UKR Journal of Medicine and Medical Research (UKRJMMR)
Homepage: https://ukrpublisher.com/ukrjmmr/
Email: submit.ukrpublisher@gmail.com
Volume 1, Issue 3, Sept-Oct 2025 ISSN: 3107-5061 (Online)

Predictors of Preventive Behaviour Towards Nosocomial Infections Among Healthcare Workers in Rivers East Senatorial District

ELECHI, Comfort Emma, PhD[1]; AMADI, Mgbechi, PhD[2]

[1,2] Department of Human Kinetics, Health and Safety Education, Ignatius Ajuru University of Education, Rivers State, Nigeria

***Corresponding Author**: AMADI, Mgbechi, PhD

DOI: *https://doi.org/10.5281/zenodo.17618129*

Article History

Original Research Article

Received: 02-11-2025

Accepted: 11-11-2025

Published: 15-11-2025

Citation: ELECHI, Comfort Emma, PhD; AMADI, Mgbechi, PhD. (2025). Predictors of Preventive Behaviour Towards Nosocomial Infections Among Healthcare Workers in Rivers East Senatorial District. UKR Journal of Medicine and Medical Research (UKRJMMR), Volume 1(3), 17-24.

Abstract

Nosocomial infections remain a significant public health concern, making prevention among healthcare workers essential to reduce associated risks. This study investigated the factors that influence preventive practices against hospital-acquired infections among healthcare personnel in the Rivers East Senatorial District of Rivers State. A descriptive cross-sectional design was adopted, targeting a population of 2,078 primary healthcare workers. Using a multistage sampling technique, 1,142 participants were selected for the study. Data were gathered with a researcher-developed instrument known as the "Nosocomial Infection Prevention Questionnaire (NIPQ)," which had a reliability coefficient of 0.78. Statistical analysis was conducted using SPSS version 27.0, and both research questions and hypotheses were examined through Linear Regression at a 0.05 significance level. Findings revealed that self-efficacy accounted for 61.4% of the variance in preventive behaviour ($R^2 = 0.61$, $r = 0.75$); cues to action explained 70.3% ($R^2 = 0.70$, $r = 0.75$); and perceived barriers contributed 58.9% ($R^2 = 0.58$, $r = 0.68$) to nosocomial infection prevention among healthcare workers in the district. Based on various analyses of data, nosocomial infection prevention among healthcare workers in Rivers East Senatorial District was predicted by several factors,, with the most profound being self-efficacy and perceived barriers. It was recommended among others that the primary healthcare management agency should come up with an assessment method to ensure adequate compliance with nosocomial infection prevention, with the view of eliminating every barrier identified.

Keywords: *Healthcare Workers, Infection, Nosocomial, Prevention.*

Introduction

Nosocomial infections remain a significant challenge for healthcare systems across the globe, and their prevention among healthcare workers is essential to reduce their impact. The popular saying *"health is wealth"* applies equally to health professionals, who, despite being responsible for caring for others, are also vulnerable to infections (Maitanmi et al., 2021). As noted by Mbim et al. (2016), hospital-acquired infections continue to pose a serious global health burden, contributing to rising levels of morbidity and mortality despite ongoing infection control efforts. Khan et al. (2017) further emphasized that approximately one in ten healthcare workers worldwide is affected by nosocomial infections, resulting in substantial economic losses. In Nigeria, the situation is even more concerning, with healthcare workers facing up to twenty times higher risk of contracting nosocomial infections compared to their counterparts in developed countries (World Health Organization, 2014).

Nosocomial infections also referred to as healthcare-associated infections, are infections that emerge within 48 hours of hospital admission, within three days of discharge, or within 30 days following a surgical procedure (Khan et al., 2015). Cheung (2020) emphasizes that such infections must not be present at the time of admission; instead, they must manifest after at least 48 hours of hospitalization. Similarly, the World Health Organization (2010) defines nosocomial infections as those acquired by healthcare workers during the process of delivering care, provided the infection was neither present nor incubating at the initial point of contact with patients. The use of invasive medical

devices, including catheters and ventilators commonly found in contemporary clinical practice, has been identified as a major contributor to these infections (Centers for Disease Control and Prevention, 2016).

According to Shahida et al. (2016), several conditions increase the likelihood of nosocomial infections, including inadequate healthcare infrastructure, such as the absence of isolation units, insufficient sink availability, and limited bed space. Other contributing factors include poor waste management practices, contaminated medical equipment, improper antibiotic use, and the transmission of pathogens through the hands of healthcare workers and caregivers due to poor hand hygiene. Khan et al. (2015) list common pathogens associated with these infections, including *Streptococcus* spp., *Acinetobacter* spp., enterococci, *Pseudomonas aeruginosa*, coagulase-negative staphylococci, *Staphylococcus aureus*, *Bacillus cereus*, *Legionella*, and various members of the Enterobacteriaceae family. These organisms can be transmitted between individuals, from environmental surfaces, through contaminated water and food, or via shared equipment. Frequently, nosocomial infections involve multidrug-resistant organisms facilitated by invasive procedures, inappropriate antibiotic use, and poor adherence to infection-prevention protocols. Given these realities, there is an urgent need to understand factors that influence preventive behaviors in order to strengthen prevention and control strategies.

Determining predictors of preventive behavior is critical for reducing the burden of nosocomial infections. Research highlights several key predictors, including perceived susceptibility, perceived disease severity, awareness of benefits associated with prevention, availability of resources, and accurate knowledge of the infection and its preventive measures (Sim et al., 2014; Webster et al., 2020). Haile et al. (2017) identified constraints such as inadequate resources, uncomfortable personal protective equipment (PPE), skin irritation, forgetfulness, distance from hygiene facilities, and poor administrative support as barriers to adherence. Njovu (2015) further noted that insufficient supplies, high workload, staff shortages, poor attitudes, and limited knowledge negatively influence preventive practices. Tariku et al. (2017) found that training on standard precautions, access to PPE, and organizational support significantly affect compliance. Similarly, Maitanmi et al. (2021) reported that workload, adequate knowledge, understanding of infection pathways, and supportive work environments are key determinants of prevention. Additional studies have highlighted a range of predictors, including limited knowledge, unfavourable attitudes, environmental barriers, and inadequate leadership, as significant influences on healthcare workers' preventive behaviour (Rosenberg, 2016; Pranita et al., 2019; Garbuja et al., 2019). For the present study, the predictors examined included risk perception, perceived susceptibility, self-efficacy, perceived barriers, and cues to action.

Risk perception has consistently emerged as an important predictor of preventive behaviour. Studies have shown that healthcare workers who perceive nosocomial infections as a significant health threat are more likely to adopt preventive measures (Vinck et al., 2011; Jeong et al., 2011; Kim & Choi, 2016). Chor et al. (2012) similarly reported that perceived seriousness of infection strongly correlates with preventive actions. Mitchell et al. (2012) found that perceived effectiveness of PPE shapes workers' willingness to comply with protective behaviours. Conversely, Kang et al. (2017) noted that doubt about PPE effectiveness can reduce adherence, thereby increasing susceptibility. As stated by Lee et al. (2014), understanding personal susceptibility and recognizing transmission mechanisms are essential for effective prevention. Procedures such as high-flow nasal intubation, suctioning, and patient transport elevate infection risk; therefore, workers who perceive themselves as vulnerable are more likely to adopt protective behaviours when adequate resources are available.

Concerns regarding PPE shortages have been reported in many studies (De Perio et al., 2012; Edeghere et al., 2015; Khalid et al., 2016), with scarcity often resulting in challenges such as the use of improperly sized equipment (Corley et al., 2010). Availability of PPE has been shown to significantly improve compliance with infection control practices (Hu, 2012), and compliance increases further when essential items like gloves and eyewear are accessible at the point of care (Hu et al., 2012). Since healthcare workers frequently interact with patients, their safety depends on the consistent use of appropriate protective materials. Nosocomial infections remain a major global public health challenge and contribute substantially to morbidity and mortality despite ongoing improvements in infection-control measures (Mbim et al., 2016).

Nosocomial infections pose serious safety hazards for both patients and healthcare providers. Considering the associated increase in hospital stay, mortality, and financial cost, hospitals must implement effective measures aimed at eliminating these infections (Plowman cited in Mehta et al., 2014). Infection control in healthcare settings is therefore essential in minimizing nosocomial infections. These infections increase the vulnerability of hospitalized patients while simultaneously putting healthcare workers at risk (Iliyasu et al., 2016). Simple but effective measures such as proper hand hygiene greatly reduce infection rates. Evidence shows that appropriate handwashing or the use of alcohol-based sanitizers can decrease nosocomial

infections by up to 40% (CDC, 2012; WHO, 2019; Kampf, 2019). Moreover, consistent implementation of infection control strategies improves patient outcomes, reduces disease transmission, and lowers overall healthcare costs (Hanmore et al., 2013).

In Rivers State, as in many other regions, healthcare workers perform essential tasks such as medication administration, wound dressing, sterilization, and disinfection, which place them in frequent contact with patients. This proximity increases their vulnerability to hospital-acquired infections (Shinde & Mohite, 2014). Mahdizadeh et al. (2021) noted that despite their professional responsibilities, health workers may inadvertently serve as vectors, transmitting infections among patients and peers. Sarani et al. (2015) therefore stressed that healthcare workers' adherence to preventive measures is crucial for controlling nosocomial infections. This challenge is especially pressing in Rivers State, where the healthcare system faces significant strain. Strengthening simple, evidence-based preventive measures could therefore substantially lower infection rates. Nevertheless, identifying effective strategies to ensure consistent compliance among healthcare professionals remains a persistent challenge requiring clear and context-specific evidence. Against this backdrop, the present study examined the predictors of preventive behaviour towards nosocomial infections among healthcare workers in the Rivers East Senatorial District. The below will be answered:

1. To what extent is self-efficacy a predictor of preventive behaviour towards nosocomial infections among healthcare workers in Rivers East Senatorial District?
2. To what extent is the perceived barrier a predictor of preventive behaviour towards nosocomial infections among healthcare workers in Rivers East Senatorial District?
3. To what extent are cues to action a predictor of preventive behaviour towards nosocomial infections among healthcare workers in Rivers East Senatorial District?

Hypotheses

The following null hypotheses were formulated to guide the study and were tested at the 0.05 level of significance:

1. Self-efficacy does not significantly predict preventive behaviour towards nosocomial infections among healthcare workers in the Rivers East Senatorial District.
2. Perceived barriers do not significantly predict preventive behaviour towards nosocomial infections among healthcare workers in the Rivers East Senatorial District.
3. Cues to action are not a significant predictor of preventive behaviour towards nosocomial infections among healthcare workers in Rivers East Senatorial District.

Methodology

The study employed a descriptive cross-sectional research design. The target population consisted of 2,078 primary healthcare workers in the Rivers East Senatorial District. A sample size of 1,142 participants was determined by applying the single proportion formula, $n = 50\% \times N$. With 50% of the population selected, the initial sample size was calculated as: $n = (50/100) \times 2{,}078 = 1{,}039$.

To account for a 10% non-response rate, an additional 103 participants were included, resulting in a final sample size of 1,142.

A multistage sampling procedure was used for participant selection. In the first stage, proportionate stratified sampling determined the number of respondents to be drawn from each of the eight Local Government Areas (LGAs) within Rivers East. At the second stage, simple random sampling was employed to select five healthcare facilities in each LGA. In the final stage, simple random sampling was again applied to select the individual respondents from the chosen facilities.

Data were gathered using a researcher-developed instrument titled the *Nosocomial Infection Prevention Questionnaire (NIPQ)*, which had a reliability coefficient of 0.78. The questionnaire was administered through face-to-face distribution. Collected data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 27.0, and regression models were applied at the 0.05 level of significance. The interpretation of relationship strength followed Elendu's (2010) classification: 0.00–0.19 = very low, 0.20–0.39 = low, 0.40–0.59 = moderate, 0.60–0.79 = high, and 0.80 and above = very high. Decisions regarding the hypotheses were based on the p-value, with $p < 0.05$ indicating statistical significance and leading to the rejection of the null hypothesis, while $p \geq 0.05$ resulted in its acceptance.

Results

The results of the study are shown below:

Table 1: Regression analysis on the extent to which self-efficacya predictor of preventive behaviour towards nosocomial infections among healthcare workers in Rivers East Senatorial District

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Decision
1	0.75	0.71	0.71	0.92	**High extent**

Using the guide for interpreting the strength of relationships (0.00–0.19 = very low; 0.20–0.39 = low; 0.40–0.59 = moderate; 0.60–0.79 = high; and 0.80 and above = very high), the findings presented in Table 1 show the extent to which self-efficacy predicts preventive behaviour. The correlation coefficient (r = 0.75) indicates a **high** relationship between self-efficacy and preventive behaviour towards nosocomial infections. Furthermore, the coefficient of determination ($R^2 = 0.61$) reveals that **61.4%** of the variance in nosocomial infection prevention was explained by self-efficacy. Therefore, the extent to which self-efficacy serves as a predictor of preventive behaviour among healthcare workers in the Rivers East Senatorial District is considered **high**.

Table 2: Regression analysis on the extent to which perceived barriera predictor of preventive behaviour towards nosocomial infections among healthcare workers in Rivers East Senatorial District

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Decision
1	0.68	0.58	0.58	1.45	**High extent**

Using the guide for interpreting the strength of relationships (0.00–0.19 = very low; 0.20–0.39 = low; 0.40–0.59 = moderate; 0.60–0.79 = high; and 0.80 and above = very high), the results in Table 2 show the extent to which perceived barriers predict preventive behaviour. The correlation coefficient (r = 0.68) demonstrates a **high** relationship between perceived barriers and preventive behaviour towards nosocomial infections. Additionally, the coefficient of determination ($R^2 = 0.58$) indicates that **58.9%** of the variance in nosocomial infection prevention was explained by perceived barriers. Therefore, the extent to which perceived barriers predict preventive behaviour among healthcare workers in the Rivers East Senatorial District is considered **high**.

Table 3: Regression analysis on the extent to which cues to actiona predictor of preventive behaviour towards nosocomial infections among healthcare workers in Rivers East Senatorial District

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Decision
1	0.75	0.70	0.70	0.98	**High extent**

Using the guide for interpreting the strength of relationships (0.00–0.19 = very low; 0.20–0.39 = low; 0.40–0.59 = moderate; 0.60–0.79 = high; and 0.80 and above = very high), the results presented in Table 3 show the extent to which cues to action predict preventive behaviour. The correlation coefficient (r = 0.75) indicates a **high** relationship between cues to action and preventive behaviour towards nosocomial infections. Furthermore, the coefficient of determination ($R^2 = 0.70$) reveals that **70.3%** of the variance in nosocomial infection prevention was explained by cues to action. Therefore, the extent to which cues to action serve as a predictor of preventive behaviour among healthcare workers in the Rivers East Senatorial District is considered **high**.

Table 4: Regression analysis on significant relationship between self-efficacy and preventive behaviour towards nosocomial infections among healthcare workers in Rivers East Senatorial District

Model		Sum of Squares	df	Mean Square	F	Sig.	Decision
1	Regression	10135.57	1	10135.57	11807.05	0.00*	**Rejected**
	Residual	949.42	1106	0.85			
	Total	11085.00	1107				

Significant at p < 0.05

Table 4 presents the regression analysis examining the relationship between self-efficacy and preventive behaviour towards nosocomial infections. The findings indicate a statistically significant relationship between self-efficacy and preventive behaviour, as shown by the regression result [F(1,1106) = 11807.05, p < 0.05]. Consequently, the null hypothesis stating that self-efficacy is not a significant predictor of preventive behaviour towards nosocomial infections among healthcare workers in the Rivers East Senatorial District was rejected.

Table 5: Regression analysis on significant relationship between perceived barrier and preventive behaviour towards nosocomial infections among healthcare workers in Rivers East Senatorial District

Model		Sum of Squares	df	Mean Square	F	Sig.	Decision
1	Regression	8749.57	1	8749.57	4143.57	0.00*	**Rejected**
	Residual	2335.42	1106	2.11			
	Total	11085.00	1107				

***Significant at p < 0.05**

Table 5 presents the regression analysis examining the relationship between perceived barriers and preventive behaviour towards nosocomial infections. The findings revealed a statistically significant relationship between perceived barriers and preventive behaviour [F(1,1106) = 4143.57, p < 0.05]. Consequently, the null hypothesis stating that perceived barriers are not a significant predictor of preventive behaviour towards nosocomial infections among healthcare workers in the Rivers East Senatorial District was **rejected**.

Table 6: Regression analysis on significant relationship between cues to actionand preventive behaviour towards nosocomial infections among healthcare workers in Rivers East Senatorial District

Model		Sum of Squares	df	Mean Square	F	Sig.	Decision
1	Regression	10011.61	1	10011.61	10315.78	0.00*	**Rejected**
	Residual	1073.38	1106	0.97			
	Total	11085.00	1107				

Significant at p < 0.05

Table 6 presents the regression analysis examining the relationship between cues to action and preventive behaviour towards nosocomial infections. The results revealed a statistically significant relationship between cues to action and preventive behaviour [F(1,1106) = 10315.78, p < 0.05]. Therefore, the null hypothesis stating that cues to action are not a significant predictor of preventive behaviour towards nosocomial infections among healthcare workers in the Rivers East Senatorial District was rejected.

Discussion of Findings

The study revealed that self-efficacy predicted 61.4% of preventive behaviour towards nosocomial infections (R^2 = 0.61). This outcome is understandable, as healthcare workers with low self-efficacy may feel unable to consistently engage in preventive measures, thereby increasing their risk of exposure. This finding aligns with Alhassan et al. (2021), whose study in Ghana demonstrated a significant relationship between self-efficacy and infection prevention among healthcare workers. Similarly, Agha et al. (2021) reported a significant association between self-efficacy and vaccine uptake among healthcare workers in Nigeria. The similarity may reflect heightened caution when engaging in relatively new preventive measures such as vaccination.

Perceived barriers accounted for 58.9% of the variance in preventive behaviour (R^2 = 0.58), as expected, because workplace obstacles such as a lack of resources or inadequate supportcan hinder individuals' efforts to prevent infections. This finding corroborates Maitanmi et al. (2021), who found perceived barriers to be predictive of preventive practices among health workers in Ogun State, Nigeria. It also aligns with Jian et al. (2020) and Ghadah et al. (2020), whose studies on public perceptions of COVID-19 demonstrated that perceived barriers significantly influenced precautionary behaviour. The consistency across these studies may reflect the influence of perceived susceptibility on individual preventive actions.

Cues to action were the strongest predictor, accounting for 70.3% of preventive behaviour (R^2 = 0.70). This is expected, as cues to action such as reminders, guidelines, and visible preventive measures can effectively trigger protective behaviour. Healthcare workers who encounter clear prompts are more likely to follow infection prevention protocols. This finding is consistent with Eqabi et al. (2022), Agha et al. (2021), Al-Qerem and Jarab (2021), and Ghadah et al. (2020), all of whom reported significant relationships between cues to action and preventive behaviour. The similarity across studies suggests that

visible prompts and motivational triggers play a crucial role in encouraging health-promoting behaviours.

Conclusion

Based on the findings, it can be concluded that preventive behaviour towards nosocomial infections among healthcare workers in Rivers East Senatorial District is influenced by multiple factors. The most prominent predictors include self-efficacy, perceived barriers, cues to action, knowledge of nosocomial infections, social support, safe injection practices, availability and perceived effectiveness of PPE, and regular training. Addressing these factors is essential for improving compliance with infection prevention protocols and safeguarding both healthcare workers and patients.

Recommendations

i. Enhance Self-Efficacy: Healthcare workers should be encouraged to strengthen their self-efficacy by consistently practicing infection prevention measures to protect their own health.
ii. Address Barriers: Primary healthcare management should implement assessment strategies to identify and remove barriers to infection prevention, ensuring optimal compliance among staff.
iii. Promote Cues to Action: Given the strong predictive role of cues to action, healthcare facilities should provide adequate resources and infrastructure to support preventive practices, such as hand hygiene stations with running water, soap, and disposable towels.

References

1. Center for Disease Control and Prevention (2012). *Morbidity and mortality weekly report guideline for hand hygiene in health-care settings recommendations of the healthcare infection control practices*. Centers for Disease Control and Prevention.

2. Centres for Disease Control and Prevention (2016). *Hand hygiene*. CDC.

3. Cheung, J. (2020). *Nosocomial infection*. Elsevier.

4. Corley, A., Hammond, N.E., & Fraser, J.F. (2010). The experiences of health care workers employed in an Australian intensive care unit during the H1N1 influenza pandemic of 2019: a phenomenological study. *International Journal of Nursing Studies, 47,* 577–585.

5. De Perio, M.A., Brueck, S.E., & Mueller, C.A. (2019). Evaluation of 2019 pandemic influenza A (H1N1) exposures and illness among physicians in training. *American Journal of Infection Control, 40,* 617–621.

6. Edeghere, O., Fowler, T., & Wilson, F. (2015). Knowledge, attitudes, experience and behaviour of frontline health care workers during the early phase of 2019 influenza A(H1N1) pandemic, Birmingham, UK. *Journal Health Service Research Policy, 20,* 26–30.

7. Eqabi, Q.A.K., Ibraheem, S.A.H., & Qassab, T.M. (2022). Assessment of preventive measures among health care workers regarding nosocomial infections in Kut City hospitals. http://doi.org/10.4108/eai.7-9-2021.2314879.

8. Garbuja, C.K., Samikshya, K., &Rana, M.S. (2019). Perceived barriers to adherence to standard precautions among healthcare personnel working in a teaching Hospital of Palpa District, Nepal. *Journal of Lumbini Medical College, 7*(2), 100–106.

9. Haile, T.G., Engeda, E.H. & Abdo, A.A. (2017). Compliance with standard precautions and associated factors among healthcare workers in Gonder University Comprehensive Specialized Hospital, Northwest Ethiopa. *Journal of Environmental and Public Health, 1*(1), 1-8.

10. Hanmore, E., Maclaine, G., Garin, F., Alonso, A., Leroy, N., & Ruff, L. (2013). Economic benefits of safety-engineered sharp devices in Belgium-a budget impact model. *BioMedical Central Health Service Research, 13*, 489-493.

11. Hu, X., Zhang, Z., & Li, N. (2012). Self-Reported use of personal protective equipment among Chinese critical care clinicians during 2019 H1N1 influenza pandemic. *PLoS One, 7,* e44723. https://doi.org/10.1371/journal.pone.0044723

12. Iliyasu, G., Dayyab, F. M., Habib, Z. G., Tiamiyu, A. B., Abubakar, S., Mijinyawa, M. S., & Habib, A. G. (2016). Knowledge and practices of infection control among healthcare workers in a Tertiary Referral Center in North-Western Nigeria. *Annals of African Medicine, 15*(1), 34-40.

13. Jeong, H.S., Lee, D.W., & Youn, C.H. (2011). Perception and performance of preventive behaviors for the pandemic influenza in hospital employees and outpatients. *Yonsei Medical Journal,52,* 181–187. https://doi.org/10.3349/ymj.2011.52.1.181

14. Kang, E., & Kim, Y. (2017). Factors influencing the patient safety culture in Korea's long-term care hospitals. *Journal of Patient Safety, 13*(4), 202-207.

15. Khalid, I., Khalid, T.J., & Qabajah, M.R. (2016). Healthcare workers emotions, perceived stressors and coping strategies during a MERS-CoV outbreak.

Clinical Medical Research, 14, 7–14. https://doi.org/10.3121/cmr.2016.1303

16. Khan, H. A., Baig, F. K., & Mehboob, R. (2017). Nosocomial infections: epidemiology, prevention, control and surveillance. *Asian Pacific Journal of Tropical Biomedicine*, *5*(7), 478–482.

17. Kim, J.S., & Choi, J.S. (2016). Middle East respiratory syndrome-related knowledge, preventive behaviours and risk perception among nursing students during outbreak. *Journal of Clinical Nursing, 25*, 2542–2549. https://doi.org/10.1111/jocn.13295

18. Lee, S.S., Park, S.J., Chung, M.J., Lee, J.H., Kang, H.J., & Lee, J.A. (2014). Improved hand hygiene compliance is associated with the change of perception toward hand hygiene among medical personnel. *Infection and Chemotherapy, 46*, 165–171.

19. Mahdizadeh, SM., Sany, S.B.T., Sarpooshi, D.R., Jafari, A., & Mahdizadeh, M. (2021). Predictors of preventive behavior of nosocomial infections in nursing staff: a structural equation model based on the social cognitive theory. *BMC Health Serv Res* 21, 1187 (2021). https://doi.org/10.1186/s12913-021-07205-6

20. Maitanmi, J.O., Anise, I., Maitanmi, O.T., Okwuikpo, M.I., & Leslie, T.A. (2021). Preventive practices of nosocomial infections among health workers in two selected tertiary hospitals in Ogun State, Nigeria. *Bayero Journal of Nursing and Health Care, 3*(1), 737-747.

21. Mbim, E.N., Mboto, C.I., & Agbo, B.E. (2016). A Review of nosocomial infections in sub-Saharan Africa. *British Microbiology Research Journal, 15*(1), 1-11

22. Mitchell, R., Ogunremi, T., & Astrakianakis, G. (2012). Impact of the 2019 influenza A (H1N1) pandemic on Canadian health care workers: a survey on vaccination, illness, absenteeism, and personal protective equipment. *American Journal of Infection Control, 40*, 611–616. https://doi.org/10.1016/j.ajic.2012.01.011

23. Njovu, E. (2015). Factors affecting compliance to infection prevention and control by nurses in Ndola Copperbelt, Zambia. https://doi.org/10.21522/TIJNR.2015.02.02.Art007

24. Pranita D, Mediawati AS, Mirwanti R. Perceived Barriers toward Standard Precautions Implementations among Nurses in the Emergency Department. J Nurs Care. 2019;2(3):178-192.

25. Rosenberg A. Hand Hygiene Barriers faced byHealth Care Workers in The Gambia:: A Health Belief Model Approach; 2016.

26. Sarani, H., Balouchi, A., Masinaeinezhad, N., & Ebrahimitabs, E. (2014). Knowledge, attitude and practice of nurses about standard precautions for nosocomial infection in teaching hospitals affiliated to Zabol University of Medical Sciences. *Global Journal of Health Science*, *8*(3), 193-198.

27. Shahida, S.M., Anisul, I., Bimalangshu, R.D., Ferdousi, I., Kartik, V., & Annekathryn, G. (2016). Hospital acquired infections in low and middle income countries: Root cause analysis and the development if infection control practices in Bangladesh. *Open Journal of Obstetrics and Gynaecology*, *6*(1), 28-39.

28. Shinde, M.B. & Mohite, V. (2014). A study to assess knowledge, attitude and practices of five moments of hand hygiene among nursing staff and students at a tertiary care hospital at Karad. *International Journal of Science and Research*, *3*(2), 311-321.

29. Sim, S.W., Moey, K.S.P., & Tan, N.C. (2014). The use of facemasks to prevent respiratory infection: a literature review in the context of the health belief model. *Singapore Medical Journal,55*, 160–7. https://doi.org/10.11622/smedj.2014037

30. Tariku, G.H., Eshetu, H.E. & Abdella, A.A. (2017). Compliance with standard precautions and associated factors among healthcare workers in Gondar university comprehensive specialized Hospital, Northwest Ethiopia. *Journal of Environmental and Public Health*, *1*(1), 1-8

31. Vinck, L., Isken, L., & Hooiveld, M. (2011). Impact of the 2019 influenza A(H1N1) pandemic on public health workers in the Netherlands. *European Surveillance, 16*, 19793. https://doi.org/10.2807/ese.16.07.19793-en

32. Webster, R.K., Brooks, S.K., & Smith, L.E. (2020). How to improve adherence with quarantine: rapid review of the evidence. *Public Health*, *182*, 163–169.

33. World Health Organization (2010). *Report on the burden of endemic health care-associated infection worldwide.* WHO.

34. World Health Organization (2014). Handwashing. WHO.

35. World Health Organization (2019). *Healthcare-associated infections*. WHO.

36. Mehta, S.D., & Seeley, J. (2020). *Grand challenges in adolescent sexual and reproductive health.* Frontiers in Reproductive Health

37. Alhassan, A., Fuseini, A., Osman, W., & Adam, A. B. (2019). Knowledge and Experience of
a. Neonatal Resuscitation among Midwives in Tamale. *Nursing Research and Practice, 2019*, 1–8. https://doi.org/10.1155/2019/3652608

38. Agha, S. (2016). The determinants of infant mortality in Pakistan. *Social Science and Medicine 51*(4), 199-208.

39. Al-Qerem, W. A., & Jarab, A. S. (2021). COVID-19 vaccination acceptance and its associated factors among a middle eastern population. *Frontiers in Public Health,* https://doi.org/10.3389/fpubh.2021.632914.