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# Assessment of Infection Control Practices Among Healthcare Providers at Federal Medical Centre, Owo, Ondo State, Nigeria

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**Abstract:**

Healthcare acquired infections (HCAIs) otherwise called nosocomial infection is associated with increased morbidity and mortality among hospitalized patients and predisposes healthcare providers (HCPs) to an increased risk of infections. The study assessed the current infection knowledge and extent of practices of infection control among healthcare providers at Federal Medical Centre, Owo, Ondo State. The study adopted a cross-sectional survey design. A proportional stratified random sampling was adopted to select 221 respondents. The instrument for data collection was a structured questionnaire modified by the researcher using adapted questionnaire. The face and content validity of the instrument were ensured through the help of experts in the field of nursing. The instrument was subjected to a pilot testing among thirty (30) healthcare providers outside the sampled area. After subjecting the collated data to Cronbach alpha, the reliability value for Section B was 0.80 and Section C was 0.77. Data were collected, coded and analysed using statistical package for social sciences. Findings from the study showed that majority of the healthcare providers had moderate level of knowledge on infection control practices and good level of infection control practices were adhered to. The study also revealed that there was significant relationship between knowledge of infection control and practices (P< 0.05) and significant difference in infection control practices among different healthcare providers

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(P < 0.05). In conclusion, majority of the healthcare providers had moderate knowledge and good practice on infection control measure in FMC, Owo. It was recommended that hospitals should compel all health care providers and trained them on compulsory practice of infection control

**Keywords**: Assessment, Infection Control, Practices, Healthcare Providers,

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## Introduction

Infection is everywhere and could be acquired anywhere and anytime particularly in health care institutions. Infections acquired in a health care setting are often regarded as healthcare-associated infections or Nosocomial infections which are significant public health issues. Globally, the healthcare-associated infection has continually been a huge problem affecting health care delivery, practices, and institutions. Healthcare-associated infection (HCAI) 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, HCAI could occur within or more than 48 to 72 hours after admission and within ten days after hospital discharge (Johnson, et al, 2019). It can be acquired anywhere within the ambience of health care settings, including long-term care, home care, and ambulatory care. HCAI affects a large number of patients and health care workers every year and frequently increases epidemics. In hospitals, infected patients are a source of infection transmission to other patients, health care workers, and visitors (Auta, et al, 2017; Nofal, Subih & Al-Kalaldeh, 2017).

The prevalence in developing countries is somewhat higher with up to 19% of Healthcare-acquired infections among hospitalized patients (WHO, 2020). In the United States, the added expenditure as a result of Healthcare-acquired infections is more than $4.5 billion, (Chemaly, et al, 2014) while in the United Kingdom, a mortality rate of 13% and a prolongation of hospital stay by a factor of 2.5% was reported (Ogoina, et al 2015; Almoghrabi, et al, 2018). The endemic burden of healthcare-associated infection is also significantly higher in low- and middle-income than in high-income countries, particularly in patients admitted into intensive care units and in neonatal wards (WHO, 2017; Arinze-Onyia, et al., 2018).

Even with the paucity of data in sub-Saharan Africa. A recent study in Nigeria revealed that the present prevalent level of HCALs is 14.3% with bloodstream and surgical site infections accounting for two-thirds of all the HCALs, Neonatal, and peadiatric surgical specialties had the highest prevalence and represented more than 50% of all the HCAL.

Inadequate knowledge and practice on the risk factors associated with hospital infection prevention and control contribute to high rates of acquired infections (Bekele, et al., 2020). Uncontrollable nosocomial infection contributes to prolonged stay, morbidity, and mortality which puts stress on the health care economics of the country (Mishta, Banerjee & Gosain, 2014). Approximately 16% of hospitalized patients in developing countries are diagnosed with HCAI, the high rate of HCAI in developing countries is attributed to inadequate infection control practices owing to the lack of infection control policy and guidelines, and the dearth of infection control health professionals. Other factors include lack of infrastructure, inconsistent surveillance, overcrowding, scarcity of resources, poor sanitation, and poor management of hospital waste (Bardossy, et al., 2016).

Inadequate infection control knowledge, unsafe practices, and noncompliance with universal precautions were frequent among healthcare providers, revealing a potentially common problem at public healthcare facilities. Many health care providers might be aware but not engaged in infection control practices. The goal of the study is to assess the current infection control prevention situation in FMC, Owo, existing infection control activities /resources, and identify strengths and gaps that can inform further plans.

In a study conducted by Chitimwango, Priscilla and Chisanga, (2017) at a tertiary Hospital in Zambia, to determine knowledge, attitudes, and practices of Nurses regarding infection control. 196 questionnaires were distributed; participants completed the questionnaires, with a response rate of 100%. The majority of participants had good knowledge of infection control with a mean score of 83.21. The attitude towards infection control was good with a mean score of 81.37. The practice in infection control was poor with a mean score of 48.88. Based on the findings of the study, it can be concluded that, despite performing well in knowledge and showing a positive attitude towards infection control, nurses had unsatisfactory practice levels regarding infection control and prevention, exposing the patients to infection-related diseases.

In a study conducted among five health care professionals at Federal Medical Centre, Owo, between February 2019 and May 2019 using Infection prevention control Assessment Framework the result revealed that poor motivation to adopt recommended changes among hospital staff were major issues preventing improvement. There are empirical studies in infection control among health care providers in the Western world but there is a dearth of similar data in Nigeria, another problem that can arise from lack of infection control practices is the increase in workload, this is because if some of the health care providers were infected and hospitalized there will be a shortage of manpower.

There is a high incidence of infectious cases among health care providers especially in FMC, Owo, the statistics of staffs of FMC, Owo infected with COVID-19 as from April 2020 till date is 144 and the fact that health care infection has become the main cause of death hence there is a need for this study. The main objective of this study is to assess the infection control practices among health care providers in Federal Medical Centre, Owo, Ondo state. This study specifically:

1. assessed the level of knowledge of Healthcare providers on infection control practices;
2. determined the extent of infection control practices adhered to by Healthcare providers;
3. examined the relationship between knowledge and practice of infection control among healthcare providers; and
4. determined the difference in infection control practices among different healthcare providers.

**Research Questions**

The following research questions were raised for this study:

1. What is the level of knowledge of Healthcare providers on infection control practices?
2. What is the extent of infection control practices adhered to by Healthcare providers?

**Research Hypotheses**

The following hypotheses were postulated for this study:

1. There is no significant relationship between knowledge and practice of infection control among healthcare providers
2. There is no significant difference in infection control practices among different healthcare providers

## Methodology

This study was quantitative in nature as it utilised a cross-sectional survey to assess the infection control practices by healthcare providers at FMC, Owo. This study was carried out in Federal Medical Centre, Owo, Ondo state. The total population of healthcare providers were four hundred and twenty four (424). The sample size of 222 for this study was determined by applying the Cochran (1997) formula as it is the standard method of randomization and is also suitable for identifying the limits of errors considered as the most essential items in the survey. A proportional stratified random sampling method was used for the selection of the sample.

The instrument for data collection was a structured questionnaire modified by the researcher using adapted questionnaire through extensive literature search and consultation with scholars in the field of Nursing, and Occupational Health and Safety. The face and content validity of the instrument were ensured through the help of experts in the field of nursing. Their observations were used to correct the items in the research instrument. The instrument was subjected to a pilot testing among thirty (30) healthcare providers at Olabisi Onabanjo University Teaching Hospital, Sagamu, Ogun State. After subjecting the collated data to Cronbach alpha, the reliability value for Section B was 0.80 and Section C was 0.77.

The researcher and research assistance made repeated visits to the departments and the wards to distribute and retrieved the questionnaire. At the conclusion of questionnaire administration which took about two weeks, only two hundred and twenty one (221) questionnaires were retrieved. Data were analysed and processed using statistical package for social sciences (SPSS) version 23. Results were presented using descriptive statistics techniques of frequency count, percentage, mean and standard deviation. Hypotheses were analysed using inferential statistics of Pearson's product moment correlation at 0.05 level of significance.

## Results

**Research Question 1:** What is the level of knowledge of Healthcare providers on infection control practices?

**Table 1: Knowledge of infection control practices among Healthcare providers**

| Variables | Yes | | No | |
|---|---|---|---|---|
| | Freq. | % | Freq. | % |
| Infection can be transmitted by medical equipment such as syringes, needles, catheters, stethoscope, and thermometers. | 221 | 100.0 | 0 | 0 |
| I know the World Health Organization's '5 moments of hand hygiene.' | 221 | 100.0 | 0 | 0 |
| Do you have a list of reportable infectious agents available in your unit and accessible to all staff? | 150 | 67.9 | 71 | 32.1 |
| If there is limited beds available, patients with communicable disease may be admitted in the same ward with other patients | 56 | 25.3 | 165 | 74.7 |
| Micro-organisms are destroyed by using clean water | 23 | 10.4 | 198 | 89.6 |
| Standard precautions apply to all patients regardless of | 210 | 95.0 | 11 | 5.0 |

| | | | | |
|---|---|---|---|---|
| their diagnosis. | | | | |
| I am familiar with hospital acquired infection guidelines | 220 | 99.5 | 1 | .5 |
| All staff and patient should be considered potentially infectious | 220 | 99.5 | 1 | .5 |
| You can handle body fluids with bare hands if gloves is not available | 50 | 22.6 | 171 | 77.4 |
| Infection can be one of the factor associated with morbidity and mortality to clients and staff | 219 | 99.1 | 2 | .9 |

**Source:** Field survey 2021

Table 1 above revealed the knowledge on infection control practice. For 'Infection can be transmitted by medical equipment such as syringes, needles, catheters, stethoscope, thermometers, etc', yes has 221 (100%) while no has 0 (0%) respondents. Meanwhile for 'I know the World Health Organization's '5 moments of hand hygiene', yes has 221 (100%) while no has 0 (0%) respondents. Whereas for 'Do you have a list of reportable infectious agents available in your unit and accessible to all staff', yes has 150 (67.9%) while no has 71 (32.1%) respondents. Also, for 'If there is limited beds available, patients with communicable disease may be admitted in the same ward with other patients', yes has 56 (25.3%) while no has 165 (74.7%) respondents. For 'Micro-organisms are destroyed by using clean water', yes has 23 (10.4%) while no has 198 (89.6%) respondents. And for 'Standard precautions apply to all patients regardless of their diagnosis', yes has 210 (95.0%) while no has 11 (5.0%) respondents. More so, for 'I am familiar with hospital acquired infection guidelines' yes has 220 (99.5%) while no has 1 (0.5%) respondents. And for 'All staff and patient should be considered potentially infectious', yes has 220 (99.5%) while no has 1 (0.5%) respondents. For 'You can handle body fluids with bare hands if gloves is not available', yes has 50 (22.6%) while no has 171 (77.4%) respondents. Meanwhile for 'Infection can be one of the factor associated with morbidity and mortality to clients and staff', yes had 219 (99.1%) while no has 2 (0.9%) respondents.

**Table 2: Level of knowledge of infection control practices among respondents**

| **Level of knowledge** | **Frequency** | **Percentage%** |
|---|---|---|
| **Poor (0-3)** | 0 | 0 |
| **Moderate** (4- 7) | 184 | 83.3 |
| **Good** (8 -10) | 37 | 16.7 |
| **Total** | **221** | **100** |

**Source:** Field survey 2021

The result above shows that majority of the respondents 184(83.3%) out of 221 had moderate level of knowledge of healthcare providers on infection control practices, 37 (16.7%) out of 221 had good level of knowledge of healthcare providers on infection control practices while poor level had nil knowledge of healthcare providers on infection control practices. In conclusion the healthcare providers at Federal Medical Centre Owo had moderate level of knowledge of health care providers on infection control practices.

**Research Question 2:** What is the extent of infection control practices adhered to by Healthcare providers?

**Table 3: Extent of infection control practices among respondents**

| | Correct responses | | Wrong responses | |
|---|---|---|---|---|
| | **Freq.** | **%** | **Freq.** | **%** |
| Do not have to wash hand if I used gloves | 218 | 98.6 | 3 | 1.4 |
| Hand hygiene is important after exposure to body fluids or secretions | 173 | 78.3 | 48 | 21.7 |
| Does lack of time in busy wards prevent Hand hygiene? | 219 | 99.1 | 2 | .9 |
| Hand hygiene should be done before and after contact with the patient | 219 | 99.1 | 2 | .9 |
| Washing and disinfecting your hand are good ways for preventing infections? | 209 | 94.6 | 12 | 5.4 |
| Can disposable personal protective equipments PPE be wash and reused? | 210 | 95.0 | 11 | 5.0 |
| Should care providers use PPE to protect against infection when caring for a sick person at home? | 221 | 100.0 | 0 | 0 |
| I can share PPE with other users? | 135 | 61.1 | 86 | 38.9 |
| Wearing personal protective equipment in health care environment is crucial for preventing the spread of infection | 199 | 90.0 | 22 | 10.0 |
| Putting on face mask and glasses when performing invasive and body fluid procedure limit the spread of infection | 219 | 99.1 | 2 | .9 |

**Source:** Field survey 2021

Table 3 above revealed the extent of infection control practices adhered to by Healthcare providers. Two hundred and eighteen (98.6%) respondents consented that they need to wash hand if they used gloves. Hand hygiene is important after exposure to body fluids or secretions (78.3%); lack of time does not prevent Hand hygiene (99.1%); hand hygiene should be done before and after contact with the patient (99.1%); and washing or disinfecting one's hand are good ways for preventing infections (99.1%). The table revealed further that disposable personal protective equipment PPE cannot be wash and reused (95%), care providers should use PPE to protect against infection when caring for a sick person at home (100%), 135 (61.1%) did not share PPE with others, wearing personal protective equipment in health care environment is crucial for preventing the spread of infection (90%), and putting on face mask and glasses when performing invasive and body fluid procedure limit the spread of infection (99.1%).

**Table 4: Extent of infection control practices adhered to by Healthcare providers**

| **Level of practice** | **Frequency** | **Percentage%** |
|---|---|---|
| **Poor** (1-5) | 1 | 0.5 |
| **Good** (6 -10) | 220 | 99.5 |
| **Total** | **221** | **100** |

**Source:** Field survey 2021

The result above shows that majority of the respondents 220 (99.5%) had good level of infection control practices adhered to by Healthcare providers while 1 (0.5%) had poor level of infection control practices adhered to by Healthcare providers. In conclusion the healthcare providers at Federal Medical Centre Owo had good level of infection control practices.

**Test of Hypotheses**

**Hypothesis 1**: There is no significant relationship between knowledge and practice of infection control among healthcare providers

**Table 5: Pearson Correlation between knowledge and practice of infection control among healthcare providers**

| | | Practice of infection control | Level of Knowledge |
|---|---|---|---|
| Practice of infection control | Pearson Correlation | 1 | .541** |
| | Sig. (2-tailed) | | .000 |
| | N | 221 | 221 |
| Level of Knowledge | Pearson Correlation | .541** | 1 |
| | Sig. (2-tailed) | .000 | |
| | N | 221 | 221 |

**. Correlation is significant at the 0.01 level (2-tailed).

The table above revealed negative correlation between knowledge and practice of infection control among healthcare providers, r-value is 0.541 and p-value is 0. 000, since p-value is less than 0.05, then the null hypothesis will then be rejected while the alternative hypothesis will be accepted which state that there is relationship between knowledge and practice of infection control among healthcare providers. In conclusion, it has been established that there is significant relationship between knowledge and practice of infection control among healthcare providers.

**Hypothesis 2**: There is no significant difference in infection control practices among different healthcare providers

**Table 6: T-test of significant different in infection control practices among different healthcare providers**

| | N | Mean | Std. Deviation | Std. Error Mean | T | Df | Sig. (2-tailed) |
|---|---|---|---|---|---|---|---|
| Assessment of Practice | 221 | 26.774 | 2.872 | .193 | 138.585 | 220 | .000 |

T-test table above revealed that there is significant difference in infection control practices among different healthcare providers. Since p-value is 0.000 less than 0.05 and t-value is 138.585greater than 1.98 at 5% level of significant, the null hypothesis will be rejected and accept the alternative state that there is significant difference in infection control practices among different healthcare providers.

## Discussion

The findings of the result shows that 184(83.3%) of healthcare providers had moderate level of knowledge on infection control practices. This is similar to the study conducted by Chitimwango, Priscilla and Chisanga (2017) at a tertiary Hospital in Zambia, to determine knowledge, attitudes and practices of Nurses regarding infection control. 196 questionnaires were distributed, participants completed the questionnaires, a response rate of 100%. The majority of participants had good knowledge of infection control with mean score of 83.21. This shows how knowledgeable the respondents about infection control practices.

The result shows that majority of the respondents 220 (99.5%) out of 221 had good level of infection control practices adhered to by Healthcare providers which is contrary to the findings of Taffurelli, et al. (2017) which revealed that preparedness of health workers in the control and management of Ebola Viral Disease (EVD) was assessed and the result showed that there is knowledge gap and poor practice of infection control. The routine use of infection prevention and control measures, and an understanding of how infectious agents are transmitted, are critical in preventing this transmission and essential in ensuring patients receive safe care. Practitioners have a clear responsibility to treat patients fairly and without discrimination. They must not discriminate against patients by refusing or compromising care on the grounds of a known or suspected infectious condition. Practitioners also have an ethical obligation to address known failures or risks to patients in relation to infection prevention and control. Inform the patient, in a timely manner, about a serious breach in the infection prevention and control measures, even if that event caused no harm to that patient. Ensure the patient is aware of the Code of Health and Disability Consumers' Rights, and inform them of relevant complaints procedures (Khan, Baig & Mehboob, 2017).

Hypothesis one revealed Pearson correlation established that there is significant relationship between knowledge and practice of infection control among healthcare providers with r-value is -0.541 and p-value is 0.000 at 5% level of significant. This means that for more effectiveness in the practice of infection control among the health care providers, there is need for them to be more knowledgeable in some aspect of practice of infection control. Hypothesis two reveal using Pearson correlation established that there is no relationship between years of experience of health care providers and their practices of infection control with r-value is 0.018 and p-value is 0. 791 at 5% level of significant. This reflects that the years of experience or length of their service as a healthcare provider does not guarantee their practice of infection control.

## Conclusion

The study concludes that the healthcare providers had moderate level of knowledge on infection control practices and good level of infection control practices adhered to by Healthcare providers, .

## Recommendations

Based on the result from this study, the researchers hereby recommended the following:

1) Hospitals should compel all health care providers and trained them on compulsory practice of infection control.

2) Government should make fund available and employ more staff to Federal Medical Centre, Owo for effective and good practices of infection control.
3) To reduce mortality among the health care providers appropriate infection control measure should be adhere to for all health care providers when rendering services to patients

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