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FACTORS INFLUENCING THE UTILIZATION OF INFECTION PREVENTION AND CONTROL MEASURES (IPCM) AMONG NURSES IN SOME SELECTED STATE HOSPITALS IN LAGOS STATE, NIGERIA

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ABSTRACT: *This study investigated the factors influencing the utilization of infection prevention and control strategies (IPCM) among nurses in some selected state hospitals in Lagos State. It adopts a descriptive cross-sectional research design using multistage sampling technique to recruit 158 nurses. Self-structured questionnaire with reliability index of 0.79 was used for data collection. Obtained data was analyzed using descriptive and inferential statistics. Findings revealed that 84.8% of respondents used IPCM while 15.2% didn't use this. The factors reported by respondents to influence utilization of IPCM include; attitude of nurses (p=0.001), unavailability of personal protective equipment (p=0.009), poor knowledge about IPCM (p=0.034), prompt supervision by hospital's infection control committee (p= 0.022), accessibility of materials for infection prevention and control (p= 0.042), frequent trainings on infection prevention and control procedures (p= 0.036) while year of practice (p=0.645) and Qualification (p= 1.000) does not have influence on utilization of IPCM .Majority in this study use IPCM but few do not make use of it which can cause fatal consequences. Hospitals should set up infection control committee to train and enforce safe practices among nurses and hospital management should also ensure availability accessibility of personal protective equipment to health care workers for safe practice.*

KEYWORDS: factors, infection prevention, infection control, nurses, utilization,

INTRODUCTION

One of the global public health agenda is infections associated with health care (Desta et al., 2018) as hospital related infection is becoming a momentous threat (Burnnet, 2020). Infection can occurs when microorganism such as bacteria, viruses, fungi and so on enters human body to create havoc (World Health Organisation WHO, 2016). Infection prevention is a process of placing a barricade between susceptible host and the microorganisms. It can also be refer to the sum total of all activities aim targeted towards reducing the risk of transferring infectious diseases in an health institution (Hussen et al., 2017). Also, WHO (2017) also defined Infection prevention and control (IPC) as "a scientific approach and practical solution designed to prevent harm caused by infection to patients and health workers"

Health care-associated infections (HCAIs) are "infections that occur while receiving health care, developed in a hospital or other health care facility that first appear 48 hours or more after hospital admission, or within 30 days after having received health care" (Haque et al., 2018). Hospital-acquired infections affect millions of patients worldwide each year and result in massive preventable healthcare costs. When health workers violate the rules of infection prevention and control, microorganisms that lie on surfaces and hands may thrive and cause catastrophies in health institutions.Yacob et al., 2015; Jayasre & Afzai, (2019).

According to Hopmans, Blok, Troelstra, & Bonten (2017), more than 1.4 million people worldwide are suffering from infections acquired in hospitals. About 5% -10% patients acquire one or more infections in health care setting worldwide. Also, developing countries was reported to have higher risk of contracting nosocomial infection as compared with developed countries. Nosochomial infection is responsible for 7% in developed countries as compared with 10% in developing countries (Khan, et al., 2017). In addition, one out of ten patients when seeking for treatments gets infected but if appropriate infection prevention and control measures are used in health institution, health care associated infection can subside by 30% (WHO, 2017)

Infection prevention strategy include measures like hand hygiene, respiratory hygiene (cough etiquette), use of personal protective equipment (aprons), injection safety practices, correct medication storage and handling, as well as correct cleaning and disinfection of devices and environmental surfaces. By implementing these measures, the transmission of infection is disrupted in several ways and most patient deaths and suffering attributable to health care-associated infections can be prevented through the use of low-cost and simple practices that are available prevent these infections (WHO, 2017; Khan et al., 2017).

Noncompliance with infection prevention and control measures increases transfer of infections from patients to another patients, to visitors who will spread it to environment outside hospital and also health workers and this can increases infection related morbidity and mortality (iliyasu et al., 2016; Salem, 2019) and coupling with the fact that nowadays, treating infections is becoming severe as most microorganisms are resistance to Antibiotics (Burnett, 2020).WHO (2017) reported that more than half surgical site infection can be anti-resistance against antibiotics. Hence to improve clinical practice, nurses must be involved in infection control (Dekker et al., 2019) .To

ward off infections in hospitals, it is important to conform to infection prevention and control measures (Nofal et al., 2017) and Nurses have to plays a fundamental role in it (Rebmann, (2017) because nurses spend most time with individual, groups and families at different times, performing both invasive and non-invasive procedures hence utilizing infection prevention and control measures is important for patients safety, the surroundings in which patients are nursed must be free from infections (Osuala & Oluwatosin, 2017; Batista, Leite, Oliveira, De Medeiros & De Souza TA 2018).

The benefits of applying infection prevention strategy in patient care include protecting healthcare workers and patients from exposure to infections, supporting cost-effective care, and better patient care outcomes (Haile et al., 2017) and the most effective ways to break this chain of infection is correctly applying infection control measures in the form of Standard Precautions which kills the micro-organism, alter the environment in which the microorganism thrives or influence the spread of microorganisms from one person to another. (Ali et al., 2018).

In spite of the effectiveness of standard precautions, the reality shows us a very low compliance with these measures (Yakob et al., 2015**).** Nurses in developing countries have been reported to have higher knowledge, perceived risk susceptibility level but have demonstrated poor practice of infection control measures (Parmeggiani, Abbate, Marinelli, & Angelillo, 2016; Efstathiou, Papastavrou, Raftopoulos, & Merkouris, 2017). Therefore, this study sets out to assess the contextual factors that influence utilization of infection prevention and control measures among nurses in some selected government owned hospitals in Lagos State.

Objectives of the study

The objective of this study is to assess the factors influencing the utilization of infection prevention and control strategies (IPCS) among nurses in some selected state hospitals in Lagos State.

METHOD

Research design

A descriptive cross sectional design using quantitative method was adopted.

Research setting

The study setting was Lagos state Nigeria. Lagos is a state in the southwestern geopolitical zone of Nigeria. The state houses a lot of tertiary institutions and health facilities. In this study, Alimosho and Isolo General Hospitals in Lagos was used.Alimosho General Hospital which is also Teaching Hospital is fully fixed with competent Doctors and Nurses who are diligent and committed to their duties at all time. The hospital houses 80-bed Trauma and Burns Centre, and Combined Clinics and Wards. It has about 480 bed spaces and 130 nurses. Isolo General hospital is owned by the Lagos state government, built to provide premium healthcare services to the people of Isolo in Lagos. The hospital is fully equipped with medical facilities to provide care in all fields of internal medicine and an intensive care unit for babies with state of the art incubators. It has about 400 beds and 126 nurses.

Target population
The target population is nurses working in Alimosho and Isolo General Hospitals in Lagos.

Sampling and sampling technique
A multi stage sampling technique was used for this study. Firstly**,** the state was divided into clusters based on divisions as follows; Ikeja division, Lagos division, and Ikorodu division. From these one was randomly selected using lucky dip method and that was Ikeja division. Secondly, this division was further broken down based on the hospital in the setting and the following hospitals were randomly selected; General hospital Alimosho and General hospital Isolo. Thirdly, to select the calculated number of nurses from each of the hospital, a convenient sampling technique was used to select 158 respondents after determining the sample size using Cochran,s formular . This was applied because not all nurses were on duty at same time, hence, only those present during the time of data collection were allowed to participate in the study.

Instrument for data collection
A self-developed questionnaire was used as instrument for data collection. it was designed from extensive review of literature and in line with the objective of the study.

Validity of instrument
The instrument was carefully constructed after reviewing relevant literature. The validity of the instrument was established by face and content validity criteria. The face and content validity was done with input from expert in the field. The corrections were effected before administering the instruments to the respondents.

Reliability of instrument
As a measure to ensure that the research instrument measures exactly what it is designed to measure, a pilot study was carried out among 16 nurses in General Hospital Gbagada, Lagos state. Reliability index of the instrument was done using bivariate regression which was found to be 0.79.

Data collection procedure
Preliminary visits were made to take permission from ethical committee of the selected hospitals to collect data. After obtaining ethical clearance, rapport was established with the participants. The objective of the study was explained to them and informed consent was signed after which a self-structured questionnaire was used to collect data from the respondents. Same was administered by two research assistants and the principal investigators and it was retrieved after the respondents filled the questionnaires.

Data analysis procedure
All data collected was encoded and subjected to computer analysis using statistical product and service solution (SPSS, version 24). Descriptive and inferential statistics was used to test the Hypotheses and results were presented in tables.

Ethical consideration

Ethical approval for this study was sought from study areas from the ethical review committee of the hospitals. Verbal and written consent was obtained from respondents Confidentiality, anonymity and respect for human dignity was considered during and after collection of data. They were explained to that they are free to withdraw at any stage of the study and that it will not have any negative impact on them.

RESULTS

Socio demographic variables

Table 1: Socio demographic characteristics of nurses in some selected state hospitals in Lagos state

Variables	**Frequency**	**Percentage (%)**
Age (years)		
20-29	50	31.6
30-39	56	35.4
40-49	38	24.1
50-59	14	8.9
Total	**158**	**100.0**
Gender		
Male	41	25.9
Female	117	74.1
Total	**158**	**100.0**
Religion		
Christianity	97	61.4
Islam	61	38.6
Traditional religion	0	0
Total	**158**	**100.0**
Marital status		
Single	38	24.1
Married	110	69.6
Divorced	2	1.3
Widowed	8	5.1
Total	**158**	**100.0**
Educational Qualification		
Diploma	86	54.4
BSc	72	45.6
Total	**158**	**100.0**
Tribe		
Yoruba	97	61.4
Igbo	21	13.3
Others	40	25.3

Total	**158**	**100.0**
Unit/Ward		
Medical ward	40	25.3
Surgical ward	43	27.2
Theatre	14	8.9
ICU	4	2.5
OPD	26	16.5
Maternity/labour	31	19.6
Total	**158**	**100.0**
Years of experience		
1-5	42	26.6
6-10	78	49.4
11-15	22	13.9
16 and above	16	10.1
Total	**158**	**100.0**

In the above table, majority of respondents are 30-39years of age (35.9%) and 20-29years of age (31.6%) while 8.9% are of ages 50-59years. 74.1% of respondents are females while 25.9% are males, 61.4% of respondents are Christians while 38.6% are Muslims, 69.6% are married while 1.3% are divorced. Most respondents (54.4%) have attained diploma degree while 45.6% have attained BSc degree in Nursing. Majority of respondents are from Yoruba tribe (61.4%) while 13.3% are from Igbo tribe, 27.2% of respondents are from the surgical wards while 2.5% are from ICU department. 49.4% have 5-10years of experience while 10.1% of respondent have more than 15years of experience.

Table 2: showing utilization of infection prevention and control strategies by Nurses

S/N	Variables	Yes	No
	Do use always utilize infection prevention and control Strategies?	84.8%	15.2

The above table shows that few respondents do not utilize infection prevention and control strategies

Table 3: Showing Factors influencing utilization of infection prevention and control strategies among nurses in some selected state hospitals in Lagos state

	Yes		**No**		**Coefficient of logistic regression**	
Factors	**Freq.**	**%**	**Freq.**	**%**	**Sig.**	**Exp.(B)**
Attitude of nurses towards infection prevention and control	141	89.2	17	10.8	**0.001**	5.853
Unavailability of personal protective equipment influences practicing infection prevention	139	88.0	19	12.0	**0.009**	3.720
Poor knowledge on infection prevention and control strategies	122	76.6	36	23.4	**0.034**	11.473
Prompt supervision by infection control committee of the hospital	121	76.6	37	23.4	**0.022**	2.512
Accessibility of materials for infection prevention and control	101	63.9	57	36.1	**0.042**	0.095
Frequent trainings on infection prevention and control procedures	89	56.3	69	43.7	**0.036**	2.001
Hospital policy not encouraging practicing infection prevention and control strategies	72	45.6	86	54.4	0.071	25.182
Years of practice influences my practice in infection prevention and control strategies	67	42.4	91	57.6	0.645	0.616
Emergency situations often influences my implementation of infection prevention and control strategies	64	40.5	94	59.5	0.570	2.149
Qualifications influences implementation of infection prevention and control strategies	47	29.7	111	70.3	1.000	6.281

From the above table, analysis of the factors that influence utilization of infection prevention and control revealed that majority agreed that the following influence the utilization of infection prevention and control strategies: attitude of nurses towards infection prevention and control (89.2%), unavailability of personal protective equipment (88.0%), poor knowledge about infection prevention and control strategies (76.6%), prompt supervision by infection control committee of the hospital (76.6%), accessibility of materials for infection prevention and control (63.9%), frequent trainings on infection prevention and control procedures (56.3%) why majority disagreed to the fact that hospital policy (54.3%), years of practice (57.6% said No), emergency situations (59.5%) and qualifications of nurse (70.3%) does not influence utilization of infection prevention and control measures. The P-value of logistic regressions shows only year of experience, emergency situation and qualification as variables that does not have influence on utilization of IPCM, others has a significant in utilization of IPCM

DISCUSSION OF FINDINGS

Socio-demographic characteristics

From Table 1 majority of respondents are 30-39years of age (35.9%) and 20-29years of age (31.6%) while 8.9% are of ages 50-59years. This finding was expected because this age group represents the peak working age group in most typical civil service setting within and outside the country. Christianity is the dominant religion in the south-western part of Nigeria as opposed to that seen in the northern part and this can be attributed to the wide spread and acceptance of Christianity in this region. This was seen in the current study as 61.4% of respondents are Christians while 38.6% are Muslims. 74.1% of respondents are females while 25.9% are males. This was expected and it depict the general belief that nursing is a female dominated profession however, the 25.9% male is a finding that offers hope that in the nearest future, more males will venture into the nursing profession. Considering the age group and the female dominance in this study, most respondents are expected to be married. This was so as, 69.6% are married while 1.3% are divorced. Most respondents (54.4%) have attained diploma degree while 45.6% have attained BSc degree in Nursing. This shows that graduate nursing are increasingly flooding the clinical areas and those nurses in the clinical areas that previously don't have nursing degrees are going for their nursing degrees and in the nearest future, graduate nurses are bound to dominate the clinical areas. Majority of respondents are from Yoruba tribe (61.4%) while 13.3% are from Igbo tribe. This was also expected considering the fact that the research settings are located in a Yoruba dominated settlement in the country. 27.2% of respondents are from the surgical wards while 2.5% are from ICU department. 49.4% have 5-10years of experience while 10.1% of respondent have more than 15years of experience.

In the current study, Table 2 shows that 84.8% of respondents indicated the use of infection prevention and control strategies in their practice while 15.2% didn't use this. A contrasting finding was observed in a 2018 study by Bekele et al., (2018) that 148 (64%) of nurses were good in Practice (able to answered >50% of Practice questions) and 83 (36%) of nurses have less practice(able to answer <50% of practice question).

From the table 3, poor knowledge about infection prevention and control strategies influences utilization of infection prevention and control strategies (76.6% yes while 23.4% indicated No). Logistic regression shows that when with increasing knowledge about IPCS, there is an increase in utilization of infection prevention and control strategies ($p=0.034$). contrasting observation was also seen in the study by Irene, Chinyere and Gobir (2019), where it was documented that Compliance with Standard Precautions is not associated with knowledge of SPs . The outcome of this study however goes in line with the studies of Osuala and Oluwatosin (2017) that observed a relationship between nurses' knowledge on infection prevention and control strategies. Also, the study by Bekele, Yimam and Akele (2018) observed that there was a relationship between knowledge on infection prevention and control strategies and utilization of infection prevention and control strategies.

Also, unavailability of personal protective equipment influences utilization of infection prevention and control strategies (88.0% said yes while 12.05 said No). Logistic regression shows that when there is availability of equipment, there is an increase in utilization of infection prevention and control strategies (p=0.009). In line with this finding was that observed in the study by Njovu (2019) where the key factors identified to hinder the practice of infection control and prevention effectively was non-availability of equipment.. The findings of Robinson-Bassey and Onyeabara (2016) was similar to that seen in this study as the factors affecting utilization of infection prevention and control include non-availability of relevant equipment. In line with this finding was that observed in a study by Bekele, Yimam and Akele (2018) where there was a significant association between unavailability of equipment and utilization of infection control practice. Also in line with the finding of the study was that observed by (Fashafsheh et al., 2015 & Destac et al., 2018) where there was a relationship between unavailability of equipment and Nurses utilization of infection prevention and control strategies

In addition in this study, Logistic regression shows no relationship between year of practice and utilization of infection prevention and control measures (p=0.645). This finding was against the findings of Njovu (2019) & Destac et al. (2018) where the years of practice had statistical influence on their practice of infection prevention and control strategies. In consonance with this observation was also the finding of a study by Bekele et al., (2018) where there was a significant association between experience of nurses and practice of infection prevention and control strategies($p<0.05$). Brisibe, Ordinioha and Gbeneolol (2014) observed a similar finding as there is a relationship between years of experience of nurses and utilization of infection prevention and control strategies. The outcome of this study also shows that frequent trainings on infection prevention and control procedures influences utilization of infection prevention and control strategies (56.3% said yes while 43.7% said No). Logistic regression shows that nurses who have been trained on IPCS were more likely to utilize infection prevention and control strategies (p=0.036). In line with this finding was that observed in the study by Njovu (2019) that identified lack of training as an hindrances to use of infection prevention and control measures, also, Destac et al. 2018 & Haile et al., 2017.
More so, attitude of nurses towards infection prevention and control influences utilization of infection prevention and control (89.2% said yes while 10.8% said no). Logistic regression shows that with increasing positive attitude, there is an increase in utilization of infection prevention and control (p=0.001). Njovu (2019) also identified poor attitude as factors identified to hinder the practice of infection control and prevention effectively.

It was also observed from this study that supervision by infection control committee of the hospital influences utilization of infection prevention and control strategies (76.6% yes while 23.4% replied No). Logistic regression shows nurses who had exposures to supervision from Infection control units were more likely to utilize infection prevention and control strategies (p=0.022). In agreement with this finding was those observed in the studies by Brisibe, et al., (2014) & Fashafsheh, et al, (2015), where supervision by infection control unit influenced nurses' practice of infection control.

This study also shows there is no relationship between Qualification (p=1.000), year of practice (p=0.645) and utilization of infection prevention and control strategies . this goes in line with the

findings of Hussen et al., (2017) reported educational status , work experience and job title having no significant association with infection prevention practice

CONCLUSION

The strict implementation of infection prevention and control strategies is the primary measure for the prevention of infections both in healthcare professionals and in patients. Therefore, nurses need to be compliant with infection prevention and control strategies and this will help keep them safe and those they attend to safe, they should be encourage to attend seminars, workshops and educational programs bothering on infection prevention and control to improve their knowledge about infection prevention and control and also nurses should be encourage and educated to maintain a positive attitude towards infection prevention and control and take it as a priority.

Recommendation

Based on the findings of the study, it is recommended that

- Hospital and health care institutions should develop policies that will promote infection control and prevention practices among all workers in the hospital
- Hospital management should set up infection control committee to train and enforce safe practices among nurses and other health workers and should ensure at all times that equipment for effective practice of infection prevention and controls are readily available and accessible
- Government and other employer should from time to time engaged their employee (nurses) in training that will help update their knowledge on safe practices in the hospital

CONCLUSION

Based on the findings of this study, nurses need to be compliant with infection prevention and control strategies and this will help keep them safe and those they attend to safe, they should be encourage to attend seminars, workshops and educational programs bothering on infection prevention and control to improve their knowledge about infection prevention and control and also nurses should be encourage and educated to maintain a positive attitude towards infection prevention and control and take it as a priority. Finally nurses should imbibe the culture of sensitivity to infection control and prevention practices and not necessarily waiting for supervision team to enforce these practices on them.

REFERENCES

Ali, S., Birhane, M., Bekele, S., Kibru, G., Teshager, L., Yilma, Y., Ahmed, Y., Fentahun, N., Assefa, H., Gashaw, M., &Gudina, E.K. (2018). Healthcare-associated infection and its risk factors among patients admitted to a tertiary hospital in Ethiopia: Longitudinal study. Antimicrobial Resistance and Infection Control, doi: 10.1186/s13756-017-0298-5. 7:2.

Batista J.R., Leite, K.N., Oliveira, S. X., De Medeiros, R.C., De Souza, T.A., de Lima, M.M. (2017). Knowledge of the nursing team in the main types of hospital. Infections.J Nurs UFPE online, Recife, 2017;11:4946-4952

Bekele I, Yimam I, Akele G (2018). Adherence to Infection Prevention and Factors among Nurses in Jimma University Medical Center. Immunome Res 14: 156.

Brisibe, S., Ordinioha, B., Gbeneolol, P. K. (2014). Knowledge, attitude, and infection control practices of two tertiary hospitals in Port-Harcourt, Nigeria .Niger J Clin Pract;17:691-5

Burnett, E. (2020). Effective infection prevention and control: The nurse's role. Nursing Standard, 35(5). https://doi.org/10.7748/ns.2018.e11171

Dekker, M., Jongerden, I. P., van Mansfeld, R., Ket, J. C. F., van der Werff, S. D., Vandenbroucke-Grauls, C. M. J. E., & de Bruijne, M. C. (2019). Infection control link nurses in acute care hospitals: A scoping review. Antimicrobial Resistance & Infection Control, 8(1), 20. https://doi.org/10.1186/s13756-019-0476-8

Desta, M., Ayenew, T., Sitotaw, N., Tegegne, N., Dires, M., & Getie, M. (2018). Knowledge, practice and associated factors of infection prevention among healthcare workers in Debre Markos referral hospital, Northwest Ethiopia. BMC Health Services Research, 18(1), 465. https://doi.org/10.1186/s12913-018-3277-5

Efstathiou, G., Papastavrou, E., Raftopoulos, V. & Merkouris, A. (2011).Factors influencing nurses' compliance with Standard Precautions in order to avoid occupational exposure to microorganisms. BioMed Central Ltd.

Fashafsheh, A, Ayed A, Eqtait F and Harazneh L(2015). Knowledge and Practice of Nursing Staff towards Infection Control Measures in the Palestinian Hospitals. Journal of Education and Practice, 6(4): 79

Haile, T. G., Engeda, E. H., & Abdo, A. A. (2017). Compliance with Standard Precautions and Associated Factors among Healthcare Workers in Gondar University Comprehensive Specialized Hospital, Northwest Ethiopia [Research Article]. Journal of Environmental and Public Health; Hindawi. https://doi.org/10.1155/2017/2050635

Haque, M., Sartelli, M., McKimm, J., & Abu Bakar, M. (2018). Health care-associated infections – an overview. Infection and Drug Resistance, 11, 2321–2333. https://doi.org/10.2147/IDR.S177247

Hopmans, T.E., Blok, H.M., Troelstra, A., & Bonten, M.M. (2017). Prevalence of hospital-acquired infections during successive surveillance surveys conducted at a university hospital in the Netherlands. Journal of Infection Control & Hospital Epidemiology, 28(4), 459-465.

Hussen, S.H., Estifanos, W.M., Melese, E. S., Moga, F. E. (2017) Knowledge, Attitude and Practice of Infection Prevention Measures among Health Care Workers in Wolaitta Sodo Otona Teaching and Referral Hospital. J Nurs Care 6: 416. doi:10.4172/2167-1168.1000416

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. https://doi.org/10.4103/1596-3519.161724

Irene E, Chinyere O and Gobir A. (2019). Factors Affecting Compliance with Standard Precautions among Healthcare Workers in Public Hospitals Abuja, Nigeria.

Jayasre, T. & Afzai, M. (2019). Implementation of infection control practices to manage hospital acquired infection. Jouranal of pure and applied Microbiology, Vol 13 (1). Pg 591-597

Khan, H. A., Baig, F. K., & Mehboob, R. (2017). Nosocomial infections: Epidemiology, prevention, control and surveillance. Asian Pacific Journal of Tropical Biomedicine, 7(5), 478–482. https://doi.org/10.1016/j.apjtb.2017.01.019

Njovu, E. (2019). Factors affecting Compliance to Infection Prevention and Control guidelines, by Nurses at St. Dominic Mission Hospital, Ndola Copperbelt, Zambia. Journal of Hospital Infection, 73: 378-385.

Nofal, M., Subih, M., & Al-Kalaldeh, M. (2017). Factors influencing compliance to the infection control precautions among nurses and physicians in Jordan: A cross-sectional study. Journal of Infection Prevention, 18(4), 182. https://doi.org/10.1177/1757177417693676

Osuala, E. O., & Oluwatosin, O. A. (2017). Infection control by nurses in selected hospitals in Anambra State, Nigeria. Trop J Med Res, 20, 53–60.

Parmeggiani, C., Abbate, R., Marinelli, P., & Angelillo, I. F. (2016). Healthcare workers and health care-associated infections: knowledge, attitudes, and behavior in emergency departments in Italy. BMC infectious diseases, 10(1), 35.

Rebmann, T., Carrico, R., (January 31, 2017) "Consistent Infection Prevention: Vital During Routine and Emerging Infectious Diseases Care" OJIN: The Online Journal of Issues in Nursing Vol. 22, No. 1, Manuscript 1.

Robinson-Bassey, G.C., Onyeabara, C.N. (2016) Infection Prevention and Control Life Saving Skills: Practice among Midwives in University of Port Harcourt Teaching Hospital Rivers State. Obstet Gynecol Int J 4(4): 00119.

Salem, O. A. (2019). Knowledge and Practices of Nurses in Infection Prevention and Control within a Tertiary Care Hospital. Annals of Medical and Health Sciences Research. https://www.amhsr.org/abstract/knowledge-and-practices-of-nurses-in-infection-prevention-and-control-within-a-tertiary-care-hospital-5078.html

WHO. The burden of health care-associated infection worldwide. 2016 [Online] Available from: http://www.who.int/gpsc/country_ work/burden_hcai/en/ [Accessed on, 27/11/2019]

World Health Organization (2017). Infection Control. Retrieved January, 26th, 2020, from http://www.who.int/topics/infection_control/en/www.rcht.nhs.uk/…...../RoyalCornwallHospitalsTrust/.../InfectionPreventionAndControl/...

Yacob, E., Y., Abota, T., & Henok, A. (2015). Knowledge, Attitude and Practice towards Infection Control Measures among Mizan-Aman General Hospital Workers, South West Ethiopia. Journal of Community Medicine & Health Education, 05. https://doi.org/10.4172/2161-0711.1000370

Yakob E, Lamaro T, Henok A. Knowledge, Attitude and Practice towards Infect Control Measures among Mizan-Aman General Hospital Workers, South West Ethiopia. J Community Med Health Educ. 2015;5:370.