

# Ethical Management of Communicable Diseases among Health-Care Workers in Nigeria: A Case Study of University of Ilorin Teaching Hospital

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## ABSTRACT

In recent years, however, it has become clear that infectious diseases remain a major threat to man. It is very high in developing countries mainly because of high level of poverty, weak health care system, low technology and poor hygiene. This study is a descriptive cross-sectional study that assessed the management of communicable diseases by health care workers in the University of Ilorin Teaching Hospital (UITH). The observed differences in mean attitude scores were statistically significant with a p-value of 0.000. The positive attitude observed among the respondents was incongruent to their levels practices of safety precautions and ethical management of infectious diseases. The study among others recommends that Capacity building of relevant hospital staff on standard precaution and medical ethics of infection prevention and control should be provided at regular intervals in all health institutions across the country.

**Keywords:** *management; hepatitis; sterilization; vaccination; non-maleficence*

## 1. Introduction

Disease is any deviation from or interruption of the normal structure or function of any body part, organ, or system that is manifested by a characteristic set of symptoms and signs and whose etiology, pathology, and prognosis may be known or unknown (Broadbent, 1868).

Communicable or infectious diseases are a leading cause of illness and death throughout the world (Centers for Disease Control, 2011). The enormous diversity of microbes combined with their ability to evolve and adapt to changing populations, environments, practices, and technologies creates ongoing threats to health and continually challenging our ability to prevent and control disease. Infectious diseases are among the worst enemies of mankind. They have historically caused more morbidity and mortality than any other cause, including war.

In recent years, however, it has become clear that infectious diseases remain a major threat to man. Ethical issues associated with infectious disease have not been a traditional focus of discussion within the discipline of bioethics-and it has been argued that the topic of infectious disease was for a long time grossly neglected by bioethicists. AIDS was perhaps an exception all along; which received substantial discussion among bioethicists since its emergence was first recognized in the early 1980s (Selgelid, McLean, Arinaminpathy, & Savulescu, 2009).

The prevalence of communicable diseases is very high in developing countries mainly because of high level of poverty, weak health care system, low technology and poor hygiene (Musa, B.M and Musa, A.G, 2014 and Abdesslam B and Saber, B. 2015). This group of diseases affects all age groups, genders, tribes and occupations. Health-care workers are particularly prone to communicable diseases due to the nature of their occupation. However, patients and their relatives are also at risk of acquiring the diseases when seeking health care and this result in Health Care Associated Infections (HAI) that was formerly referred to as hospital Acquired or nosocomial infections (Initiative, 2007)(Societies, 2009).

The global burden of infectious diseases has a major impact on all healthcare systems as well as international prosperity and welfare (Mikael, 1865).

The main objective of this study therefore; is to examine the ethical management of communicable diseases among healthcare workers in Nigeria. This became imperative considering Healthcare-associated infections (HAI) which often lead to additional costs of treatment, increase antibiotic resistance, jeopardize treatment outcomes, prolong patient suffering, decrease treatment capacity and create 'bad-will' for healthcare providers.

## 2. Literature Review

The status of a patient's immune system plays a major role in fighting infections. Acute and chronic illnesses, advancing age and some classes of medication tax a patient's immune system, placing patients at highest risk for infection. Those with compromised immunity are much more likely to develop a nosocomial infection in a health care facility where so many patients congregate in one setting; with this in mind, health care facilities implement infection control and prevention programs, including mandatory staff education. Interrupting the cycle of infection by adhering to basic standard precautions not only supports patient safety by preventing the development of nosocomial infections, but it is also the standard for all credentialed health care facilities.

In sub-Saharan Africa, a high proportion of hospitalized patients are at increased risk of infection due to lack of resources needed to implement standard precautions. This has been found to be true in most part of Africa considering the local culture and beliefs concerning infection control.

### 2.1. Ethical Management of Infectious Disease

Health Care Associated Infections require certain precautionary safety measures to prevent the spread of infectious agents among health care workers, patients, patient relatives and visitors. The safety measures are series of universal and standard precautions that must be followed strictly by health care workers to prevent and control the spread of infectious diseases. This involves infection control in the health facilities (inform of hand hygiene, sterilization of hospital equipment, cleaning of hospital environment, disinfection of fomites and antimicrobial surfaces and use of personal protective equipment), Vaccination of health care workers, post-exposure prophylaxis, surveillance for infections, isolation, out-break investigation, training in infection control and health care epidemiology.

Aseptic technique is a key component of all invasive medical procedures. Similarly, infection control measures are most effective when Standard Precautions (health care) are applied because undiagnosed infection is common (Wikipedia, 2014; David OM, and Famurewa, O. 2010).

Drying is an essential part of the hand hygiene process. In November 2008, a non-peer-reviewed study was presented to the European Tissue Symposium by the University of Westminster, London, comparing the bacteria levels present after the use of paper towels, warm air hand dryers, and modern jet-air hand dryers. Of those three methods, only paper towels reduced the total number of bacteria on hands, with "through-air dried" towels the most effective.

Sterilization is a process intended to kill all microorganisms and is the highest level of microbial kill that is possible. Sterilizers may be heat only, steam, or liquid chemical. There are four main ways in which such items can be sterilized: autoclave (by using high-pressure steam), dry heat (in an oven), by using chemical sterilants such as glutaraldehyde or formaldehyde solutions or by radiation (with the help of physical agents). The first two are the most used methods of sterilizations mainly because of their accessibility and availability.

Disinfection uses liquid chemicals on surfaces and at room temperature to kill disease causing microorganisms. Ultraviolet light has also been used to disinfect the rooms of patients infected with *Clostridium difficile* after discharge. Disinfection is less effective than sterilization because it does not kill bacterial endospores.

Personal protective equipment (PPE) is specialized clothing or equipment worn by a worker for protection against a hazard. The hazard in a health care setting is exposure to blood, saliva, or other bodily fluids or aerosols that may carry infectious materials such as Hepatitis C, HIV, or other blood borne or bodily fluid pathogen. PPE prevents contact with a potentially infectious material by creating a physical barrier between the potential infectious material and the healthcare worker.

Components of PPE include gloves, gowns, bonnets, shoe covers, face shields, CPR masks, goggles, surgical masks, and respirators. How many components are used and how the components are used is often determined by regulations or the infection control protocol of the facility in question. Many or most of these items are disposable to avoid carrying infectious materials from one patient to another patient and to avoid difficult or costly disinfection.

## 3. Theoretical Framework

### 3.1. Principle of Autonomy

Autonomy is the "personal rule of the self that is free from both controlling interferences by others and from personal limitations that prevent meaningful choice." (Medicine, n.d.) Autonomous individuals act intentionally, with understanding, and without controlling influences.

In clinical applications, respect for autonomy is one of the fundamental guidelines of clinical ethics. Autonomy in medicine is not simply allowing patients to make their own decisions. Physicians have an

obligation to create the conditions necessary for autonomous choice in others. For a physician, respect for autonomy includes respecting an individual's right to self-determination as well as creating the conditions necessary for autonomous choice. Respect for autonomy also includes confidentiality, seeking consent for medical treatment and procedures, disclosing information about their medical condition to patients, and maintaining privacy.

### **3.1.2 Principle of Beneficence**

Beneficence is action that is done for the benefit of others. Beneficent actions can be taken to help prevent or remove harms or to simply improve the situation of other.

Clinical Applications of this occur where Physicians are expected to refrain from causing harm, but they also have an obligation to help their patients. Ethicists often distinguish between obligatory and ideal beneficence. Ideal beneficence comprises extreme acts of generosity or attempts to benefit others on all possible occasions. Physicians are not necessarily expected to live up to this broad definition of beneficence. However, the goal of medicine is to promote the welfare of patients, and physicians possess skills and knowledge that enable them to assist others.

### **3.1.3 Balancing Autonomy and Beneficence**

Some of the most common and difficult ethical issues to navigate arise when the patient's autonomous decision conflicts with the physician's beneficent duty to look out for the patient's best interests. For example, a patient with pneumonia may refuse antibiotics. In these situations the autonomous choice of the patient conflicts with the physician's duty of beneficence and following each ethical principle would lead to different actions. As long as the patient meets the criteria for making an autonomous choice (the patient understands the decision at hand and is not basing the decision on delusional ideas), then the physician should respect the patient's decisions even while trying to convince the patient otherwise.

### **3.1.4 Principle of Non-Maleficence**

The principle of non-maleficence means that no harm must be done to patients in the course of their treatments.(Mikael,1865). The same principle applies to the use of modern medical devices. If anybody uses yesterday's technology and techniques in daily practice—knowing that there are more modern, more efficient, safer equipment and still not replacing it with up-to-date devices and procedures—they will inevitably, at a certain stage, violate the principle of 'non-maleficence.'

In the course of caring for patients, there are some situations in which some type of harm seems inevitable, and we are usually morally bound to choose the lesser of the two evils which may be determined by the circumstances.

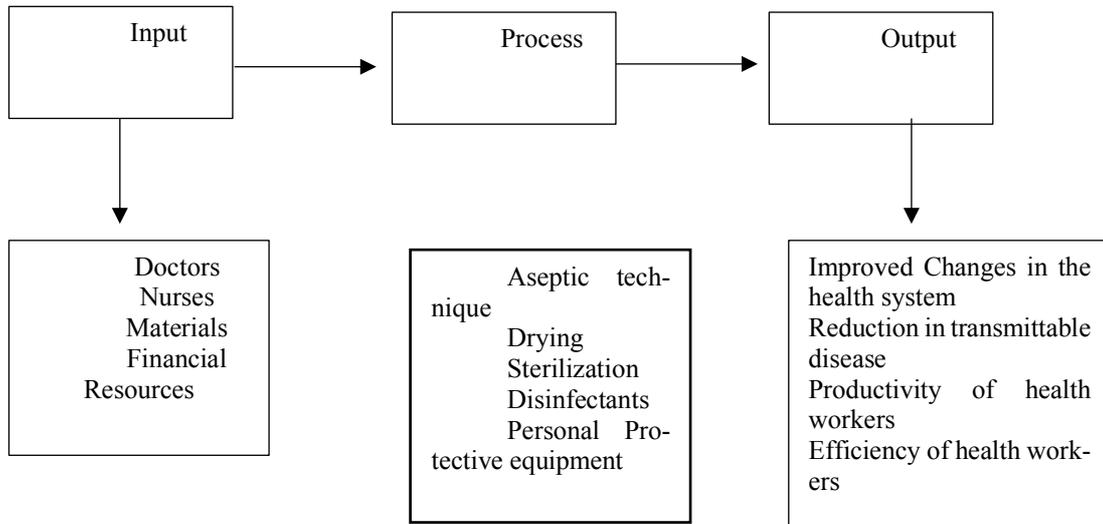
The formal name for the principle governing this category of cases is usually called the principle of double effect. A typical example might be the question as to how to best treat a pregnant woman newly diagnosed with advanced cancer of the cervix. The usual treatment, removal of the uterus is considered a lifesaving treatment. However, this procedure would result in the death of the fetus. It is argued in this case that the woman has the right to self-defense, and the action of the hysterectomy is aimed at preserving her life. The unintended consequence (though undesired) is the death of the fetus.

## **4. Empirical Framework**

A famous case was the Tuskegee Syphilis Study. Between 1932 and 1972 a study was conducted by the United States Public Health Service to study the effects of syphilis. At the start of the study there was no effective drug against syphilis, and the study enrolled 600 black men, both with syphilis and without syphilis. They were observed and monitored in what began as a proper research study.

However, when penicillin was discovered in the 1940's as an effective treatment for syphilis the patients were neither told that they had syphilis nor were they treated for it. This led many of them to eventually die of syphilis or complications of it. They also unknowingly passed the disease on to their wives and partners, and their children were born with congenital syphilis. The unethical behavior of the physicians and researchers in this trial led to further federal laws and regulations to protect human subjects in medical studies (Selgelid, 2005).

Smallpox was the most deadly infectious disease, but it was likely a combination of several new pathogens at once that killed so many people. In addition since so many people were infected for the first time at the same time, not many healthy people were left were able to serve as caregivers, which likely raised the death toll. Some estimates say that millions of indigenous people, possibly 80-90% of the population, were wiped out by diseases introduced by the Europeans (Selgelid, 2005).



## 5. Methodology

The study was a descriptive cross-sectional study. The questions were developed through a consultative process with healthcare workers. The questionnaire consisted of critical issues such as (i) knowledge of healthcare practitioners (i) attitudes of the practitioners as well as their (iii) practices. The questions raised involved the knowledge of the respondents regarding communicable diseases and how infectious and transmittable those diseases could be. More so, questions regarding the attitude and practices of the respondents regarding the management of diseases and the precautionary measures such as personal protective equipment and disinfectants were raised. More importantly, questions raised in the study were framed and arranged in such a way that it reduces the biases and response error

The study assessed the knowledge, attitudes and practice of health care workers on safety and medical ethics of infectious disease control in UITH, Ilorin. The study was done among two thousand three hundred and forty health workers (doctors and nurses) who are working in UITH, Ilorin.

The sample size for this study was determined by using the Fisher's formula for a descriptive study in a population that is less than ten thousand (10,000).

$$n_f = \frac{n}{1 + \frac{n}{N}} \tag{1}$$

Where;

$n_f$  = the sample size required for a population with less than 10,000 people

$n = \frac{Z^2 pq}{d^2}$  = The minimum sample size required for a population with more than 10,000 people

Z = the standard normal deviate corresponding to 5% level of significance for a tail test = 1.96

p = the proportion of Doctors with correct practice of hand washing = 11.6% = 0.116

(Abdelaziz KM, and Bakir, I.M. 2009)

q = the complementary probability to p = 1-p (1- 0.116) = 0.884

d = the level of accuracy

N = total population of doctors and nurses in UITH = 2340

$$n = \frac{1.96^2 \times 0.116 \times 0.884}{0.05^2} = 158 \tag{2}$$

$$n_f = \frac{158}{1 + \frac{158}{2340}} = 148 \tag{3}$$

With non-response set at 10%;  $n_f = \frac{148}{1-0.1} = \frac{148}{0.9} \approx 164$

A total number of 200 respondents were selected for the study. A multistage sampling technique was used to select the respondents. Stage 1: Six clinical departments were selected purposefully for the study. Stage 2: The workers in each department were stratified by cadres - doctors and nurses. Proportional allocation was used to know the number of respondents to be selected in each department and in each cadre. Stage 3: Respondents were randomly chosen by balloting after proportional allocation had been done.

Self-administered semi-structured questionnaire was used to assess the knowledge, attitude and practice of Doctors and Nurses on safety measures and ethical obligations of infection prevention and control in UITH. The Data analysis will be done using IBM Statistical Package for Social Science (SPSS) software version 21 was used to analyze the data obtained.

## 6. Analysis and Discussion of Results

In assessing the attitudes and practices of the research respondents and the determinants of ethical management of communicable diseases in tertiary health institutions, the findings of the study were presented as frequency tables, and charts. Cross-tabulations were done to test the statistical significance of the association between variables as stipulated statements of hypotheses.

Then, the results of the study were also discussed following the way they were presented so as to ensure organization and clarity of work. The results were compared with similar studies in literatures and the likely reasons for the identified similarities and differences were adduced.

## 7. Data Presentation, Analysis and Interpretation

A total of 188 questionnaires were completely filled and returned giving a response rate of 94%. Ninety-eight (52%) of the respondents were doctors while 90 (48%) were nurses. The results were analyzed, presented and interpreted according to the objectives of the study.

**Table 1: Respondents' Attitude Score for Ethics of Infection Control and Prevention**

Attitude score	Doctor N= 98 n (%)	Nurse N= 90 n (%)	Total N = 188 n (%)	$\chi^2$	<i>p</i> value
Positive	94 (95.9)	83 (92.2)	177 (94.1)	0.589	0.443 <sup>Y</sup>
Negative	4 (4.1)	7 (7.8)	11 (5.9)		
Mean attitude score	21.15 ± 2.55	19.43 ± 2.91	20.32 ± 2.85	4.320	<b>0.000*</b>

$\chi^2$ : Chi square; <sup>Y</sup>: Yates corrected value \*: Statistically significant (i.e. *p* value < 0.05)

From the 177 (94.1%) respondents with positive attitudinal score towards the standard precaution and ethics of infection control and prevention, 94 (95.9%) and 83 (92.2%) were doctors and nurses respectively. The observed differences in mean attitude scores were statistically significant with a *p*-value of 0.000. The positive attitude observed among the respondents was incongruent to their levels practices of safety precautions and ethical management of infectious diseases.

**Table 2: Respondents' Practice of Hand-washing with Soap and Water**

Practice of hand-washing	Doctor N= 84 n (%)	Nurse N= 74 n (%)	Total N= 158 n = (%)	$\chi^2$	<i>p</i> value
Whenever hands are visibly dirty	75 (89.3)	60 (81.1)	135 (85.4)	2.55	0.279
After removal of gloves	81 (96.4)	63 (85.1)	144 (91.1)	6.63	<b>0.036*</b>
Following any handling of blood	79 (94.0)	57 (77.0)	136 (86.1)	14.13	<b>0.001*</b>
After any microbial contamination	82 (97.6)	59 (79.7)	141 (89.2)	13.51	<b>0.001*</b>
Before performing an aseptic procedure	79 (94.0)	60 (81.1)	139 (88.0)	6.67	<b>0.036*</b>
Before preparing, handling or eating food	80 (95.2)	58 (73.4)	138 (87.3)	10.52	<b>0.005*</b>
After visiting toilet	76 (90.5)	57 (77.0)	133 (84.2)	5.76	0.056
After patient toileting	79 (94.0)	58 (73.4)	137 (86.7)	8.79	<b>0.012*</b>
After handling laundry	79 (94.0)	58 (73.4)	137 (86.7)	8.79	<b>0.012*</b>
After dealing with patients with diarrhea and vomiting	79 (94.0)	58 (73.4)	137 (86.)	8.79	<b>0.012*</b>
Mostly after close of work	81 (96.4)	59 (79.7)	140 (88.6)	11.27	<b>0.004*</b>

$\chi^2$ : Chi square. \*: Statistically significant (i.e. *p* value < 0.05)

Of the respondents that washed their hands at work with soap and water, more than three-quarter of doctors complied with standard precaution while about 60 nurses complied with standard precaution.

Despite the better exposures of nurses to infectious disease training, doctors' practice hand hygiene ethics for the management of infectious diseases than nurses. This is in line with the position of WHO(2016).

**Table 3: Respondents' Determinants of Ethics of Infection Prevention and Control**

Determinants	Doctor N= 98 n (%)	Nurse N= 90 n (%)	Total N = 188 n (%)	$\chi^2$	p value
<b>Service factor</b>					
Types of Organism	60 (61.2)	50 (55.6)	110 (58.5)	0.62	0.431
Patient's proximity to source of infection	48 (49.0)	41 (45.6)	89 (47.3)	0.22	0.639
Potential means of transmission	55 (56.1)	46 (51.1)	101 (53.7)	0.47	0.491
Patient's immune status	49 (50.0)	43 (47.8)	92 (48.9)	0.93	0.761
Lack of resources for implementation	42 (42.9)	36 (40.0)	78 (41.5)	0.16	0.691
Local culture and beliefs	27 (27.6)	26 (28.9)	53 (28.2)	0.44	0.508
<b>Management factor</b>					
Good clinical leadership	77 (78.6)	41 (45.6)	118 (62.8)	21.88	<b>0.000*</b>
Large number of Staff	34 (34.7)	18 (20.0)	52 (27.7)	5.06	<b>0.024*</b>
Team stability and morale	55 (56.1)	36 (40.0)	91 (48.4)	4.88	<b>0.027*</b>
Supporting staff training	57 (58.2)	31 (34.4)	88 (46.8)	10.60	<b>0.001*</b>
Appraisal and clinical Governance	60 (61.2)	28 (31.1)	88 (46.8)	17.08	<b>0.000*</b>

$\chi^2$ : Chi square. \*: Statistically significant (i.e. p value < 0.05)

The determinants of medical ethics of infection control and prevention were generally identified by less than half of the respondents but doctors could identify the correct determinants more than nurses. The observed statistical significance levels were with management factors. This implies that the respondents expected that provision of safety measures and ethics of infectious diseases management depend mostly on management or administrative department of hospitals.

## 8. Conclusion

This research work was designed to assess the ethical management of communicable diseases among health-care workers in Nigeria. The detailed of safety measures and medical ethics of infectious disease management and its determinants were examined. From the analysis of the data collected, majority of the respondents had good knowledge of and attitude to standard precaution but poor knowledge of ethics required for infectious disease prevention and control. However, the behavioral intents and practice of ethical management of communicable diseases were poor.

It was also discovered from analysis of data collected that less than half of the respondents could identify the factors that affect management of communicable diseases in hospitals. The factors that were better identified by the respondents were that of administrative or management factors.

Compliance of health care workers with standard precaution and ethics of infection prevention and control guidelines is linked to their general and specific knowledge of and attitudes to safety measures for infection control.

The majority (80.9%) of respondents were found to have good knowledge score for standard precautions and ethics of infection prevention and control. However, 89.8% of doctors had higher knowledge score than 71.1% of nurses. The mean knowledge scores were  $25.58 \pm 2.75$  for doctors and  $23.62 \pm 3.51$  for nurses. Also, of the respondents with positive attitudinal score towards the standard precaution and ethics of infection prevention and control, 95.9% and 92.2% were doctors and nurses respectively.

The findings also showed that the potentials of health workers for infection prevention and control in the study area were low. Only a half (51.0%) of doctors had training on infection prevention and control compared with 67.8% of nurses. Half (50.0%) of doctors and 31.1% of nurses experienced needle stick injury but only 14.3% of doctors and 13.3% of nurses received post exposure prophylaxis.

## 9. Recommendations

Capacity building of relevant hospital staff on standard precaution and medical ethics of infection prevention and control should be provided at regular intervals in all health institutions across the country. Priority should be given to infection prevention and control through special allocation of health resources

to improve infectious disease prevention and control in tertiary health institution nation-wide. Adequate equipment and consumables for maintaining standard precaution such as hand hygiene, waste segregation at source and gloving in hospitals should be provided at all times. Rewards or sanctions should be given to health workers according to their potentials for and efforts on infectious disease prevention and control in hospital. Regular integrated supportive supervision should be provided by infectious disease control team of the hospital to health workers on their duty posts. Health education should be provided for patients, their relatives and visitors on infectious disease control and prevention. Information on standard precaution and ethics of infectious disease prevention and control should be pasted in strategic positions in hospitals to reinforce the training received by the health workers.

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