University Teaching Hospital, Ikeja.
3. identify the factors influencing the practice of standard precautions among nurses in Lagos State University Teaching Hospital, Ikeja.

Significance of the Study

Findings from this study would provide data on the knowledge, attitude and factors influencing standard precaution practices among nurses in Lagos State University Teaching Hospital, Ikeja. The findings may culminate in or corroborate other findings to be used in developing a template for strategic and operational intervention that will affect the standard precaution practices of health workers positively. It may as well provide a baseline data for subsequent studies on standard precaution practice among nurses. Findings from this study might contribute to the body of knowledge in nursing regarding standard precaution practices among nurses. Findings from this study might also enable governments and hospital management to plan programmes and policies that may help to tackle factors influencing standard precaution practices among nurses.

METHODOLOGY

Research design

Descriptive cross-sectional design was used to assess factors influencing standard precaution practices among nurses in Lagos State Teaching Hospital, Ikeja, Lagos State. This approach enabled the researchers to assess and describe the factors influencing standard precaution practices.

Sample size and sample techniques

The sample size was determined using Yamane (1967) formula.



The distribution of nurses at Lagos State University Teaching Hospital= N=900

$$n = \frac{N}{[1 + N(e^2)]}$$

where

n = required sample size

95% level of confidence and 5% level of precision

e = level of significance = 0.05

Therefore, n (minimum sample size) is

$$\frac{900}{[1 + 900(0.0025)]} = \frac{900}{3.25} = 277$$

An additional 10 percent was added to the calculated sample size to take care of attrition rate.

$$10\% \text{ of } 277 = 27.7$$

$$n = 277 + 27.7 = 304.7$$

Thus, 305 respondents were recruited for this study.

Instrumentation

A self-designed questionnaire was used in data collection. It had four sections which were socio-demographic data, knowledge about standard precaution, attitude towards standard precaution practice and factors influencing standard precaution practices.

Validity and Reliability of the Instrument

The validity of the instrument was ascertained by presenting the instrument to experts in health sciences and in the test and measurement field.

Reliability of the instrument was done through a split half method using a total of 35 respondents attending an outpatient clinic in Lagos University Teaching Hospital, Idi Araba, Lagos State. Cronbach alpha reliability coefficient was then calculated (0.78) and the instrument was considered reliable.

Method of data analysis

Data gathered from respondents were processed using Statistical Package for the Social Sciences version 25. The research questions were answered using descriptive statistics of means, standard deviation and percentages. Frequency/percentage tables were made for data presentation.



Ethical consideration

Ethical approval was obtained from the Babcock University Health Research Ethics Committee (BUHREC) and permission was obtained from the Management of Lagos State University Teaching Hospital. Also, informed consent was sought from each respondent. The purpose of the study was clearly explained to the respondents and the freedom to pull out from the study without any negative aftermath was also explained.

Table 1: Socio-Demographic Characteristics of the Respondents

Variables	Frequency	Percentage	Mean (SD)
Age (years)			41.64±10.08
21-30	50	16.4	
31-40	79	25.9	
41-50	99	32.5	
51-60	77	25.2	
Gender			
Male	23	7.5	
Female	282	92.5	
Years of experience			
lesser than 5 years	50	16.4	
5-10 years	46	15.1	
above 10 year	209	68.5	
Level of education			
Diploma	123	40.3	
Bachelor's degree	182	59.7	

The obtained results on the socio-demographic data show a higher female preponderance (92.5%). The respondents were mostly within the age range of 41-50 years (32.5%) with a mean score of 41.64. The majority of the respondents had more than 10 years of work experience (68.5%) with Bachelor's degree (59.7%) being the most reported level of education.

Table 2: Knowledge of Standard Precautions among Nurses

Knowledge levels	Scores	Frequency	Percentage
Above average	8-15	285	93.4
Below average	0-7	20	6.6
Mean	24.69		
Standard dev.	2.16		

Table 2 displays the level of knowledge of standard precautions among nurses. A total of 93.4% of the respondents had above average knowledge. The mean score of knowledge of standard precautions among nurses was 24.69 ±2.16.

**Table 3: Attitudes towards Standard Precautions among Nurses**

Questions	Agree	Disagree	I don't know
There is no need to wash or decontaminate hands after touching patients' surroundings	50 (16.4)	255 (83.6)	-
Gloves should always be worn before venipuncture except for emergency cases	151 (49.5)	143 (46.9)	11 (3.6)
Sharps should never be recapped	219 (71.8)	73 (23.9)	13 (4.3)
In the absence of standard precaution, healthcare facilities can be the source of infection and epidemic diseases	229 (75.1)	76 (24.9)	-
Used needles can be bent or broken after use	93 (30.5)	206 (67.5)	6 (2.0)
Wearing gloves, mask, and protective eyewear are hospital acquired infections control Measures	250 (95.1)	15 (4.9)	-
Hand washing is the single most important, simplest and least expensive standard precaution measure	294 (96.4)	11 (3.6)	-
Standard precautions are useful in protecting against biohazards in the workplace	287 (94.1)	15 (4.9)	3 (1.0)
Employers should provide standard precaution training for their workers	302 (99.0)	3 (1.0)	-

Table 3 shows the attitudes towards standard precautions among nurses. The respondents were asked 9 questions on attitudes towards standard precautions. Majority (59.7%) of the respondents had a positive attitude towards standard precautions.

Table 4: Factors Influencing Standard Precautions Practices among Nurses

Question	Agree	Disagree	Undecided
Low staff strength	157 (51.5)	134 (43.9)	14 (4.6)
Poor remuneration	153 (50.2)	152 (49.8)	-
Lack of good policy on standard precaution	267 (87.5)	28 (9.2)	10 (3.3)
Unavailability of personal protective equipment	281 (92.1)	18 (5.9)	6 (2.0)
Lack of regular training on standard precaution	278 (91.1)	21 (6.9)	6 (2.0)
Education	200 (65.6)	86 (28.2)	19 (6.2)

The results in table 4 show the factors influencing good practice of standard precaution among nurses. In their responses, 51.5% agreed to low staff strength, 50.2% agreed to poor remuneration, 87.5% agreed to lack of good policy on standard precautions, 92.1% agreed to unavailability of PPEs, 91.1% agreed to lack of regular training on standard precautions and



65.6% agreed to level of education as factors that majorly influence good practice of standard precautions.

DISCUSSION OF FINDINGS

The result of the socio-demographic data carried out among 305 nurses in Lagos State University Teaching Hospital revealed that the majority of the respondents were females, 282 (92.5%). A similar result of a high number of female health workers, especially nurses, was found in a study of Agofure and Perewari (2017). Many of the respondents were within the age range of 41-50 years, with a mean age of 41.64 ± 10.1 years. This result is similar to the findings reported by Adebimpe (2016), who documented a mean age of 36.7 ± 6.9 years.

Majority (68.5%) of the participants had >10 years of work experience. Similarly, a study by Adebimpe (2016) found out that most of the respondents had worked for over 10 years. Most of the nurses (59.7%) recruited for the study had a Bachelor's degree which may be connected to the setting of this study, being a metropolitan city.

Research Question One: What is the level of knowledge about standard precautions among nurses in Lagos State University Teaching Hospital, Ikeja?

The result on the level of knowledge about standard precautions seen within this study showed a good level of knowledge on standard precautions. Findings from this study shows that almost all of the participants (93.4%) had a high level of knowledge about standard precautions. The outcome of this study corresponds with the result reported by Adebimpe (2016), which also revealed that many (81.8%) of their respondents had good knowledge of safety precautions. This is similar to the studies of Ogoina et al. (2015), and Agofure and Perewari (2017) on the knowledge, attitude and practice of standard precaution among healthcare workers in teaching hospitals in Nigeria. Mandona et al. (2019) and Asmr et al. (2019) also mirrored the report of high knowledge on standard precautions among healthcare providers. However, the result is in contrast with that of Agu et al. (2015), who reported low knowledge of universal standard precautions among rural primary healthcare workers, as well as Ali and Rooman (2018) that found poor knowledge. Thus, the high level of knowledge of standard precautions may be attributed to the incorporation of teaching of standard precautions in the nursing students' curriculum and the setting of practice.

Research Question Two: What is the attitude towards standard precautions among nurses in Lagos State University Teaching Hospital, Ikeja?

Almost all respondents (99%) agreed that standard precaution training should be provided for workers with a similar number of respondents (94.1%) agreeing that it is useful in protecting against biohazards in the workplace. About the same number of participants (95.1%) agreed that hand washing is the simplest and least expensive standard precaution, most of which identified wearing gloves, mask and protective eyewear as PPE. Slightly above two-third (67.5%) of the Nurses believe that used needles can be bent or broken after use and 71.8% agreed that needles should never be recapped. Overall, the majority (59.7%) of the respondents had a positive attitude towards standard precautions.



This is in tandem with the results obtained by Agofure and Perewari (2017), who found out positive attitude towards standard precaution among the respondents who agreed to the use of gloves, washing or decontaminating of their hands after touching patients, not recapping sharps, not bending or breaking used needles, performing medical check-up in case of a needle stick injury and wearing double hand gloves as a way of protecting themselves. The outcome of this study also corresponds to what was reported by Adebimpe (2016); positive attitude towards safety precautions was found to be 94.0% among nurses. In the study by Mandona et al. (2019), all their participants had positive attitudes towards safety precautions. One of the reasons for this outcome might be that the respondents answered the questions on attitude towards safety precautions based on their academic knowledge and not necessarily on their current attitude to safety precautions practices.

Research Question Three: What are the factors influencing the practice of standard precautions?

The majorly identified factor influencing the practice of standard precautions among the respondents was found to be as a result of the unavailability of personal protective equipment (PPE) (92.1%), which was followed by lack of regular training on standard precautions (91.1%) and lack of good policy on the standard procedure (87.5%). The least reported factor was poor remuneration (50.2%). These results correspond with the findings reported in the study by Ogoina et al. (2015), where out of the 290 study participants, 66.1% identified lack of appropriate or adequate resources and 52.4% reported lack of regular training to be the two major factors preventing the practice of standard precautions. In the study by Agu et al. (2015), they reported inadequate supply of gloves to be the greatest barrier to adherence to universal precaution, followed by inadequate water and soap supply. Also, poor provisioning of amenities such as water, electricity and lack of protective equipment was part of the major reported barriers to the practice of safety precautions among healthcare workers by the respondents. The majority (>80%) of the respondents complained about the inadequate supply of hand gloves, over 60% reported inadequate water supply, while about half (49.7%) of the respondents reported inadequate supply of disposables such as syringes and needles. All of these suggest part of the reasons why safety precaution practices were difficult and why nurses might be at risk of getting infected.

CONCLUSION

The findings from the study revealed that the majority of the respondents had above average knowledge and positive attitude to standard precautions. However, non-availability of personal protective equipment was highly reported as the major factor influencing the practice of safety precautions among health workers, followed by lack of regular training on standard precautions and the lack of good policy on standard precautions.



RECOMMENDATIONS

Based on the findings from this study, the following were recommended:

1. The need for continued sensitization across all cadres of nurses on standard precautions to sustain the high level of knowledge and the positive attitude.
2. Government and other hospital management should make PPEs readily available in the hospital.

Suggestions for further studies

1. A larger multi-center study can also be carried out to have a larger sample size for better generalization of the result.
2. Also, studies that can directly observe the practice of standard precautions among nurses in Nigeria are recommended for comparative analysis to see whether the level of knowledge and the positive attitude translate to practice.
3. Phenomenological studies can be conducted among health workers in order to identify and resolve the factors influencing the standard precaution practices.

REFERENCE

- Abdulraheem, I.S., Amodu, M.O., Saka, M. J., Bolarinwa, O.A., & Uthman, M.M.B (2012). Knowledge, Awareness and Compliance with Standard Precautions among Health Workers in North Eastern Nigeria. *Journal of Community Medical Health Education*, 2 (1)
- Adebimpe, W. O. (2016). Knowledge, Attitude, and Practice of Use of Safety Precautions Among Health Care Workers in a Nigerian Tertiary Hospital, 1 Year After the Ebola Virus Disease Epidemic. *Annals of global health*, 82(5), 897–902. <https://doi.org/10.1016/j.aogh.2016.07.004>
- Agofure, O. & Perewari. O. A. (2017). Knowledge, Attitude and Practice of standard precaution among Health Care Workers in Federal Medical Centre Yenagoa, Nigeria. *IOSR Journal of Pharmacy and Biological Sciences (IOSR-JPBS)*, 12(4), 79-86
- Ali, A., & Rooman, N. (2018). The Knowledge of Standard Precautions among Nurses in Public and Private Tertiary Care Hospital Lahore. *National Journal of Health Sciences*, 3 (3), 76–82. <https://doi.org/10.21089/NJHS.33.0076>
- Ali, A., & Rooman. N. (2018). The Knowledge of Standard Precautions among Nurses in Public and Private Tertiary Care Hospital Lahore Dilnasheen. *National Journal of Health Sciences*, 3 (1), 76-82
- Alice, T. E., Akhere, A. D., Ikponwonsa, O., & Grace, E. (2013). Knowledge and practice of infection control among health workers in a tertiary hospital in Edo state, Nigeria. *Direct Research Journal of Health and Pharmacology*, 1(2), 20-27
- Almoghrabi, R., Aldosari, N., Bakhsh, A., AlGarni, F., Alseragi, E., & Omer, T., (2018). Standard Precaution among Nurses in Primary Health Care Centers: Knowledge and Compliance. *Journal of Nursing and Health Science (IOSR-JNHS)*



- Alwabr, I. & Gawad, M.A. (2017). Assessment of Knowledge about Standard Precautions and Nosocomial Infection among Nurses Working in Hospitals of Sana'a City, Yemen. *International Journal of Caring Sciences*
- Angaw, D.A., Gezie, L.D. & Dachew. B.A. (2019). Standard precaution practice and associated factors among health professionals working in Addis Ababa government hospitals, Ethiopia: a crosssectional study using multilevel analysis. *British Medical Journal*, <https://doi:10.1136/bmjopen-2019-030784>
- Arinze-Onyia, S. U., Ndu, A. C., Aguwa, E.N., Modebe. I., Nwamoh. U. (2018). Knowledge and Practice of Standard Precautions by Health-Care Workers in a Tertiary Health Institution in Enugu, Nigeria. *Nigeria Journal of Clinical Practice*, 21 (1), 149-55
- Arinze-Onyia, S.U., Ndibuagu. E.O. & Ozor, I.I. (2018). Standard precautions: Nurses' knowledge and use in a tertiary health institution in Southeast Nigeria. *International Research Journal of Medicine and Medical Sciences*, 6(2), 35-40
- Asmr, Y. Beza L., Engida, H. Tariku B., Netsanet T. & Yibeltal, A. (2019). Assessment of Knowledge and Practices of Standard Precaution against Blood Borne Pathogens among Doctors and Nurses at Adult Emergency Room in Addis Ababa, Ethiopia. *Hindawi Emergency Medicine International*
- Boskey, E. (2019). The Purpose of Universal Precautions. Verywell. *Dotdash publishing*
- CDC. (2016a). Standard Precautions for All Patient Care. Standard Precautions for All Patient Care | Basics | Infection Control | CDC
- CDC. (2016b). Precautions to Prevent Transmission of Infectious Agents. Precautions | Isolation Precautions | Guidelines Library | Infection Control | CDC
- De Carli, G., Abiteboul, D., & Puro, V. (2014). The importance of implementing safe sharps practices in the laboratory setting in Europe. *Biochemia Medica*, 24(1), 45-56.
- 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
- Haridi, H. K., Al-Ammar, A. S., & Al-Mansour, M. I. (2016). Compliance with infection control standard precautions guidelines: a survey among dental healthcare workers in Hail Region, Saudi Arabia. *Journal of Infection Prevention*, 17(6), 268-276
- Johnson, O., Assi, A., Bakpo, I., Harrison, U., Angba, F. & Okon, M. (2018). Knowledge and Practice of Standard Precautions among Health Care Workers in a Secondary Facility in Southern Nigeria. *International Research Journal of Medicine and Medical Sciences*, 6(2), 35-40
- Malik, M. R., Mahjour, J., & Alwan, A. (2014). Preventing the introduction of Ebola virus into the Eastern Mediterranean Region: enhanced preparedness is the key. *Eastern Mediterranean Health Journal*, 20(10), 656
- Munro, S. A., Lewin, S. A., Smith, H. J., Engel, M. E., Fretheim, A., & Volmink, J. (2007). Patient adherence to tuberculosis treatment: a systematic review of qualitative research. *PLoS Med*, 4 (7), e238
- Nakagawa, F. (2015). Estimation of the size and characteristics of HIV-positive populations in Europe (Doctoral dissertation, UCL (University College London)).
- NHS. (2019). Standard infection control precautions: national hand hygiene and personal protective equipment policy. NHS England and NHS Improvement.



- Oden, C. (2018). Knowledge, Attitude and Practice of Standard Precautions among Health Care Workers. <https://www.projecttopics.org/knowledge-attitude-and-practice-of-standard-precautions-among-health-care-workers.html>
- 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>
- Okhiai, O., Nwaopara, A.O., Omoregbe, F.I., Izefua, E., Nwandike, G.I., Nmorsi, P., Shelu, J.O. & Blackies, H.O.T. (2014). A Study on Knowledge, Attitude and Practice of Standard Precautions among Theatre Personnel in Irrua Specialist Teaching Hospital, Irrua, Edo State. *International Journal of Basic, Applied and Innovative Research. IJBAIR. 3*(4), 147 – 153
- PAHO. (2017). Standard precautions and Transmission based precautions. Guidelines on Infection Control Practice in the Clinic Settings of Department of Health. Infection Control Committee, Department of Health December 2019 (Revised). <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4730013/>
- Poudel, M., Bhandari, R., Uprety, S., Chaudhari, S., Giri, R., Yadav, A. & Baral, D. D. (2015). Knowledge, Attitude and Practice about STD/ HIV Aids among the Health Attendant Staff of a Tertiary Level Hospital of Eastern Nepal. *Health Renaissance, 3*(3), 5-106
- Projectchampionz, J. (2018). Knowledge, Attitude and Practice of Standard Precautions among Health Care Workers. <https://projectchampionz.com.ng/2018/01/08/knowledge-attitude-practice-standard-precautions-among-health-care-workers/>
- Punia, S., Nair, S., & Ranjitha, S. S. (2014). Health Care Workers and Standard Precautions: Perceptions and Determinants of Compliance in the Emergency and Trauma Triage of a Tertiary Care Hospital in South India. *Int Sch Res Notices*. [https://doi: 10.1155/2014/685072](https://doi.org/10.1155/2014/685072). PMID: 27433500; PMCID: PMC4897196.
- Quan, M, Wang, X. & Li, L. (2015). Influencing Factors on Use of Standard Precautions against Occupational Exposures to Blood and Body Fluids among Nurses in China. *International Journal of Clinical Exp Medicine, 18* (12), 22450–22459
- Ritchie, L. & McIntyre, J. (2017). Standardizing Infection Control Precautions: Nursing Practice review on infection control. *Nursing Times, 111* (38)
- Singhal, V., Bora, D., & Singh, S. (2009). Hepatitis B in health care workers: Indian scenario. *Journal of Laboratory Physicians, 1*(2), 41
- Ubokobong, E. Harrison, Freda, E. Angba, & Martin, A. O. (2019). Knowledge and Practice of Standard Precautions among Health Care Workers in a Secondary Facility in Southern Nigeria. *International Journal of Biomedical Research, 10* (01)
- Valim, D., DeMorais, M., Marziale, R.B., Palucci, M. H. (2016). Instruments and impacting factors on standard precautions knowledge among health workers. *Enfermería Global. 305-321*
- Zhu, S., Kahsay, K. M., & Gui, L. (2019). Knowledge, Attitudes and Practices related to standard precautions among nurses: A comparative study. *Journal of clinical nursing, 28*(19-20), 3538–3546. <https://doi.org/10.1111/jocn.14945>