Knowledge, attitude and practice towards nosocomial infections among healthcare workers in Ijebu- Ode Local Government Area of Ogun State

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ABSTRACT`

Nosocomial infections, also known as hospital-acquired infections are contracted when providing medical care to an individual in health facilities or undergoing medical treatment. As a result, this study investigated the knowledge, attitude and practice towards nosocomial infections among healthcare workers in Ijebu- Ode Local Government Area of Ogun State. The study adopted descriptive survey design and one hundred and fifty –three health care workers were used for the study. Furthermore, the level of knowledge, attitude and practice among healthcare workers towards nosocomial infections were measured. The study revealed that 77.8% of the healthcare workers had high knowledge, 63.4% had high attitude while 60.8% had high preventive practices towards nosocomial infections. There was a weak correlation ($p< 0.05$) between age and knowledge; year of practice and preventive practices among healthcare workers. The healthcare workers stated that Bacteria are the most common causative organism (39.21%) followed by virus (26.14%) for nosocomial infections. Furthermore, Respiratory tract infection (33.3%) was the most prevalent type of nosocomial infections followed by surgical site infection (22.8%). Individuals that were likely to contact nosocomial infections are surgically operated patient; patient with low immune status; patient in labor ward. It can be concluded that the healthcare workers has high level of knowledge, attitude and preventive practices towards nosocomial infections, and respiratory tract is the commonest type of nosocomial infections.

Key words: Nosocomial, infection, hospital-acquired, knowledge, practice

INTRODUCTION

Nosocomial infections (also known as Hospital acquired infections) are infections that develop during the administration of care for other ailments in patients or after the patients have been discharged. These infections are also found among medical personnel and it has been connected to usage of invasive medical equipment such as ventilators, catheters in modern health facilities. The microorganisms that are responsible for nosocomial infections make their first appearance in health facilities (Khan, Baig & Mehboob, 2017; WHO, 2017). These include bacteria, viruses, or fungi. These microorganisms can spread from person to person through shared objects, surfaces and contact, the environment, contaminated water and food, diseased people (Nimer, 2022).

Nosocomial infections (NI) do not include those infections that were already existing at the time of admission but become complicated without the pathogens or symptoms changing into a new infection; those that are acquired through placenta such as toxoplasmosis, rubella, syphilis and manifest 48 hours after birth (Festary *et al.*, 2015). The most prevalent hospital acquired infections are HIV infection, hepatitis B virus infection, and hepatitis c virus infection and they are spread by healthcare workers that do not follow infection control procedures (Desta *et al.*, 2018).

Despite efforts at improving hospital infection control procedures, nosocomial infections still remain a significant global public health issue that considerably increase morbidity and mortality (Maitanmi & Anise, 2021). It has been reported that out of every 100 patients with nosocomial infections, developing regions account 10 while 7 are from industrialized countries (Danasekaran *et al.*, 2014). This has

continually made it difficult for hospitals around the world to manage the delivery of healthcare effectively and also constitute serious problem for healthcare professionals (Olisa & Simon-Oke, 2018).

In North America and Europe, NI accounts for 5%–10% of hospitalizations, over 40% in Latin America, Sub-Saharan Africa, and Asia (WHO, 2002). In Africa, Nigeria have been reported to consistently have high rates between 23.1% and 26.6% of nosocomial infection among in-patients which is greater than the WHO's defined rate of 5 to 10% (Izadi *et al*., 2020; Olisa & Simon-Oke, 2018). One of the main ways for disease to spread is through contaminated hands and hand hygiene has been recommended as one of the ways to prevent and control the infections. A good hand hygiene prevents environmental contamination as well as healthcare worker colonization and infection (Sikora & Zahra, 2022). However, health professionals stated that factors responsible for poor hand-washing habits include scarce hand washing supplies, work overload and shortage of time (Jemal, 2018). Nosocomial infections is known to make the patients' condition even worse, lengthening their stay in hospital, exacerbating pain for the patient, and increasing medical expenses (Goyal & Chaudhary, 2019). However, In IjebuOde Local Government Area, there is paucity of information on knowledge, attitude and preventive practices towards nosocomial infections among healthcare workers. As a result of this, the level of knowledge, attitude and preventive practices of healthcare workers against nosocomial infections were investigated.

MATERIALS AND METHODS

Study Area

This study was carried out in Ijebu-Ode, Ogun State, Southwestern Nigeria which is situated between Shagamu and Benin Express way. It lies between latitude (6.8300^0 N) & longitude (3.9165^0E).

Research Design

A survey research design was used to determine knowledge, attitude and practices towards nosocomial infections among healthcare workers in Ijebu- Ode Local Government Area of Ogun State.

Ethical approval and consideration

The study area was visited prior to the commencement of the study. Permission to carry out the study was obtained from the Medical Director of each health facility. All information obtained from the respondent through the completed questionnaires was kept confidential.

Inclusion criteria

Volunteered health care workers of different ages in Ijebu-Ode Local Government Area were included in the study

Exclusion criteria

Healthcare workers that did not volunteer were excluded from the study.

Study Population

The study population comprised all healthcare workers in Ijebu- Ode Local Government Area, Ogun State.

Sample size determination

The sample size was calculated using formulae described Yamane (1973) in equation (1)

$$n = \frac{N}{(1+N(e)^2} \quad \text{----------Equation 1}$$

Where n= sample size, N = estimated target population, e= sampling error (0.05 acceptable error).

$= \frac{250}{(1+250\times0.0025)} = 153$

Sample and sampling procedure

Purposive sampling technique was adopted to select one hundred and fifty-three healthcare workers from both private and government health facilities were used for the study.

Instrument for data collection

An adapted questionnaire by Goyal & Chaudhry (2019) was used as an instrument for data collection.

Reliability of research Instrument

The questionnaire was administered to twenty healthcare workers to test the reliability of the instrument using Cronbach's Alpha. The questionnaire has reliability value of 0 .695

Data Analysis

Data obtained was coded, organized and analyzed using the Statistical Package for Social Sciences (SPSS version 20). Pearson product moment correlation was used to determine the relationship among the variables at significant level $p<0.05$.

Results

Table 1 shows the demographic data of the respondents. A total of 121 representing (79%) of the respondents were female while 32 representing (21%) were male. Ninety-four which represents (61.44%) of the respondents were between 20-30 years, 38 (24.84%) of the respondents were between 31-40 years, 18 (11.76%) of respondents were between 41-50 years while 3 (2.00%) of the respondents were between 51-60 years. 133 (86.93%) of the respondents had between 1-10 years of experience, 16 (10.45%) of the respondents had between 11-20 years of experience, 2 (1.32%) of the respondents had between 21-30 years of experience, 2 (1.32%) of the respondents had between 31-40 years of experience.

Table 1: Demographic information of the respondents

Characteristics		**Number**	**Percentage (%)**
Gender	Female	121	79.00
	Male	32	21.00
Age	20-30	94	61.44
	31-40	38	24.84
	41-50	18	11.76
	51-60	3	2.00
Year of Practice	1-10	133	86.93
	11-20	16	10.45
	21-30	2	1.32
	31-40	2	1.32

Knowledge of the respondents about nosocomial infections

Table 2 shows the knowledge of the respondents about nosocomial infections. 93.46% of the respondents reported that environment is the major source of bacterial responsible for nosocomial infection while 72.54% of respondents stated that prolonged hospital stay causes nosocomial infection.

Table 2: Question on knowledge of respondents about Nosocomial infection

S/n	Items	Number	Percentage (%)
1.	The environment (air, water, inert surfaces) is the major source of bacterial responsible for nosocomial infection	143	93.46
2.	Advanced age or very young age increases the risk of nosocomial infection	114	74.5
3.	Invasive procedures increase the risk of nosocomial infection	137	89.54
4.	Nosocomial infections are hospital acquired	135	88.23
5.	Prolonged hospital stay cause nosocomial infections	111	72.54
6.	Compromised immune system easily contact nosocomial	146	95.42
7.	Improper aseptic techniques cause nosocomial infections	134	87.5

Overall Knowledge Score

Table 3 shows that 77.8% of respondents had high knowledge about nosocomial infection, while 22.2% respondents had low knowledge about nosocomial infection. The mean knowledge score for all respondents was 6.36 out of a possible nine points (SD= 1.31).

Table 3: Overall Knowledge Score of the healthcare workers Score		Number Percentage (%)
High Score (9)	119	77.8
Low Score (3)	34	22. 2
Total	153	100
Minimum (3)	Mean = 6.36	
Maximum (9)	SD = 1.31	

*SD- Standard Deviation

Attitude of the respondents towards nosocomial infections

Table 4 shows the attitude of the respondents towards nosocomial infections. 96.07% of respondents believe that health care workers is at risk of acquiring a nosocomial infection while 93.46% of respondents reported that it is necessary to categorize hospital waste before disposal.

Table 4: Questions on attitude of respondent's towards nosocomial infections

S/N	Items	Number	Percentage (%)
1.	Do you believe that health care workers are at risk of acquiring a nosocomial infection?	147	96.07
2.	Is it necessary to categorize hospital waste before disposal?	143	93.46
3.	Do you recap a needle before disposal?	99	64.70
4.	Have you been similarly infected?	22	14.37
5.	Do you take safety precaution before attending to patients?	147	96.07

Overall attitude towards nosocomial infection

Table 5 shows that 63.4% of respondents had high attitude while 36.6% respondents had low attitude towards nosocomial infection. The mean attitude score for all respondents was 3.64 out of a possible five points (SD=0.71).

Table 5: Overall attitude towards nosocomial infection across all respondents Score

Number	**Percentage (%)**	
High Score (5)	97	63.4
Low Score (0-2)	56	36.6
Total	153	100
Minimum (0)	Mean = 3.64	
Maximum (5)	SD = 0.71	

SD = Standard Deviation

Preventive practices of the respondents against nosocomial infections

Table 6 shows the preventive practices of the respondents against nosocomial infections. 96.07% of respondents reported that hand hygiene was used before contact with a patient while 27.45% of respondents stated that precaution standard of nosocomial infections is recommended to protect only the patients.

Table 6: Preventive practices of respondents towards nosocomial infection

S/N	**Items**	**Number**	**Percentage (%)**
1.	Hand hygiene is used before a contact with a patient	147	96.07
2.	Hand hygiene is used after a contact with a patient	143	93.46
3.	Hand hygiene is used between patient contact	99	64.70
4.	Precaution standards of nosocomial infections are applicable to all patients	144	94.12
5.	Precaution standards of nosocomial infections are applicable to all health care worker who have contacts with body fluid	140	91.50
6	Precaution standard of nosocomial infections is recommended only to protect patient	142	27.45
7	Precaution standard of nosocomial infections is recommended to protect patient and health care workers	150	98.04

Overall practice against nosocomial infection

Table 7 shows that 60.80% of respondents had high preventive practices while 39.21% respondents had low practice towards nosocomial infection. The mean attitude score for all respondents was 5.65 out of a possible seven points (SD=0.92).

Table 7: Overall practice against nosocomial infection across all respondents Score

Number	**Percentage (%)**	
High Score (7)	93	60.8
Low Score (3)	60	39.2
Total	153	100
Minimum (3)	Mean = 5.65	
Maximum (7)	SD= 0.920	

SD = Standard Deviation

Relationship between knowledge, attitude, practice and demographic data

Table 8 shows that there is weak correlation ($p<0.05$) between age and knowledge, year of practice and preventive practices of the respondents. There is inverse correlation between gender and knowledge of the respondents.

Table 8: Relationship between knowledge, attitude, practice and demographic data

	Knowledge	**Attitude**	**Practice**
Age	0.262**	-0.112	0.30
Gender	-0.191*	0.084	-0.159*
Year of Practice	0.078	-0.053	0.230**

**correlation significant at 0.01 level (2-tailed)

*correlation significant at 0.05 level (2-tailed)

Types of nosocomial infection

Figure 1 shows the types of nosocomial infection reported by the respondents. 33.33% of respondents indicated respiratory tract infection as the common type of nosocomial infection, followed by surgical site infection (22.8%), urinary tract infection (20.26%).

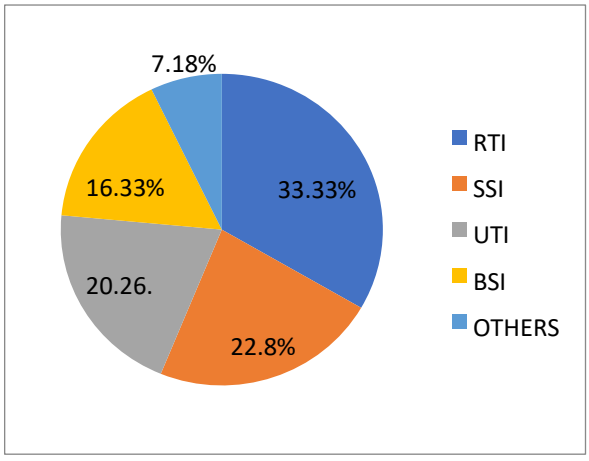

Figure 1: Types of nosocomial infection

RTI: Respiratory tract Infection, SSI: Surgical Site Infection, UTI: Urinary tract infection.

BSI: Blood stream infection

Organisms that cause nosocomial infections

Figure 2 shows the organisms causing nosocomial infections. 39.21% of the respondents stated that bacteria, 26.14% viruses while 18.30% stated that that fungi cause nosocomial infection.

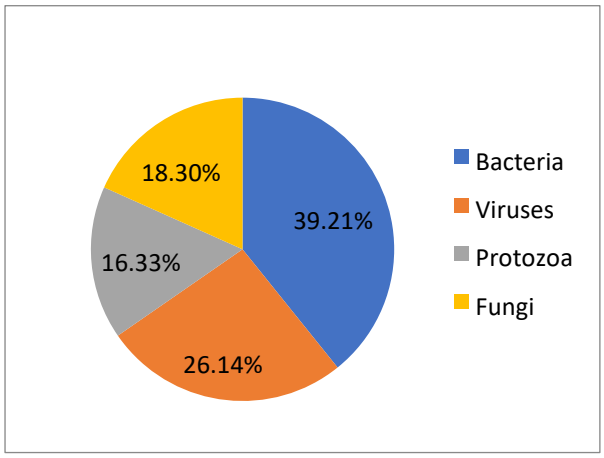

Figure 2: Organisms causing Nosocomial Infection

Figure 3 shows individuals who are likely to contact nosocomial infection. 8.49% stated that surgically operated patient can be affected, 32.68% indicated Patient with low immune system, 24.84% reported Patient in labour ward

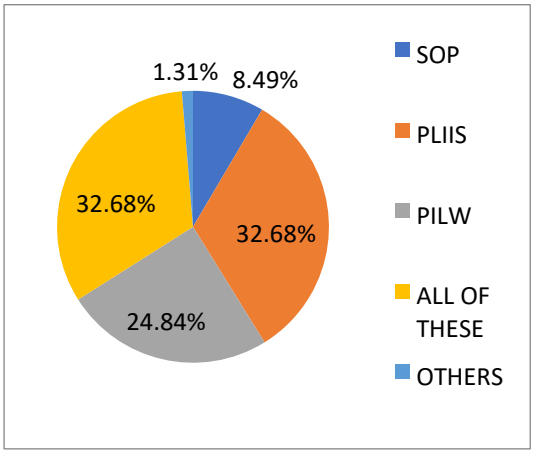

Figure 3 : Individuals who are likely to contract nosocomial infection

SOP: Surgically operated patient, PLIS: Patient with low immune system, PILW: Patient in labor ward

DISCUSSION

Nosocomial infection can cause restlessness, decrease the quality of life, and prolong patient stay in hospital. It is the main cause of death in hospitalized patients (Naveed *et al.*, 2019).

The healthcare workers in the study area have high knowledge about nosocomial infections. This corroborates the findings of Maitanmi & Anise (2021); Maitanmi *et al.*, (2021) who reported that healthcare workers in two selected Tertiary Hospitals in Ogun State had high knowledge about

nosocomial. Also, this is line with findings of Samaila, *et al.,* (2015) that reported that majority of the healthcare workers in Zaria were aware of nosocomial infections.

The attitude of the healthcare workers in this study towards nosocomial infection was high. This agrees with the finding of Bayleyegn *et al.,* (2021) who reported that more than half of the respondents had a favorable attitude about infection prevention. On the other hand, this study contradicts the findings of Haile, Engeda, & Abdo, (2017) who reported that attitude of the health care workers was low. This might be attributed to the workload, lack of supervision from the infection control department, lack hospital equipment, distance from necessary facilities, and inadequate knowledge of nosocomial infection

The level of preventive practices against nosocomial infection among health care workers in the study area was high. This corroborates the findings of Maitanmi & Anise (2021); Maitanmi *et al.,* (2021) who reported that healthcare workers in two selected Tertiary Hospitals in Ogun State had high preventive practices. The high preventive practices might be as result of adequate hand-hygiene habits the respondents have which is major influence in the preventive practice of nosocomial infections (Otto *et al.,* 2022). Furthermore, majority of respondents practiced hand hygiene before and after contact with patients, also they take precaution standards against nosocomial infection as recommended by the World Health Organisation.

Majority of the respondents reported that bacteria were the main cause of nosocomial infections. This supports the findings of Khan, Ahmad, & Mehboob (2015) who reported that ninety percent of nosocomial infections are brought on by bacteria.

Most of the respondents reported that respiratory tract infection, surgical site infection, urinary tract infection and blood stream infection are most common types of nosocomial infection. This agrees with findings of Sikora & Zahra (2022) who stated that the most common types of nosocomial infection are Central line-associated bloodstream infections, Catheter-Associated Urinary tract Infection, Skin and Soft Tissue Infection.

CONCLUSION

In this study, it was found that the healthcare workers in the study area had high level of knowledge, attitude and preventive practice against nosocomial infection. The health care workers identified respiratory tract infection, surgical site infection, urinary tract infection and blood stream infection as the types of nosocomial infections.

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