Archives of Medicine©
14 (8) 2022 : 001-005 • RESEARCH ARTICLE

Knowledge and Precautionary Measures of Healthcare Associated Infection among Patients in UNIOSUN Teaching Hospital, Osogbo

Fiyinfoluwa Aremu*
Department of Medicne, Adeleke University, Ede, Nigeria

SUMMARY

Healthcare associated infections are caused mainly by pathogenic microorganisms (viruses, bacteria, and fungal), including multidrug resistant strains of these microorganisms: However, they vary amongst populations; examples include; *Staphylococcus aureus, Enterococcus faecalis, Escherichia coli, Candida albicans, Klebsiella oxytoca, Pseudomonas aeruginosa, Enterobacter proteus*, Yeast, Bacteroides, Methicillin-resistant *Staphylococcus Aureus* (MRSA), vancomycin-resistant *Enterococcus faecium,* carbapenem-resistant *Pseudomonas aeruginosa*, extended-spectrum cephalosporin-resistant *K. pneumoniae, K. oxytoca, E. coli,* and *Enterobacter* species, and carbapenem-resistant *P. aeruginosa.*

Key words: Central line-associated bloodstream infections; Statistical package for social sciences; Bacteroides

Address for correspondence:

Dr. Fiyinfoluwa Aremu,
Department of Medicne, Epidemiology, Adeleke University, Ede, Nigeria, Tel: 7031028102; E-mail: fiyinfoluwaa559@gmail.com

Word count: 1,947 **Figures:** 00 **Tables:** 02 **References:** 08

Date of Submission: 28 October, 2021, Manuscript No. IPAOM-21-11320; **Editor Assigned:** 01 November, 2021, PreQC No. P-11320; **Reviewed:** 15 November, 2021, QC No. Q-11320; **Revised:** 12 October, 2022, Manuscript No. R-11320; **Published:** 28 October, 2022.

INTRODUCTION

Background of the study

Infections obtained from a healthcare institution while getting health care are known as Healthcare-Associated Infections (HCAI). They appear two days or more after admission to the hospital, or thirty days after discharge from patient care [1]. They are also known as nosocomial infections, and they are found in every type of healthcare facility, including acute care hospitals, ambulatory surgery centers, dialysis centers, outpatient care, and long-term care institutions like nursing homes [2].

Healthcare associated infections are caused mainly by pathogenic microorganisms (viruses, bacteria, and fungal), including multidrug resistant strains of these microorganisms: However, they vary amongst populations; examples include; *Staphylococcus aureus, Enterococcus faecalis, Escherichia coli, Candida albicans, Klebsiella oxytoca, Pseudomonas aeruginosa, Enterobacter Proteus,* Yeast, *Bacteroides, Methicillin-resistant Staphylococcus Aureus* (MRSA), *vancomycin-resistant Enterococcus faecium*, carbapenem-resistant *Pseudomonas aeruginosa*, extended spectrum cephalosporin-resistant *K. pneumoniae, K. oxytoca, E. coli,* and *Enterobacter* species, and carbapenem-resistant *P. aeruginosa* [3].

Central Line-Associated Bloodstream Infections (CLABSI) are caused when a microorganism penetrates the bloodstream *via* the catheter or central line. Risk factors for developing CLABSI are lack of hemodynamic monitoring as insertion indication, several recent laboratory tests, catheter duration, immunosuppression, impaired skin integrity, poor nutrition, poor hygiene from patient and health workers, increased age, multiple invasive procedures, poor catheter maintenance, comorbidities and position of catheter [4].

An infection in the kidney, ureter, bladder, or any other portion of the urinary system is known as catheter associated urinary tract infection. Urinary strictures, mechanical stress, subsequent bloodstream infection, and decreased mobility are all side effects. Prolonged indwelling urinary catheter usage is the major risk factor for CAUTI; additional risk factors include sex, fecal incontinence, and immunosuppression, whereas bladder catheterization, previous antibiotic treatment, and cerebral palsy are risk factors in pediatric patients [5].

Hand washing is the utmost measure to prevent HCAI; it was first identified by Dr. Ignaz Phillip Semmelweis. Using alcohol-based hand sanitizer is also an effective measure [6]. Inadequate hand hygiene accounts for about 40% of HCAIs, while adequate hand washing decreases the infection rate with HCAI. National surveillance, enhancing invasive device designs, antibiotic control

programs can also help prevent HCAI. Eliminating HCAI entails: Applying procedures that are based on evidence such as the CDC's healthcare infection control practices advisory committee infection control guidelines, affiliating financial incentives, conducting researches, and acquiring information to monitor progress facilitate response to emerging threats which must be reinforced by substantial research investments, designing new preventive equipment, enhanced accountability from individuals and organizations and forming a keen partnership between public and private stakeholders [7,8].

MATERIALS AND METHODS

Study design

A descriptive cross-sectional survey was used for this study.

Study setting

This study was conducted in Uniosun teaching hospital, which is located in Osogbo, Osun State, Nigeria. It provides tertiary health care and support undergraduate medical students from Osun state university.

Target population

The target population of this study is patients receiving healthcare services in Uniosun teaching hospital, Osogbo.

The data analysis was done using Statistical Package for Social Sciences (SPSS). 2019 version data interpretation and presentation was done using tables, and simple percentages. *Chi square* test was used to evaluate the relationship between knowledge of patients on healthcare associated infections and their practice of precautionary measures against healthcare associated infections in Uniosun teaching hospital.

A total of 422 copies of questionnaires were distributed and 400 were retrieved for this analysis. The interpretation and presentation of data gotten from the responses of the respondents were also presented.

A total of 43.25% of the respondents fall within the age range of ≥ 45 years, 31.0% of the participants fall within 36-45 years, 15.25% of the participants fall within 26-35 years and 10.5% fall within 16-25 years as shown in **Tab.1** below. A total of 59.7% of the participants are female while the remaining 40.3% are males as shown in **Tab.1** below. Participants having tertiary educational level were 41.0%, while 33.0% of the participants have secondary school education; also, 26.0 % of them have primary educational level as shown in **Tab.2** below. Most of the participants are Yoruba with a percentage of 74.2%, Igbo 17.0% and Hausa with a percentage of 8.8% Majority of the respondents with a percentage of 80.3% are not first-time hospital admitted and the remaining with a percentage of 19.7% are first time hospital admitted. Most of the respondents are out-patient with a percentage of 55.3%, in patient with a percentage of 26.2% and the remaining 18.5% are of general surgery as shown in the Tab. 1 below.

Tab. 1. The given table explain about the variables and frequency, percentage.

Variable	Frequency	Percentage (%)
Age		
16-25 years	42	10.5
26-35 years	61	15.25
36-45 years	124	31
45 years and above	173	43.25
Gender		
Male	161	40.3
Female	239	59.7
Level of education		
Primary	104	26
Secondary	132	33
Tertiary	164	41
Ethnicity		
Yoruba	297	74.2
Igbo	68	17
Hausa	35	8.8
Religion		
Christianity	185	46.2
Muslim	199	49.8
Traditional	16	4
Marital status		
Single	89	22.3
Married	269	67.2
Divorced	42	10.5
First-time hospital admitted		
Yes	79	19.7
No	321	80.3

Knowledge of healthcare associated infections

In this study respondents of 17.5% knows what health care associated infections are, 68.75% of the respondents do not receive guidance from health workers on precautions while in the hospital, 62.3% of the respondents indicated that HCAI are Infections resulting from medical care treatment in a hospital as shown in **Tab 2** 36.5% of the respondents are not concerned about getting HCAI, 25.0% of the respondents indicated they could get an infection from the hospital, 52.0% of the respondent do not know HCAIs is preventable, 49.0% of the respondents know how to prevent HCAI, 27.8% of the respondents indicated that children are at risk for contracting HCAIs, 17.7% indicated that the elderly ones are at risk for contracting HCAIs, 30.4% indicated that visitors are at risk for contracting HCAIs, 34.5% indicated that health workers are at risk for contracting HCAIs, 20.5% indicated that patients are at risk for contracting HCAIs, 11.5% of the respondents do not know if poor hygiene is a risk factor of HCAIs, 58.5% of the respondents indicated the length of stay to be a risk factor of HCAIs, 34.5% indicated an invasive nonsurgical procedure to be a risk factor of HCAIs, 11.5% of the respondents do not know if improper handling of devices and equipment by healthcare workers is a risk factor of HCAIs as shown in the Tab. 2 below.

Tab. 2. Knowledge of healthcare associated infections.

Variable	Frequency	Percentage (%)
Do you know what healthcare associated infections are?		
Yes	70	17.5
No	285	71.25
I don't know	45	11.25
Did you receive guidance from health workers on precautions while in the hospital?		
Yes	125	31.25
No	275	68.75
What is HCAI?		
Infections resulting from medical care treatment in a hospital	249	62.3
It is also known has nosocomial infection.	56	14
Infections that occur in a healthcare setting	95	23.7
Are you concerned about getting HCAI?		
Yes	244	61
No	146	36.5
I don't know	10	2.5
Do you believe you can get an infection from the hospital?		
Yes	100	25
No	96	24
I don't know	204	51
What can make anyone in the hospital get diseases or infection from the hospital do you think HCAIs is preventable?		
Yes	117	29.25
No	75	18.75
I don't know	208	52
Do you know how you can prevent HCAI?		
Yes	196	49
No	204	51

RESULTS AND DISCUSSION

Healthcare associated infections are an alarming issue for patients and healthcare workers because it increases costs, hospital admission as well as rate of morbidity and mortality. Factors such as surgical processes, usage of invasive devices, inappropriate and disproportionate use of antibiotics, contaminated air conditioning systems, prolonged hospital admission, ineffective intervention health programs, poor facility arrangement and structure increases healthcare associated infection.

Despite the alarming nature of healthcare associated infection this study, findings from the study revealed that there is little knowledge of HCAIs among respondents. This study showed 17.5% of participants know what healthcare associated infection is. In contrast, a study conducted in Ethiopia by Desta, et al. among 150 healthcare workers working in a hospital, showed 84% participants had good knowledge, the reason for this can be attributed to their profession and working experience.

Findings from this study showed that, among other factors affecting the low knowledge on HCAIs, health care officials have failed to educate patients (respondents) on what HCAIs is despite over 80% believing it is important to be educated by healthcare officers. Health education has a favorable effect on the retention of information, attitudes, and behaviors across all levels of the workforce. It is necessary to create a system of ongoing education for all levels of employees.

Compliance with interventions is required to minimize the occurrence of nosocomial infections. In addition, Samuel, et al. stated that there is need for adequate staffing and continuous education of staff on the principles of infection control, especially hand washing which is the single most important effective measure to reduce the risks of infection. This study showed that despite the low knowledge on healthcare associated infections, respondents agree in strong terms that proper health hygiene like washing of hands and hand sanitization is important in the prevention of HACIs. The reason for this maybe likely linked to the fact that washing and sanitizing of the hand after a visit to the hospital is seen as a general precaution. Study by Wijdan, et al. stated that the presence of significant differences between doctors and nurses in our study indicated the need for qualified doctors who have enough information and knowledge about the importance of hand hygiene to ensure infection control as well as all hygienic matters while working with hospitalized patients. According to Currie, et al. the effects of various HCAIs varied, patients' accounts of their experiences are very similar. Contagion's bio sociocultural environment was depicted visually, with the possible influence on social connections and professional contacts underlined. This study also showed little knowledge about HCAIs among respondents due to the fact that they got little education from healthcare workers in contrast with high practice of HCAI preventive activities. This high level of preventive practice has been attributed mostly to a general precaution against diseases and not necessarily related to HCAI alone. Finding of Asad, et al., Central Line-Associated Bloodstream Infections (CLABSI) is a significant cause of death in the United States and across the world. They are linked with considerable morbidity and additional expenditures to the healthcare system as an avoidable healthcare related infection. CLABSI prevention that is both successful and long-term necessitates a comprehensive strategy that combines evidence based best practices with effective implementation techniques. The current suggested measures, such as proper hand hygiene, full barrier precautions, avoiding femoral lines, skin antisepsis, and removing superfluous lines, are evidence based and easy. In a similar study, a cross-sectional research was carried out by Ibrahin, et al. in Qatar to evaluate knowledge and attitude regarding infection control among medical students, showing a high level of knowledge among the respondents and adequate knowledge and practice (48.4%) of standard isolation and patient surveillance precautions, as well as adequate knowledge and practice (85%) as regarding hand hygiene precautions.

CONCLUSION

Findings from this study, showed inadequate knowledge about HCAIs among respondents due to the fact that they got little education from healthcare workers. However the study showed high practice of healthcare associated infections preventive activities despite the low knowledge. This high level of preventive practice has been attributed mostly to a general precaution against diseases and not necessarily related to HCAI alone.

Healthcare Associated Infections (HCAI) have been seen to be infections caused through visitations to healthcare facilities. Despite the severe impact of these infections this research has showed little knowledge about these infections by patients due to low and almost no education by healthcare members. Despite high level of precautionary practices majorly due to general hygiene, it is still very important that proper awareness about HCAIs is carried out among patients.

LIMITATION OF THE STUDY AND SUGGESTED AREAS FOR FURTHER STUDY

Due to limited time and resources, this study was restricted to only Osun state university teaching hospital, Osogbo. It is important for further studies to be carried out across the country among other patients in other hospitals for a broader perspective.

RECOMMENDATIONS

Based on the findings from this study, the following recommendations are considered necessary:

- Proper health education and awareness should be carried out to enlighten patients on what healthcare associated infections is about. This can be done through seminars, workshops, and various awareness drives.
- Healthcare officials should be tasked with informing patients on HCAIs and its preventive practices at every contact or consultation.
- Hospitals should be mandated to put up information materials on HCAIs across various hospitals so that patients would be educated at each point in time in their visit to the hospital.

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