

EVALUATION OF INFECTION CONTROL MEASURES AMONG PRACTICING RADIOGRAPHERS IN THE SOUTH EAST OF NIGERIA

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ABSTRACT

Objective: The aim of this study was to evaluate the standard and measures adopted by Radiographers in South East of Nigeria towards infection control in practice.

Materials and methods:

51 practicing Radiographers were assessed using a 31item questionnaire. The questionnaire was semi-structured and aimed at obtaining information on Radiographers demographic factors, knowledge/awareness of infection control, the practice/techniques of infection control and the possible reasons for the stated level of compliance. The data was analyzed using SPSS version 14.0. The percentages of Radiographers that wear hand gloves during every examination, that wash their hands before and after every examination, that wear gown, mask and eye protector when likely to come in contact with body fluid or when attending to TB patients were noted.

RESULTS:

Results indicate that only 35.8% admitted having in place a policy on infection practice in the department while 64.2% did not have any. While 89.5% of the respondents disinfect x-ray examination table when stained with body fluid, 10.5% did not. The practice of hand washing before and after attending to patient was very poor representing only 20%. Pressures at work and non-availability of materials needed for proper infection control jointly accounted for over 30% of the reasons for low compliance of measures aimed at reducing infection spread in hospitals.

CONCLUSIONS:

The level of compliance of Radiographers in the Southeast towards infection control is poor. The reasons for this poor compliance is as a result of non availability of facilities needed for infection control practices, pressure of work and poor working conditions.

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INTRODUCTION

Infection refers to the invasion and multiplication of micro-organisms in body tissues, which may be clinically unapparent but result in local cellular injury due to competitive metabolism, toxins, intracellular replication or antigen-antibody response¹. Infection agents refer to micro-organisms (bacterial, viral, fungal) that are capable of causing disease in man, his domestic animal and even plants. Health practitioners (e.g. Radiographers) who have direct contact with the patients and other hosts have been reported of being at high risk of contacting and spreading infections².

In 1987, the centers for Disease control (CDC) recommended that all hospitals should adopt the infection control policy named universal precautions³. Studies have shown that training and implementation of these principles reduce the risk of contacting the infection^{4,5}.

In the hospital environment, growth of free - living gram positive bacilli and other infectious agents can be a major hazard leading to nosocomial infections⁶. Health care associated infections are infections transmitted to patients and health care workers as a result of health care

procedures in hospitals and other health care settings⁷. Infection control in health care setting are measures practised by health care facilities to decrease transmission and acquisition of infectious agents such as staphylococcus aureus, hepatitis A,B and C virus, Bacillus species, herpes zoster etc

The National HIV Sero-prevalence sentinel reports show an exponential increase in the HIV prevalence rate in Nigeria⁸. Similarly, high rates of hepatitis Band C have been reported in Nigeria and Africa as a whole^{9,10}. Very few studies have attempted to assess the level of awareness and practice of the universal precaution/infection control measures among health workers in Nigeria^{11,12}.

Since infectious agents such as HIV, hepatitis Band C virus, Bacillus species, staphylococcus aureus and others are common on the x-ray equipment^{13, 14}, assessment of measures adopted by the Radiographers in South -Eastern Nigeria to prevent spread is very important.

MATERIALS AND METHODS

This is a cross sectional study carried out between January and June 2009 in the South Eastern geopolitical zone of Nigeria. A total of 51 practicing Radiographers all government hospital in the locality were enlisted into the study. A 31 item semi-structured questionnaire; designed to obtain information on Radiographers demographic factors, knowledge / awareness of infection control measures, and their practices/techniques of infection control were distributed. The subjects all gave informed consent and the ethics committee approved the study. All the questionnaires were returned.

The data was analyzed using SPSS version 14.0 frequencies were compared with chi-square while correlation of the various variables were assessed using correlation analysis.

RESULTS

The results shows that 55% of the Radiographers were B.Sc holders, 30% were DCR (Diploma in Radiography) holder while 15% had Masters degree as their highest Certificate. The mean age of the respondent was 32.36± 9.55 years with a range of 25 to 51 years. There were 65.8% males and 34.2% females. 35.8% admitted that there is an infection control policy existing in their working places while 64.2% admitted non-existence of infection control policy in their place of work. 2.6% did not give any reply to this question. All (100%) of the respondents indicated awareness of nosocomial infection.

Table 1 shows the effects of various demographic variables on infection control compliance. From the factors tested, only number of patients attended to per day had a negative but significant effects on the level of compliance to the infection control measures. Table 2 shows the infection control measures as practiced by the radiographers.

Table 1:
Effect of various demographic variables on infections control compliance

Variables	p values
Age	0.32
Sex	0.55
Length of practice	0.13
Level of education	0.10
No of patient per day	0.03

Table 2: Infection control measures as practiced by Radiographers

INFECTION CONTROL MEASURES	YES	NOT ALWAYS	NOT AT ALL	NO RESPONSE	TOTAL
Disinfect cassette before use, when skin to cassette Contact occur	44.7%	26.8%	18.4%		100%
Observed hand washing always before each patient's examination	20.8%	50.0%	29.2%		100%
Wear gloves for every radiographic examinations	22.1%	51.6%	26.3%		100%
Wear gowns, when attending to patients	36.8%	57.9%	5.3%		100%
Wear eyes protectors and masks for TB patients or when likely to come into contact with Body fluid	0%	5.7%	94.3%		100%
Give mask to TB patient during their examination	0%	92.1%	7.9%		100%
Wear gowns, mask and gloves for patient with Skin transmissible infection during examination	47.4%	39.5%	10.5%	2.6%	100%
Disinfect x-ray couch and cassette when stained with body fluid	89.5%	10.5%			100%

Table 3: Reasons for reduced compliance with infection control measures.

REASONS FOR REDUCED COMPLIANCE	FREQUENCY
Non availability of facilities needed for proper infection control practices	15.8%
Poor working condition of the hospital environment	7.9%
Unshared working periods	13.2%
Inadequate staffing	21.1%
Pressures of work from the management and patients	15.8%
Non availability of infection control policy	13.2%
Non adherence to infection control policies available	5.3%
Inadequate patient education	7.9%

DISCUSSIONS

One of the primary concerns that ought to be in the minds of health care personnel is the control and prevention of infection. Infection control techniques are measures adopted and practiced by health care personnel in health care facilities.

according to the patient's isolation instituted to decrease transmission and acquisition of infectious agents¹². Though the major function of Radiographers is to produce quality diagnostic images, a clean and infection free environment is very important.

The occupational safety and health administration has established guidelines to help prevent the spread of infections in the health care environment. Although there are no guidelines established specifically for Radiology departments, general infection control protocols exist.

In the present study, 50% of the respondents admitted that they occasionally practice the hand washing technique before and after each patient's examination. 29.2% admitted that they do not observe hand washing at all while 20.2% says they do observe this measure always. Hand washing before and after each examination is the first precautionary tool set up by the Centre For Disease Control. McElueain et al¹⁶ in their study pointed out that thorough hand washing with soap or alcohol by all medical personnel before and after each patient examination is one of the most effective ways to combat nosocomial infection. Hospital acquired infection exerts great pressure on the health sector and this results in increased morbidity, mortality and increased health care cost. Since hospital acquired pathogens are transmitted from patient to patient via the hands of health care workers, hand washing, therefore, proves to be the simplest and most effective way to reduce the incidence of nosocomial infection.

The second precautionary measures recommended by the Centre For Disease Control is the wearing of hand gloves when performing any examination. In our study, 51.6% of the respondents admitted that they wore hand gloves only in a few radiographic investigations. Only 22.1% admitted wearing hand gloves for every radiographic examination while 26.3% accepted that they did not wear hand gloves at all.

The use of hand gloves among other health workers had been assessed by earlier studies. Ibeziako et al² reported 86.6% use of hand gloves among health workers in UNTH. This is lower than 97.1% use of hand gloves reported in Ibadan¹⁷. However, these figures are higher than 10.2% and 40% use of hand gloves reported in other studies¹⁸. There appears to have been an increase in the use of hand gloves from 10.2% in 1995¹⁸ to

40% in 2000¹¹ and 97.1% in 2003¹⁷. This later dropped to 86.6% in 2006 and the present study reveals a drastic drop in the use of hand gloves to 22% among Radiographers.

Wearing masks, eye protectors and gowns when in contact with body fluid is the third precautionary measure laid down by the Centre For Disease Control. In the present study, 36.8% of the practicing Radiographers always put on their gowns when likely to come in contact with body fluid, 57.9% make use of the gown occasionally while 7.9% do not use the gown at all. The use of eye protectors and masks had very little or no usage (5.7%) among practicing Radiographers in the southeast

The respondents gave various reasons for reduced adoption of infection control practices. 21.1% of the respondents attributed this to inadequate staffing while 15.8% attributed it to pressure of work. This agrees with the observation of Odunoye¹¹ that pressure on the Radiographers operating the MRI unit to speed up scanning and get back on schedule gives the Radiographers no time to practice infection control procedures. As a result of the foregoing, Collins et al¹⁹ suggested that reducing number of booked appointments would afford staff the time to carry out infection control measures. 13.2% of the respondent blamed the poor compliance attitude of Radiographers towards infection control on unshared working period. Another 13.2% blamed it on non-availability of infection control policy. This agrees with the observation of Alvarado et al¹⁵ who suggested that setting up an infection control team to set guidelines, continually up date measures to enforce infections control, as well as regular education sections that involves all members of staff and the use of postcards on infection control guidelines in all relevant rooms would remind and awaken the staff consciousness towards infection control. 15.8% of the respondents believes that the poor infection control compliance is due to non availability of facilities needed for proper infection control practices. Another 7.9% blamed it on inadequate

patient education. 7.9% also believed it is due to poor working condition of the hospital environment while 5.3% attributed it to non adherence to infection control policies available. Barker et al²⁰ stated that one of the contributory factors to the poor practice of infection control is non provision of specifically infection control measures. While Kareen et al²¹ tied the poor practice of infection control to environmental and organizational factors. They explained environmental factors as improving the availability of equipments and organizational factors as offering infection Control training for health care workers.

In conclusion, the standard of infection control measures among practicing radiographers in the Southeast is poor. This is as a result of pressure of work, inadequate staffing, poor working condition of the hospital environment and the non-availability of facilities needed for proper infection control practices. It is recommended that the hospital administration should provide an enabling environment for infection control.

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