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KNOWLEDGE, ATTITUDES AND PRACTICES OF NURSES REGARDING INFECTION PREVENTION AND CONTROL IN IMO STATE UNIVERSITY TEACHING HOSPITAL (IMSUTH), ORLU, IMO STATE, NIGERIA

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ABSTRACT

Among health workers, nurses spend the greatest time in care giving setting and they play a crucial role in preventing and controlling transmission of the infection through the application of standard precautions and maintenance of the health care environment. The aim of the study is to assess knowledge, attitudes and practice of nurses regarding infection prevention and control in Imo State University Teaching Hospital (IMSUTH), Orlu, Imo State, Nigeria. The study adopted a cross sectional descriptive design. Stratified and simple random sampling technique was adopted with a sample size of 160 which was determined by the use of Taro Yamane. The nurses were first grouped into different units/wards; then eight units were selected. Using simple random sampling technique, 77.3% of nurses in each unit were sampled excluding those on leave (annual, maternity, casual) and on night duty. A self-developed close ended questionnaire was used. Data were analyzes using descriptive and inferential statistics. The findings revealed that 19.4% and 35.0% of the nurses responded that the hospital always and occasionally supply infection control facilities respectively. Respondents with knowledge level were 64.4%, 59.4% had positive attitudes to infection prevention and control. The study further revealed that 27.5% and 31.2% of the respondents affirmed that they always and occasionally practice infection prevention and control respectively. There exist significant relationship between knowledge and attitude of nurses to infection prevention and control (x^2 = 28.2; P > 0.05), between knowledge and practice of nurses regarding infection prevention and control (x^2 = 60.16; P > 0.05) and between attitude and practice of nurses regarding infection prevention and control (x^2 = 52.44; P > 0.05).

KEYWORDS: *Knowledge, attitude, practice, nurse, infection prevention, control.*

INTRODUCTION

According to World Health Organization (WHO, 2011) infection control is the infection prevention and control measures that aims to ensure the protection of those who might be vulnerable to acquiring an infection both in the general community and in hospitals while receiving care due to health problems. Reports indicate that standard precautions are effective in preventing both occupational exposure incident and associated infection (Admasu, Edward and Limndsay, 2013). The basic principles of infection prevention and control is hygiene (WHO Infection Control, 2011).

Health care associated infection is an infection occurring in a patient during the process of care in a hospital or other healthcare facility which was not present or incubating at the time of admission. This includes infections acquired in the hospital but appearing after discharge and occupational infections among staff of the facility (Benedetta, 2017). Nurses and other healthcare workers can be a source of infection transmission to patients. On the other hand, nurses and other healthcare workers are constantly exposed to pathogenic (disease causing microorganisms). Healthcare providers have on many occasions been exposed to blood borne infections, especially hepatitis B, C and HIV due to recapping of needles and sharps. In 2002, the WHO report published data demonstrating that 2.5% of HIV cases and 40% of hepatitis B and C cases among healthcare workers worldwide are the result of occupational exposure (WHO, 2002).

According to the Joint United Nations Program on HIV/Acquired Immune Deficiency Syndrome (AIDS) about 34 million people are infected with HIV worldwide. An estimated 0.8% of adults aged 15 to 49 years are living with HIV and majority of them live in Asia and Africa (Sousaet al., 2017).

Healthcare infections are considered a major Public Health Concern in both epidemic and endemic form as they are the main causes of morbidity and mortality and economic burden following extended duration of care and excess costs. The endemic burden of healthcare-associated infection is significantly higher in low – and middle – income than in high – income countries, in particular in patients admitted to intensive care units and in neonates (WHO, 2017).

Most healthcare infections are transmitted by healthcare personnel who fail to practice proper hand washing procedures and change of gloves between client contacts. Nursing staff are at a greater risk of acquiring and transmitting pathogens as they have greater contact with patients and relatives more than any other member of the health team.

Health workers knowledge regarding standard precaution is important as studies show that adherence to these safety measures in health institutions may be attributed to the knowledge of the professionals. This is because most hospital based infections are transmitted by healthcare personnel who fail to put into practice standard infection preventive measures such as hand washing procedures, change of gloves between clients contact and adoption of safety practices for handling needle sticks and other sharp objects among others. Compliance with these standard precaution has been shown to reduce the risk of hospital associated infections (Amaran and Onwube, 2013). However, in spite of the effectiveness of these standard precautions, what really shows is very low compliance with these measures (Yakob, Lamaro, Henok, 2015).

It is therefore beneficial for all healthcare personnel to receive formal training on importance of basic infection control practices, such as hand hygiene, standard precautions, risk of needle stick injury, post exposure prophylaxis and cleaning of hospital environment. The Joint Commission on Accreditation of Healthcare Organization (JACO) and the Centre for Disease Control and Prevention (CDC) documented that nurses should follow certain guideline when caring for patients such as wash hands thoroughly after removing gloves and before and after all patients contact, wear gloves when there is a direct contact with blood, don't break or recap needles, discard into puncture – resistant containers and disposal of contaminated items (Smith, Duell, Martin, 2002). It is obvious that routine use of these infection control practices by healthcare personnel can help to reduce the rate of healthcare associated infections in any healthcare set-up.

Hand hygiene is usually the first initial step towards successful infection control in any healthcare set-up. In an infection control program in Geneva hospitals, evidence showed that overall hand hygiene practices when increased from 48% to 66% compliance, hospital acquired infections reduced from 16.9% to 9.9% (Pittet et al., 2000).

A study carried out in Bethesda, USA among healthcare workers reported poor adherence to hand hygiene guideline, (Liata *et al.* (2009). Similar study in Ethiopia reported very low compliance to good hand hygiene (Abdella *et al.*, 2014).

Another study conducted in Nigeria among dental professionals reported inadequate hand washing (Acharya *et al.*, 2013). Nurses play an important role in the prevention and control of hospital based infection since they carry out direct contact with the individual, invasive and potentially contaminated procedures as well as the manipulation of patients equipment, instruments and medications (Centres for Disease Control Guideline for the Prevention of Catheter- Associated Urinary Tract Infection (2011).

It is re-emphasized, however, that the successful application of infection prevention and control strategies is dependent on knowledge, attitude and practice (KAP) of nurses. The emanation of severe infections like Ebola, lassa fever and new coronavirus have reiterated the necessity of efficient control programmes in all hospitals. Nurses should be aware that patient's blood and bodily fluids are hazardousand can result in infection regardless of the patient's state of health.

Therefore, identifying existing infection preventions and control knowledge, attitude and practice (KAP) among nurses is the first step in developing and implementing a successful infection prevention and control among nurses.

MATERIALS AND METHODS

Research Design

A cross sectional descriptive survey design was used to assess knowledge, attitude and practice of infection prevention and control among nurses in Imo State University Teaching Hospital, Orlu, Imo State, Nigeria.

Setting

The study was carried out in different wards/units of Imo State University Teaching Hospital (IMSUTH), Orlu, Nigeria, from 21st October to 29th November, 2019. Orlu is a city in Nigeria which lies on the geographical coordinates of $5^0\ 47^I\ 0^{II}$ North, $7^0\ 2^I\ 0^{II}$ East. Orlu (Igbo: *Ọlụ*) is the third largest city in Southeast Nigeria, Imo State with an estimated population of 220,000. The IMSUTH is a tertiary centre located in Orlu, south eastern Nigeria and a centre of excellence in infectious diseases and immunology. It also serves as a referral site for south eastern states. IMSUTH is the only Tertiary Health Institution owned by Imo State Government and the only Teaching Hospital in the state poised to train the needed medical manpower for the state and country including medical students to become doctors, doctors to

become specialists, training of nurses, house officers and all interns etc.

Study population

The study population was 207 with a sample size of 160which is 77.3% of the population. The sample size was determined by Taro Yamane and were selected through a stratified and simple random sampling techniques. The nurses were first grouped into different units/wards then eight units/wards were selected. Using simple random sampling technique 77.3% of nurses in each unit were sampled excluding those on leave (annual, maternity, casual) and on night duty during the time of study.

Data Collection

A self-developed close ended questionnaire was used which gave a reliability index of 0.87. The questionnaire was arranged in 5 sections; section A comprised of demographic variables, section B comprised of infection control facilities in the hospital/ward/unit, section C comprised of knowledge of infection prevention and control, section D comprised of attitude of nurses towards infection prevention and control while section E comprised of practice of infection prevention and control among nurses in Imo State University Teaching Hospital, Orlu. The 160 copies of the questionnaire were administered on face to face basis by the researchers and all were adequately filled and retrieved thereafter.

Method of Data Analysis

The data were analyzed using descriptive and inferential statistics and presented in tables using frequencies, percentages, mean and chi-square values.

Ethical Approval

Ethical approval was obtained from the ethical committee of the hospital. The respondents gave verbal/oral approval before the questionnaire was given.

RESULTS

Table 1: Demographic Data of the respondents.

Variable	Category	Frequency	Percentage (%)
Age (in years)	Below 30 years	19	11.9
	31- 40 years	63	39.4
	41- 50 years	41	25.6
	51 and above	37	23.1
Gender	Male	3	1.9
	Female	157	98.1
Professional Qualification	Diploma in Nursing	61	38.1
	B.Sc. Nursing	87	54.4
	M.Sc. Nursing	12	7.5
	Ph.D. Nursing	0	0
Years in active service	1-5 years	45	28.1
	6-10 years	57	35.6
	11-15 years	30	18.8
	16-20 years	21	13.1
	21 years and above	7	4.4

A greater percentage fall within the age brackets of 31-50 years (39.4%) and 41-50 years (25.6%). There were more females (98.1%) than male nurses. More than half (54.4%) of the respondents obtained B.Sc. in Nursing Science. Also, 35.6% and 28.1% had been in active service for up to 6-10 years and 1-5 years respectively.

Table 2: Infection control facilities in the hospital.

Statement	Always (%)	Occasionally (%)	Never (%)
Water is available because the taps are running	54 (34.4)	105 (65.6)	0 (0)
Enough sterile disposable gloves are provided	12 (7.5)	61 (38.1)	87 (54.4)
Sterile hand wipes are available for hand cleaning	0 (0)	0 (0)	160 (100)
Aprons are available for appropriate procedures	61 (38.1)	87 (54.4)	12 (7.5)
Incinerators are available for waste disposal	37 (23.1)	87 (54.4)	36 (22.5)
There are functional sterilizers	12 (7.5)	61 (38.1)	87 (54.4)
Adequate supply of sterile dressings and forceps	59 (36.9)	101 (63.1)	0 (0)
Sterilization of equipment by CSSD	101 (63.1)	59 (36.9)	0 (0)
There is written guidelines of waste disposal	0 (0)	0 (0)	160 (100)
There is written guidelines for those who are exposed to HIV, HBV, HCV etc.	0 (0)	0 (0)	160 (100)
Goggles are available	3 (1.9)	51 (31.9)	106 (66.2)
Grand Total	**340**	**612**	**808**
Average/Mean	**31 (19.4)**	**56 (35.0)**	**73 (45.6)**

Infection control facility was found to be inadequate as few (19.4%) affirmed constant supply of infection control facilities; 35.0% and 45.6% opined that the hospital occasionally and never supplied most of the infection control facilities respectively. There were no sterile wipes, no written guidelines for waste disposal and for those exposed to HIV, HBV, and HCV. Supply of enough sterile disposable gloves, functional sterilizers, sterile dressings and forceps, and goggles were all inadequate. There were non-availability of running taps rather they use improvised plastic bucket with taps.

Table 3: Knowledge of infection prevention and control among nurses in IMSUTH.

Statement	Yes (%)	No (%)
To prevent cross infection, best intervention is block exit of organism	89 (55.6)	71 (44.4)
When caring for different patients at a time, the nurse should change gloves	59 (36.1)	101 (63.9)
Use of gloves and face mask are the most effective nursing action for controlling the spread of infection	109 (68.1)	51 (31.9)
In the operating theater, for the field to remain sterile, the sterile items should be 2 inches from the edge of the fields	129 (80.6)	31 (19.4)
Infection control can be achieved through family focus	65 (40.6)	95 (59.4)
Most common contributory factor to nosocomial infection risk is insufficient hand cleaning	111 (69.4)	49 (30.6)
Sterile articles are sterile if held above the waist	77 (48.1)	83 (51.9)
There is no need to recap used needles	45 (28.1)	115 (71.9)
Medical equipment can transmit nosocomial infections	147 (91.9)	13 (8.1)
Perform hand washing after contact with inanimate objects in the immediate vicinity of the patient	160 (100)	0 (0)
Mouth and nose should be covered with tissue when coughing or sneezing	160 (100)	0 (0)
Hand washing should be carried out before and after any direct contact and between patients, whether or not gloves are worn	83 (51.9)	77 (48.1)
Grand Total	**1234**	**686**
Average/Mean	**103 (64.4)**	**57 (35.6)**

Majority (64.4%) of the respondents have knowledge of infection prevention and control. All the respondents had knowledge that health care workers should perform hand washing after contact with inanimate objects in the immediate vicinity of the patient and that mouth and nose should be covered when coughing or sneezing. Majority (91.9% and 80.6%) had knowledge that medical equipment can transmit nosocomial infections and that sterile items should be 2 inches from the edge of the fields especially in the operating theatre.

Table 4: Attitude to infection prevention and control among nurses in IMSUTH.

Statement	SA	A	D	SD	Mean	Remark
Nurses should wear gloves and masks for all procedures	63	41	37	19	2.9	Positive
Hand washing is the key to infection prevention and control	59	36	33	32	2.8	Positive
Nurses with common cold should be excused from duty	18	35	57	50	2.1	Negative
Nurses should wash hands after each contact with a patient even when gloves are used	70	61	21	8	3.2	Positive
Decontamination and sterilization of all equipment and surfaces is important	71	62	24	3	3.3	Positive
Non recapping of used needle is essential	19	30	51	60	2.1	Negative
There is need to change personal protective equipment (PPE) after every contact of one patient to another	20	36	57	47	2.2	Negative
Treat all human tissues and laboratory wastes with specimen as clinical waste	22	38	61	39	2.3	Negative
Wearing gloves does not replace the need for hand washing	70	40	27	23	3.0	Positive
Feeling comfortable asking every patient if they have any symptoms of infection	19	36	59	46	2.2	Negative
Feeling comfortable to tell coughing patients to follow cough hygiene procedures	21	40	58	41	2.3	Negative
Washing hands before and after contact with patients is important	101	34	24	1	3.5	Positive
PPE protect HCWs from infection	103	40	17	0	3.5	Positive
Hospital facilities can be a source of infection without universal precaution	82	35	30	13	3.2	Positive
Nosocomial infection can pose serious outcome	59	57	33	11	3.0	Positive
Grand Total	**797**	**621**	**589**	**398**	**41.6**	
Average/Mean	**53**	**42**	**39**	**26**	**2.8**	**Positive**

Key: SA = Strongly Agree, A = Agree, D = Disagree, and SD = Strongly Disagree

The respondents had a general mean attitudinal score of 2.8. They had positive attitudes to the following statements in order of hierarchy; washing hands before and after contact with patients is important, PPE protect HCWs from infection, decontamination and sterilization of all equipment and surfaces is important, nurses should wash hands after each contact with a patient even when gloves are used etc. They had negative attitudes to the following statements; nurses with common cold should be excused from duty, non-recapping of used needle is essential, there is need to change personal protective equipment (PPE) after every contact of one patient to another etc.

Table 5: Practice towards infection prevention and control among nurses in IMSUTH.

Statement	Always (%)	Occasionally (%)	Never (%)
Use of gloves	87 (54.3)	73 (45.6)	0 (0)
Use of face masks	71 (44.4)	89 (55.6)	0 (0)
Use of goggles	15 (9.4)	70 (43.7)	75 (46.9)
Practice of hand washing hygiene before attending to patient	111 (69.4)	49 (30.6)	0 (0)
Following recommended guidelines for use of alcohol and other antiseptics after lifting and moving patient	13 (8.1)	34 (21.3)	113 (70.6)
Non recapping of used needle	44 (27.5)	47 (29.4)	69 (43.1)
Discard wastes immediately into their container	51 (31.9)	53 (33.1)	56 (35.0)
Removal of rings and bracelets before beginning hand hygiene	49 (30.6)	49 (30.6)	62 (38.8)
Going through written guideline for care of those who are exposed to HIV, HBV, HCV etc.	11 (6.9)	25 (15.6)	124 (77.5)
Application of guidelines on waste disposal	15 (9.4)	23 (14.4)	122 (76.2)
Isolation of patients who are highly contagious diseases	47 (29.4)	80 (50.0)	33 (20.6)
Discarding of sharp materials separately from other wastes	14 (8.7)	12 (7.5)	134 (83.8)
Grand Total	**528**	**604**	**788**
Average/Mean	**44 (27.5)**	**50 (31.2)**	**66 (41.3)**

Very few respondents (27.5% and 31.2%) affirmed that they always and occasionally practice infection prevention and control, whereas 41.3% never engaged in any infection prevention and control. Surprisingly, 29.4% and 43.1% occasionally and always recap used needle respectively. Also 83.8% do not discard sharp materials separately from other wastes.

Table 6: Association between knowledge of infection prevent/control and attitude to infection prevention/control.

Knowledge of infection prevention and control	No. Examined N = 160 (%)	Positive attitudes (%)	Negative attitudes (%)
Knowledgeable	103 (64.4)	77 (74.8)	26 (25.2)
Not knowledgeable	57 (35.6)	18 (31.6)	39 (68.4)
Total	**160**	**95 (59.4)**	**65 (40.6)**

$\chi^2 = 28.2$; $P > 0.05$

Table 7: Association between knowledge of infection prevent/control and practices of infection prevention/control.

Extent of Practice	No. Examined N = 160 (%)	Knowledgeable (%)	Not Knowledgeable (%)
Always	44 (27.5)	43 (97.7)	1 (2.3)
Occasionally	50 (31.2)	40 (80.0)	10 (20.0)
Never	66 (41.3)	20 (30.3)	46 (69.7)
Total	**160**	**103 (64.4)**	**57 (35.6)**

$\chi^2 = 60.16$; $P > 0.05$

Table 8: Association between attitudes to infection prevent/control and practices of infection prevention/control.

Extent of Practice	No. Examined N = 160 (%)	Positive attitudes (%)	Negative attitudes (%)
Always	44 (27.5)	41 (93.2)	3 (6.8)
Occasionally	50 (31.2)	36 (72.0)	14 (28.0)
Never	66 (41.3)	18 (27.3)	48 (72.7)
Total	**160**	**95 (59.4)**	**65 (40.6)**

$x^2 = 52.44$; $P > 0.05$

DISCUSSION

The infection control facilities was found to be inadequate as very few (19.4% and 35.0%) of the respondents affirmed that the hospital always and occasionally supply infection control facilities respectively. Major infection control facilities supplied by the hospital are aprons, sterile dressings and forceps, sterilization of equipment by CSSD, incinerator for waste disposal and sterile disposable gloves. The respondents reported that the hospital has no provision for sterile hand wipes, written guideline for waste disposal and for those who are exposed to HIV, HBV, HCV etc. Very few (34.4%) indicated that the hospital regularly/always supply water. This is similar to the findings of another study in Southern Nigeria where about a third of the participants indicated that water was not running in sinks (Bello *et al.*, 2013). Non availability of taps with sensors and automated hand dryers may be attributive to the fact that water supply and electric supply from the government are not regular. This basic infrastructure is vital to infection control measures. Many authors (Ekwere and Okafor, 2013; Admasu *et al.*, 2017) noted that due to lack of power supply, water is sometimes stored in plastic drums, tanks, cans, buckets etc. as a substitute to water supply in most hospitals, homes, offices etc.

Knowledge of infection prevention and control among nurses in IMSUTH

The study revealed an average of 64.4% of the nurses has knowledge of infection prevention and control. Specific knowledge of infection prevention and control among the nurses in order of hierarchy were hand washing after contact with inanimate objects in the immediate vicinity of a patient, covering of mouth and nose with tissue when coughing and sneezing, medical equipment can transmit nosocomial infections, sterile items should be 2 inches from the edge of the fields especially in operating theatres, insufficient hand cleaning is the most common contributory factor to nosocomial infection risk and that use of gloves and face mask are the most effective nursing action for controlling the spread of infection. This finding is similar with findings of Freahiywot, Eshetu & Workie(2015), Kelemua & Gebeyaw (2014); and Amoran & Onwube (2013) which all revealed that their respondents had good knowledge of infection prevention and control.

Attitude to infection prevention and control among nurses in IMSUTH

The study revealed that the nurses had positive attitudes to infection prevention and control with a mean score of 2.8. More than half (59.4%) of the respondents had positive attitudes to most of the given statements e.g. washing hand before and after contact with patients is important, PPE protect HCWs from infection, wearing gloves does not replace the need for hand washing, hand washing should be performed after each contact with patients even when gloves are used, and that decontamination and sterilization of all equipment and surfaces is important. This finding is in line with the finding from health institutions from Bahir Dar City which revealed 55.6% of health care workers had good attitude (Kelemua & Gebeyaw, 2014). This finding is higher when compared with finding from teaching hospital in Zabol by Hamed, Abbas, Nosratollah & Ebrahim (2015) which revealed 33% of HCWs had good attitude to infection prevention and control. This difference may be due to variation in setting of the study and it also may be due to difference in knowledge of HCWs towards infection prevention and control. High compliance to hand washing in this study was similar to the findings of Nobile (2002), where 60% of nurses decontaminate their hands at start of shift and 72.5% before and after contact with patients. The finding of this study is also in line with some Nigerian studies (Ekwere & Okafor, 2013, and Amoran & Onwube), hand hygiene compliance was reported among nurses. Surprisingly, the study revealed that nurses agreed that recapping of used needles is important. This is in line with a study conducted by Admasu and Dagmawit (2019) which revealed that 69.9% of the nurses practice needle recapping. This high rate of recapping shows that the nurses need training on injection safety.

Practice of infection prevention and control among nurses in IMSUTH

The study revealed that generally 27.5% of the nurses always practice infection prevention and control, 31.2% affirmed that they occasionally practice infection prevention and control. This finding from this study is same when compared with the finding from Zabol Teaching Hospital by Hamed *et al.* (2015) which showed 34% of the study participants occasionally practice infection prevention and control. This finding is lower when compared with finding from a study by Kelemua and Gebeyaw (2014) which revealed 87.5% of the study participants had good practice. Also this study is lower when compared with finding from Palestine

Hospital by Imad *et al.* (2015) which revealed 91.1% of the study participants had good practice towards infection prevention and control measures. These variations may be due to differences in sample size, setting and population characteristics. Also, it may be due to this study participants not following recommended infection prevention guidelines.

The study further revealed that all the participants use gloves, face masks and they practice hand washing hygiene. Majority (79.4%) of the nurses isolate patients who have highly contagious diseases from other patients. This is in line with some studies carried out by Luo *et al.* (2010) and Balami *et al.* (2017) whose findings revealed 99.5% and 99.7% compliance to use of glove, face masks and hand hygiene for infection prevention and control. Majority (83.8%) of the participants do not discard sharp materials separately from other wastes. This is in line with study by Sangini *et al.* (2014) which revealed that 81.2% of the participants do not discard sharp materials separately from other wastes. The study further revealed that 43.1% of the nurses still recap used injection needles. This corresponds with the finding of Muralidhar *et al.* (2010) which revealed that almost half (45.2%) of their participants recap used needles. Despite the fact that the respondents practice hand washing hygiene, 38.8% of the nurses do not remove their rings and bracelets before beginning hand washing hygiene. This corresponds with the finding of a study by Sari, Ibrahim and Haroen (2014) which revealed that 44.1% of the study participants do not care to remove their rings before beginning hand washing hygiene. The findings on the participants practice towards infection prevention and control calls for intense training of nurses on the need to adhere to good practice of infection prevention and control.

Association between knowledge, attitude and practice towards infection prevention and control

The study revealed that there exist significant relationship between knowledge and attitude of nurses to infection prevention and control (x^2 = 28.2; P > 0.05) and between knowledge and practice towards infection prevention and control (x^2 = 60.16; P > 0.05). This is in line with a study by Lobo *et al.* (2019) which revealed a significant correlation between participants' knowledge and attitude and also between knowledge and practice towards infection prevention and control. The study further revealed a significant relationship between attitude and practice towards infection prevention and control (x^2 = 52.44; P > 0.05). This finding corresponds with the finding of Sangini *et al.* (2014) which revealed a significant association between attitude of participants and their practice towards infection prevention and control.

CONCLUSION

The following conclusions were drawn from the findings

- The infection control facilities was found to be inadequate.
- An average of 64.4% of the nurses have knowledge of infection prevention and control.
- The nurses had positive attitudes to infection prevention and control.
- There is high rate of recapping of used injection needles among the nurses
- Practice of nurses towards infection prevention and control were not sufficient
- There exist statistical significant relationship between knowledge and practice, between knowledge and attitude, and between attitude and practice of nurses regarding infection prevention and control

LIMITATIONS

The work may not be generalized due to the small sample when compared with the number of nurses in all the States of the Federation. The study adopted descriptive design rather than quasi-experimental design which would have been more beneficial.

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