Original Research Article

Infection Prevention and Control Practices among Health Workers at Ridge Regional Hospital in Accra Ghana

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ABSTRACT

Introduction: Quality of Infection prevention and Control (IPC) control is crucial to health care and it is important to assess it, especially at hospital level as a strategy to inform health policy. The general objective of this study therefore is to assess the Infection Prevention and Control (IPC) Practices at the Ridge Regional Hospital in Accra.

Methods: The study design was a descriptive case study that employed self-administered questionnaire and observational guide to collect data. Data were analysed and presented in Tables, frequencies and percentages. Two hundred and four (204) respondents participated in the research.

Results: The findings showed that at the Ridge Hospital knowledge in IPC among Healthcare workers was moderate, 51.0% (N=204). The availability and access to materials for IPC practices at the facility was 58.0% and overall compliance with IPC Guidelines was 54.9%.

Conclusion: In conclusion, results of this study demonstrate that knowledge of Hospital Acquired Infections (HAIs) was moderate among most of healthcare workers. However, this calls for a routine training of all health workers on IPC. It is recommended that management ensures access to resources and their availability to promote effective compliance.

Key Words: Availability, Access, Knowledge, Compliance, Ridge Regional Hospital.

INTRODUCTION

An effective Infection Prevention and Control (IPC) programme is fundamental to quality health care. This is because it has the potential benefits of reducing disease burden on patients, health institutions and the nation as a whole (MOH/GHS, 2009). In the last two decades,

An infection is considered nosocomial if it becomes evident 48 hours or more after healthcare associated infections have been recognized as a significant problem in terms of quality of care and cost to patients/clients, healthcare facilities and governments. This is because of the increasing realization of healthcare associated infections as a potential indicator of quality healthcare to patients (MOH/GHS, 2009).

hospital admission or within 30 days of discharge following in- patient care (Bello et

al 2011). They are caused by *Candida albicans, Escherichia coli, hepatitis virus, herpes zoster virus, pseudomonas and staphylococcus* (Mukwato *et. al*; 2003). These pathogens are transmitted from one person to another through direct or indirect contact and at any time, about 10% of in-patients contract Hospital Acquired Infections (HAIs) (Mukwato *et. al;* 2003).

Reported cases of nosocomial infection assumed such terrifying proportion in 2002 that WHO member states approved a World Health Assembly (WHA) resolution on patient safety (Bello *et. al*; 2011). Developing countries have about 20 times the risk of contracting a nosocomial infection compared with developed countries. Thus, source(s) of the spread of infection is a major worry for managers in healthcare practice particularly in developing countries where the healthcare system is already overstretched (Bello *et. al;* 2011).

Nosocomial infection rates ranges from 1% in developed countries to more than 40% in some developing countries, including Sub-Sahara Africa (Alvarado, 2009). Some of the nosocomial infections in developing countries are surgical site infections (SSI), urinary tract infections and lower respiratory tract infections such as pneumonia. These infections are usually resistant to commonly used drugs such as penicillin and they are difficult to eradicate from health care environment. They prolong hospital stays for patients and thus increasing bed occupancy and consequently consuming scarce hospital and patient resources and a major challenge to hospital management.

The strain that these preventable infections put on the health care system include: prolonged patient hospitalization, treatment with expensive drugs and the use of other services such as laboratory tests, X-rays and transfusion, are immeasurable. Yet they can be prevented by the appropriate knowledge and practices of Infection Prevention and Control (Mukwato *et. al;* 2003).

It is possible to significantly reduce the rate of health care associated infections (HAIs) through effective infection prevention and control practices. Similarly, infection prevention and control measures are most effective when Standard Precautions are applied because undiagnosed infections are common (WHO, 2005).

Although infection is most prevalent in patients upon admission, healthcare workers also act as potential vectors for pathogenic agents. Hospitals provide a favourable transmission pathway for the spread of nosocomial infections owing, partly, to poor infection control practices among health workers on one hand and overcrowding of patients in most clinical settings on the other (Bello *et*, *al;* 2011). Healthcare providers and patients are exposed to infection through inadequate IPC practices and it is against this background that MOH developed a policy that every health worker is trained in infection prevention and control practices. The purpose is to reduce health care associated infections, thus promoting good quality care for patients and health personnel (MOH/GHS, 2009). This study seeks to assess the knowledge of infection prevention and control among health workers, evaluate the availability and access to materials for infection prevention at the facility and the level of compliance with infection prevention guidelines at the facility.

Problem Statement

The benefit of IPC in good health delivery and patient satisfaction ensures less expenditure on health care in any country. It is a policy that every country achieves at least 70% compliance with IPC practices (WHO, 2002). But in Ghana there is no current data on compliance level and furthermore a monitoring survey conducted in selected health facilities in the Greater Accra Region (GAR) by Institutional Care Division (ICD)

of GHS recorded a compliance level of 43% and 18% at Ridge Hospital (GHS, 2011). These figures are below the baseline level of 70% and need to be investigated. The study therefore seeks to assess the IPC practices at the Ridge Hospital to identify factors contributing to this low compliance level.
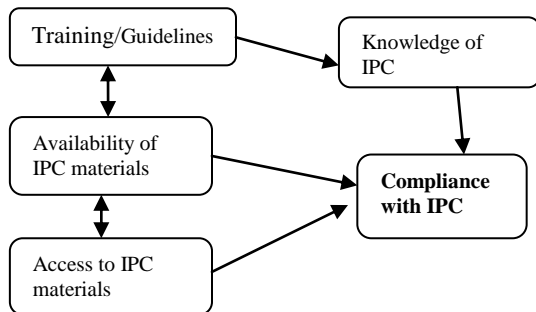
Conceptual Framework

Fig 1: Some factors associated with compliance with IPC Practices

As depicted in Fig. 1, compliance with IPC practice depends on knowledge and training of personnel. Coupled with availability and accessibility to resource materials ensure the much needed compliance at the health facility as explained in the diagram.

METHODS

Study Design: The study was a descriptive case study that employed self-administered questionnaire and observational guide to collect data. Two hundred and four (204) respondents participated in the study.

Study Area: The study was conducted at Ridge Regional Hospital in the Greater Accra Region of Ghana. The hospital is a 348-bed regional teaching and referral centre in the Greater Accra Region providing general and specialized services for the population in the city and surrounding areas. In 2011, the hospital had about 1,064 admissions, and 2,382 outpatient visits. A patient's average length of stay on admission is eight (8) days. The hospital occupancy rate is about 80% at any given time. It has staff strength of 872 comprising doctors, nurses, laboratory technicians, pharmacists and other healthcare workers. The hospital was chosen for the study because it is the regional hospital and serves as the referral points for other health facilities within the region and also for its low compliance in IPC practices (GHS, 2011).

Data Collection Techniques

All data were collected by the researchers. Self-administered questionnaires were used to collect data from the staff of the facility.

Observational guides were also used to assess the IPC practices among health workers at the facility.

Data processing And Analysis

The data that were collected were coded before being entered into SPSS version 16.0

Data was analyzed using SPSS Version 16.0. The distribution and the internal consistencies of the responses were checked. Incomplete responses were not included in the analysis.

RESULTS

The focus was on the analysis and the interpretation of the results. The results are presented in the following order: Demographic characteristics of the study population, knowledge in IPC practices among Health workers, availability and access to materials for IPC practices and compliance with IPC Guidelines and protocol.

Demographic Characteristics of the Study Population

In this study, a total of 204 respondents were included as presented in Table 1. The ages of respondents ranged from 20-29 years (43.1%) and 30-39 years were 46.1%. Majority (68.1%) had NTC as their highest educational level. The largest professional (95.1%) group who participated in the study was nurses. The junior staffs were 56.4%. About 80.04% spent between 1-5 years in their current positions of job and

78.4% spent less than 5 years working at the facility.

Table. 1 Demographic Characteristics of Respondents (N=204).

Characteristics	Frequency	Percentage (%)
Sex		
Male	58	28.4
Female	146	71.4
Age (years)		
20-29	88	43.1
30-39	94	46.1
40-49+	22	10.8
Educational Level		
University	57	27.9
Polyclinic	8	4.0
NTC	139	68.1
Professional Group		
Nursing	194	95.1
Paramedical	10	4.9
Rank/Position		
Senior Staff	89	43.6
Junior Staff	115	56.4
Years spent in current position		
1-5	164	80.4
6-10+	40	19.6
No. of years in the facility		
Less than 5	160	78.4
6-10	38	18.6
10+	6	2.9

Knowledge of Infection Prevention Practices among Health workers

Knowledge of infection prevention practices is presented in Table 2. It was found that about (70.6%) of respondents indicated that they have heard about IPC and 51.0% had training in IPC practices. The commonest mode of transmission [Hospital Acquired Infection (HAI)] was contact with blood and body fluids, (39.2% of the respondents) while 12.7% indicated needle pricks. Hand washing 41.2% was a means of preventing HAI while processing of instrument was 13.7%. The overall level of knowledge on IPC was as follows: the majority (51%) had some knowledge; followed by (29.4%) who had low knowledge and 19.6% were knowledgeable [high knowledge] about HAI.

Table 2: Knowledge of Infection Prevention Practices among Health Workers.

Variables	Frequency	Percentage (%)
Knowledge of Infection Prevention and Control (IPC)		
Knowledge of IPC	144	70.6
No knowledge of IPC	60	29.4
Training in IPC		
Training in IPC	104	51.0
No Training in IPC	100	49.0
Mode of Transmission of Hospital Acquired Infection		
Contact with blood		
Needle stick	80	39.2
Contaminated instruments	26	12.7
Contaminated hands	34	16.7
Prevention of HAI		
Hand washing	84	41.2
Use of PPE	60	29.4
Proper disposal of clinical waste	32	15.7
Proper processing instrument	28	13.7
Level of knowledge of IP	115	56.4
High	40	19.6
Medium	104	51.0
Low	60	29.4
TOTAL	**204**	**100**

Availability and Access to Materials

As presented in Table 3, about 87.7% of the respondents indicated that, gloves were always available on the ward and 12.3% indicated gloves were not always available on the ward for IPC practices. On the issue of availability of Personal Protective Equipment (PPE),70.6% of participants stated that PPE were not always available while (29.4%) stated PPE were always available for IPC practices. With regards to hand washing items, (58.3%) indicated that the items were not always available and (41.7%) stated that the items were available. Majority, (57.4%) of the respondents indicated that, detergents were always available for decontamination, while (42.6%) stated that detergents were not available.

Availability of materials for IP	Frequency	Percentage (%)
Gloves		
Always available	179	87.7
Not always available	25	12.3
Personal Protective Equipment (PPE)		
Always available	60	29.4
Not always available	144	70.6
Hand washing items		
Always available	85	41.7
Not always available	119	58.3
Detergents for contamination		
Always available	117	57.4
Not always available	87	42.6
Safety boxes		
Always available	58	28.4
Not always available	146	71.6
Access to IP materials		
Easily accessible	84	41.2
Not easily accessible	120	58.8
Personal Protective equipment		
Easily accessible	54	26.5
Not easily accessible	150	73.5
Hand Washing Items		
Easily accessible	38	18.6
Not easily accessible	6	2.9
Detergents for Decontamination		
Easily accessible	147	72.1
Not easily accessible	57	27.9
Safety Boxes		
Easily accessible	104	51.0
Not easily accessible	100	49.0

With access to material for IP, 58.8% of the respondents indicated they do not have easy access to gloves while 12.2% indicated that gloves were easily accessible. About 70.6% of the respondents mentioned that, access to PPE was not easy and (29.4%) stated access to PPE was easy. With Hand washing items, about 65.7% stated the items were easily accessible while 34.3% were not easily accessible.Accessibility to detergent for decontamination,72.1% indicated that detergents were easily accessible while 27.9% stated that detergents were not easily accessible. With safety boxes, 51.0% indicated the boxes were easily accessible and 49.0% stated the boxes were not easily accessible.

Compliance with IPC Guidelines and Protocol

On the existence of IPC committee and nurse, 49.0% indicated that they were not aware of the committee and only 11.8% stated that there was a committee and nurse. With access to IPC guideline and protocol at the workplace, 57.8% stated that they had no access to the guideline with (42.2%) indicated they had access to the guideline. On the frequency of hand washing, 76.5% stated they wash their hands, before and after contact with patients with only 1.0% stated that they

rarely washed their hands. Majority (76.5%) indicated they have been using PPE while performing various procedures. The commonest used PPE were gloves with 82.4% while the least used were boots with 2.9%.

On disposal of used syringes and needles, 57.4% put, used syringes and needles immediately into safety boxes with, 42.6% put them into receivers before pouring them into safety boxes. The overall level of compliance with IPC guidelines and protocol, 54.9% had low compliance level with (45.1%) had high level of compliance. This is presented in Table 4.

Table 4 Compliance with IPC Guidelines

Variables	Frequency	Percentage (%)
IPC Committee/Nurse		
Yes	24	11.8
No	80	39.2
Don't know	100	49.0
Access to IPC Guidelines		
Yes	86	42.2
No	118	57.8
Hand Washing		
Always	156	76.5
Sometimes	48	23.5
Use of PPE		
Gloves	168	82.4
Gowns	30	14.7
Boots	6	2.9
Disposal of used syringes and needles		
Into safety boxes	117	57.4
Into a receiver	87	42.6
Level of compliance		
High	92	45.1
Low	112	54.9
Total	**204**	**100**

DISCUSSION

The discussions of the research as related to the objective of the study are presented. Also, it provides information relevant for strengthening IPC at the facility; knowledge, availability and access to materials for IPC practices and compliance with IPC guidelines and protocol at the facility to ensure delivery of quality care to patients were discussed and presented as follows:

Knowledge of Infection Prevention and Control (IPC) Practices among Health Workers

This research reveals knowledge about infection prevention practices among health workers. Awareness of IPC and knowledge of its practices among the participants were moderate 51.0 %. This proportion was relatively low compared with others research findings (Mukwato *et. al;* 2005) in which 63.6% of sampled healthcare workers had training in IPC. This disparity in the outcome may be due to low access to training in IPC. Also, the study location may have influenced the difference in the outcome of the two studies. However, the highest reference made to training in IPC in line with WHO's requirement suggests more theoretical approach to campaign about infection prevention practices (WHO, 2005).

Although there were different levels of knowledge on Hospital Acquired Infections (HAIs) among different ranks of the staff, it was not impressive as the highest score was 39.2%. Further, the knowledge of the staff on prevention of HAIs did not show any statistical relationship between training in IPC and knowledge in prevention of HAI

Availability and Access to Material for Infection Prevention and Control (IPC) Practices

Non-availability and access to materials for IPC practices is known to be one of the barriers to IPC practices (Mukwato et al, 2003). The most available materials for IPC practices on the ward were gloves 87.7%. Although gloves were mostly available on the wards, they are not easily accessible to work with. This disparity may be due to the fact that some ward sisters do not want to issue enough of the materials at a time for the staff to use. The excuse was that the nurses misuse the gloves. This was also observed during the ward observation as some wards were borrowing gloves from other departments to use when their *ward in charges* were not available.

However, the most accessible material was detergent for decontamination 72.1%. There is disparity between the availability of the detergents and their correct use. Most wards do not have the protocol for preparing the detergent pasted at where the decontaminants are placed and because of this most staff are not conversant with the correct strength of the detergent they use on the ward. This situation can affect decontamination of used instruments which can be a source of spreading of infection.

Compliance with Infection Prevention and Control (IPC) Guidelines and Protocol

Compliance with IPC practices is based on the access to guidelines and protocol (Rak, 2010). Access to IPC guidelines by the healthcare workers was as low as 42.2%. This may explain the low compliance with IPC practices among healthcare workers. The highest complied practice was hand washing 76.5%. But this finding is contrary to that of (Tiejen, 2003) who mentioned a lower compliance among nurses in his research.

Complying with the proper disposal of syringes and needles into safety boxes was 57.4%. This was lower than a similar survey carried out by Mukwato *et. al;* 2005 where compliance with proper disposal of syringes and needles was 62.3%. This was observed in some wards where improvised containers were used for needles and sharps.

The majority of respondents 82.4% used gloves as a Personal Protective Equipment (PPE) while performing various procedures. This is in compliance with what was obtained by Tietjen, (2003).

The research sought to assess the relationship between training, the availability and access to materials for IPC practices and compliance with regards IPC. The findings of the study revealed that compliance varied across different departments of the hospital. Observable compliance was high in departments such as Operating Theatre where supplies of materials for IP were adequate compared to the Medical Ward where supplies were inadequate. About 90% of the participants observed in the Operating Theatre (conducting or assisting an operation) complied with IPC guidelines. However at the Medical and Surgical Wards did not comply with IPC guidelines.

CONCLUSION

The study showed low levels of knowledge in IPC practices due to lack of information on IPC. It was also found that availability, access to materials for IPC practices and compliance with IPC guidelines were moderate.

RECOMMENDATION

Following the findings of the study, the following actions are recommended:

1. Training in IP should be part of routine work process for all health workers at the facility. This would improve the knowledge of all staff in IPC practices which will lead to delivery of quality care to patients.

Policy makers must also provide enough information on IPC available to the health workers.

2. The management of the facility should ensure access to materials and their availability for workers to use for their work. There should also be policy at the facility for all care givers to comply with existing guidelines and protocol.

3. The IPC Committee should be actively functional and assume their monitoring and supervisory roles.

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