

Evaluation of infection control at Butiru Chrisco Hospital in Manafwa District, Eastern Uganda

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ABSTRACT

Infection prevention and control is important for the improvement of quality care in hospital. This study aimed to identify risk associated with infection control, and to determine which infection control measures are available at Butiru Chrisco hospital and how these measures are put to use by the staff working in the hospital. This descriptive cross-sectional study was conducted at Butiru Chrisco hospital in Manafwa District. The study involved 100 respondents who were staff employed by Butiru Chrisco hospital. With different educational standards, awareness of infection control was assessed through a structured questionnaire that was administered to those who consented to participate. Random sampling was done on 10 staff, this helped correct the questionnaire making it suitable for the study but the results were not included in this study. The study revealed that out of 100 respondents, 72(72%) were nurses, 60(60%) were females and 78(78%) had been employed by the hospital for less than four years. Half 50(50%) revealed that airborne infections are the commonest infections in the hospital. The study also reveals that more than 80% reported positive response to infection control tasks with 80(80%) agreeing that practice of infection control reduces likelihood of infection spread to patients. From the study, it was concluded that, there is moderate awareness of infection control with more than half of the respondents having positive ideas about infection control and use of available measures like glove, apron, and hand washing. However, practice and compliance with standard precautions was less than optimal. The researcher recommends continuous health visits by ministry of health (MOH) of Uganda to the hospital and evaluation of the practices to ensure that the health workers practice infection control following the standard guidelines. Also, hand washing or use of hand sanitizers with alcohol or other antiseptics as a measure of disinfecting the hands before or after handling a patient is encouraged.

Keywords: Infection, health workers, hand washing, Manafwa District

INTRODUCTION

Infection prevention and control refers to practices aiming at decreasing health care associated infections and nosocomial infections [1-4]. Infection control is a very pertinent issue within clinical circles, public health, and among health service consumers, practiced within the confines of a particular health care delivery system rather than directed to society as a whole [1-8]. And these infections have been with us since time of antiquity and a number of reports on poor hospital hygiene have been published including reports about

patient's fear concerning safety in hospital [9-14]. A health care or hospital acquired infection also called nosocomial infection results from treatment procedures in hospital or health service unit, while as the patient acquires an infection that she/he did not have prior to being admitted to the hospital [15-20].

Duse [15] reported that 25% or more of the hospitalized patients in developing countries acquire nosocomial infections. These infections are due to a variety of potential pathogens commonly found on

hospital surfaces and anywhere in the hospital environment [21-26]. Such pathogens include *Clostridium difficile*, vancomycin resistant enterococci (VRE), and methicillin resistant *Staphylococcus aureus* all of which are less sensitive to most available antibiotics making hospital acquired infection more difficult to manage than community associated infections [27-31]. Furthermore, these infections are the common cause of morbidity and leading cause of death in patients admitted in hospital with otherwise different medical conditions [26-30]. In addition to increased morbidity and mortality rate associated with nosocomial infections, a significant loss of resources in health sectors has been realized as well [16]. Infection control is critical in improving the quality of care given to patients and as part of management in health services [17] in that it addresses factors related to spread of infections within a healthcare setting, whether patient to patient, from patient to staff, and from staff to patient or even among staff [1] Oosthuysen, et al. [18] emphasized that infection control is a very important policy due to increasing prevalence of infectious diseases in hospitals or other health care settings. Also, infection control practice is an essential though often under recognized and under supported part of the infrastructure of health care [1] and because of the rapidly changing health care environment makes it difficult to protect patients and health care workers from transmission of pathogens [19]. Harris and Samore [20] supported the view that hospital acquired infections pose a threat to hospital workers, patients and community and represent a major cause of morbidity and mortality in hospitalized patients.

Steeds *et al.* [21] highlighted that hospitals should ensure that elimination of health care associated infections become a priority of hospital quality and patient safety program as nosocomial infection outbreaks have been associated with the healthcare staffs' poor compliance with and practice of standard precautions that include hand washing, safe injection

practices and use of unsterilized surgical tools.

Hand washing has been recognized as the most important means of preventing the transmission of infection, and great emphasis has been placed on ways to improve hand hygiene compliance by health workers [22]. Other protective measures such as masks, gloves, vaccination and proper waste management are useful in ensuring that the healthcare personals do not get exposed unnecessarily to occupational related infections or pass them onto patients [9]. Hospitals generate both medical and general wastes and waste generation depends on numerous factors such as, established waste management methods, hospital specialization and proportion of patients treated on a day care basis [1]. Hospital workers including support staff that is to say those cleaning and working in laundry section are at risk of exposure to potential life-threatening infectious agents. For example, in US, more than 800,000 needle stick injuries occur each year despite continuing education and vigorous efforts aimed at preventing such accidents [1].

The rate of such infections ranges from as low as 1% in some countries in Europe and North America to 40% or more in many regions of developing world [16]. Most of these infections are preventable with readily available and inexpensive strategies like adhering to the recommended practice especially hand hygiene and wearing of gloves.

Also, several studies have showed that the incidence of infections in pediatric and maternity specialty is on a rise despite the available resources and competent staff working in these respective sections of a hospital setting or any other health unit that renders these ventures. In developing countries, babies born in hospitals are at a greater risk of neonatal infection arising from poor intrapartum and postnatal infection control practices [16]. It's estimated that up to 50% of the hospital acquired infections are associated with only five patients care practices which are, compliance with hand hygiene and standard precautions of infection control,

use and care of urinary catheters, vascular access lines, therapy and support of pulmonary function and experienced with surgical procedures [16]. Infection control

Derick and prevention is monitored by health care committee members who see to it that infection prevention and control guidelines are followed properly.

METHODOLOGY

Study design

A descriptive cross-sectional study was used to assess infection control in Butiru Chrisco hospital.

Study area

The study research was carried out in Butiru Chrisco hospital in Manafwa district, eastern Uganda.

Study population

The study was carried out among Butiru Chrisco hospital staff including the healthcare givers as well as the support staff irrespective of their levels of education or special training.

Inclusion criteria

Only the staff members who were present at the time the research was carried out were included in this study.

Exclusion criteria

Respondents who were away at the time the research was carried out were exempted from the study. Non-residents in the hospital were not included in the study.

Staff members who were having work leaves were not included in the study.

Sampling method

A research questionnaire with both structured questions distributed randomly among 10 staff members in the hospital irrespective whether they were part of the medical team or the hospital support staff.

Sample size determination

The number of participants was determined using the Fischer's formula.

The formula $n = Z^2 pq / d^2$

Where,

n= required sample size,

Z= value corresponding to 95% confidence interval for a standard normal distribution of 1.96,

P= proportion of target population assumed to have similar characteristic, which was estimated to be 90 % (0.9),

q= 1-p which is 0.1,

d= maximum accepted error = 0.05,

Substituting the values, $n = (1.96)^2 \times 0.9 \times 0.1 / (0.05)^2 = 138$ respondents.

But due to financial constraints and limited time resource, a sample size of 100 respondents was used.

Data collection

Data collection method

A questionnaire with structured questions addressing the research objectives was issued to the respondents who met the qualification and had consented. All respondent were given ample time to fill the questions completely. Assistance was given to respondents who found difficulty in interpretation of scientific terminologies.

Data quality control

The researcher ensured that only participants who meet the inclusion criteria were allowed to fill the questionnaire and made sure all consented. Assistance was sought from the researcher's supervisor at every stage of development of this study where necessary. The researcher pretested the questionnaire before it was used in the study, and also, the researcher offered assistance to the participants where it needed.

Data analysis method

Data was analyzed manually using scientific calculator in predesigned tables, relevant frequencies were attained by tally method and then the figures manipulated to derive percentages and other derivations relevant in this study interpretation of the raw data. Microsoft excel was used to compute the obtained data.

Data presentation methods

The data was presented in form of graphs, charts, percentiles, tables depending on the data that the researcher analyzed.

Ethical consideration

- Research proposal was submitted to Kampala International University Ethics and research committee and it was approved.
- The permission was sought from Kampala International University ethic and research

office that introduced the researcher to Butiru Chrisco hospital administration.

- Participants were informed of their freedom to withdraw from the study without any penalty.
- Participants were given enough information on which they based their decision to participate in the study.

- Participants were assured of their confidentiality by not using their name for the study.
- No promise of reward for the participant either in cash or kind.

RESULTS

Findings on the demographic profile of the participants

Table 1 Personal data of the respondents

PERSONAL DATA	FREQUENCY(F)	PERCENTAGE (%)
AGE OF RESPONDENTS		
18-25	46	46.0
26-35	38	38.0
36-45	16	16.0
Total	100	100.0
GENDER DISTRIBUTION		
Male	40	40.0
Female	60	60.0
Total	100	100.0
YEARS OF EMPLOYMENT		
0-4	78	78.0
5-9	14	14.0
10-14	-	-
15 and over	8	8.0
Total	100	100.0
EDUCATION STANDARDS		
Nurse	72	72.0
Clinical officer	6	6.0
Doctor	-	-
Others	22	22.0
Total	100	100.0

Table 1 show that the majority 46 (46 %) of the respondents were of age between 18-25 years and females made 60 (60%) and the rest 40 (40%) were males, most of these 78 (78%) had worked at the hospital for 0-4 years, 14 (14%) had worked for 5-9 years, none of the respondents had worked for 10-14 years and the rest 8 (08%) of the

respondents had 15 years and above of service at Butiru Chrisco hospital. Most of the respondents who participated in the study 72 (72%) were nurses, 6 (06%) were clinical officers, none of the doctors participated in the study and the rest 22 (22%) were in the category of others.

Findings on risks associated with infection control.

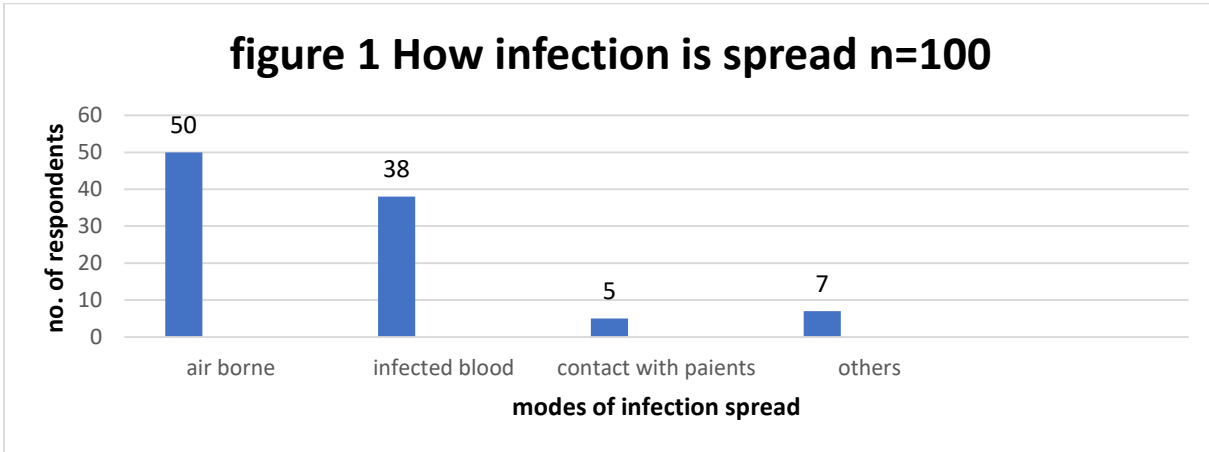


Figure 1 showing how infections are spread in the hospital setting.

Outlines that most 50 (50%) of the respondents established that airborne mode is the most commonest way infections spread, 38 (38%) established that infected body fluids, 05 (05%) also

established that contact with the infected patients is the most common mode and the rest 07 (07%) established that there are others modes of infection spread other than the ones mention above.

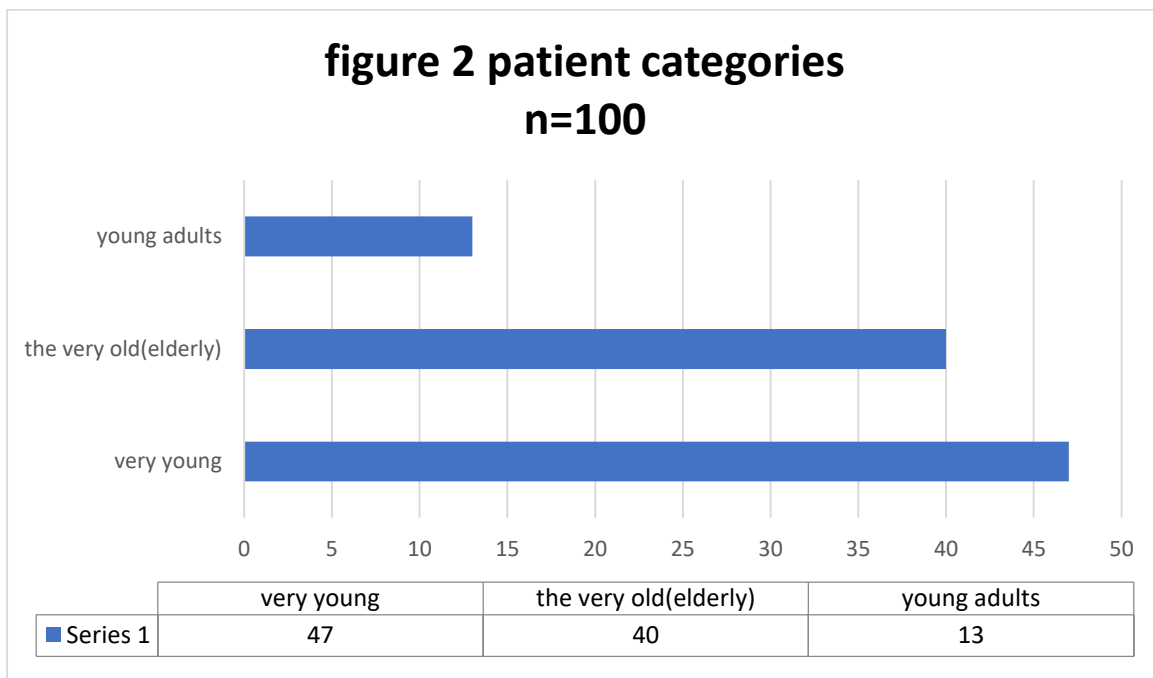


Figure 2 Showing individual groups of patients that easily acquire infection.

Figure 2 Shows that from this study, majority of the respondents 47 (47%) established that the very young children

are more susceptible group of patients to hospital acquired infections, followed by the very old (elderly) 40 (40%) and the

young adults 13 (13%) are the least susceptible group of patients to hospital acquired infection.

Table 2 shows effect of overcrowding on infection spread

Statement	Response		
	Positive (%)	Negative (%)	Total (%)
Effect of overcrowding on infection spread.	98.0	02.0	100.0

Table 2 Shows that 98(98%) established that overcrowding facilitates infection spread and only 02(02%) were not aware.

Table 3. The common effects of hospital acquired infections on a patient.

Effect of hospital acquired infections to patients	frequency	Percentage (%)
Prolonged hospital stay	29	29.0
Increased hospital charges	23	23.0
Increased antibiotics use	30	30.0
Compromise patient's health	18	18.0
Total	100	100.0

Table 3 Outlines that the most common disadvantage of hospital acquired infections to the patient 30(30%) is increased antibiotic use, followed by

prolonged hospital stay 29(29%), then increased hospital charges 23(23%) and lastly association with compromised patient health18(18%).

Table 4. Assessment of infection control measures and how they are utilized.

Subject	frequency	Percentage (%)
Frequency of emptying the bins.		
Daily	46	46.0
Weekly	06	06.0
Whenever full	48	48.0
Total	100	100.0
Use of apron.		
When cleaning	26	26.0
Others	74	74.0
Total	100	100.0
Do you wear a mask every time you work?		
No	100	100.0
Total	100	100.0
Does hand washing with soap reduce infections?		
Yes	100	100.0
Total	100	100.0
Do gloves protect healthcare givers from needle pricks?		
No	100	100.0
Total	100	100.0

Findings on infection control measures and how staffs are utilizing them.

Table 4. Shows that majority 48 (48%) emptied bins when full, 46% emptied the bins on daily basis, and only 6 (06%) emptied bins on weekly basis, most of the respondents 74 (74%) used apron for other reasons, 26 (26%) used aprons when

Derick cleaning and none of the respondents wore the apron every time or when handling body fluids. None of the respondents acknowledged wearing of a mask every time they worked, all 100 (100%) supported the view that hand washing with soap reduces infections and also knew that gloves do not protect from needle pricks.

Table 5. Assessment of practice infection control and compliance to standard precautions.

Subject	frequency	Percentage (%)
Do you have a role in infection control?		
Yes	100	100.0
Total	100	100.0
Do you think lining the bins after they have been emptied is your responsibility?		
Yes	94	94.0
No	06	06.0
Total	100	100.0
Hand washing is necessary every time one touches a patient.		
Agree	86	86.0
Disagree	14	14.0
Total	100	100.0

Findings on practice of infection control following standard precautions of infection control.

Table 5. Shows that all, 100 (100%) of the respondents declared they had a role in infection control, of these 92 (92%) had a

good attitude of extending infection control to their homes, 86(86%) agreed that hand washing is necessary every time one touched a patient. And 94(94%) showed that it's important to line the bins after they have been emptied.

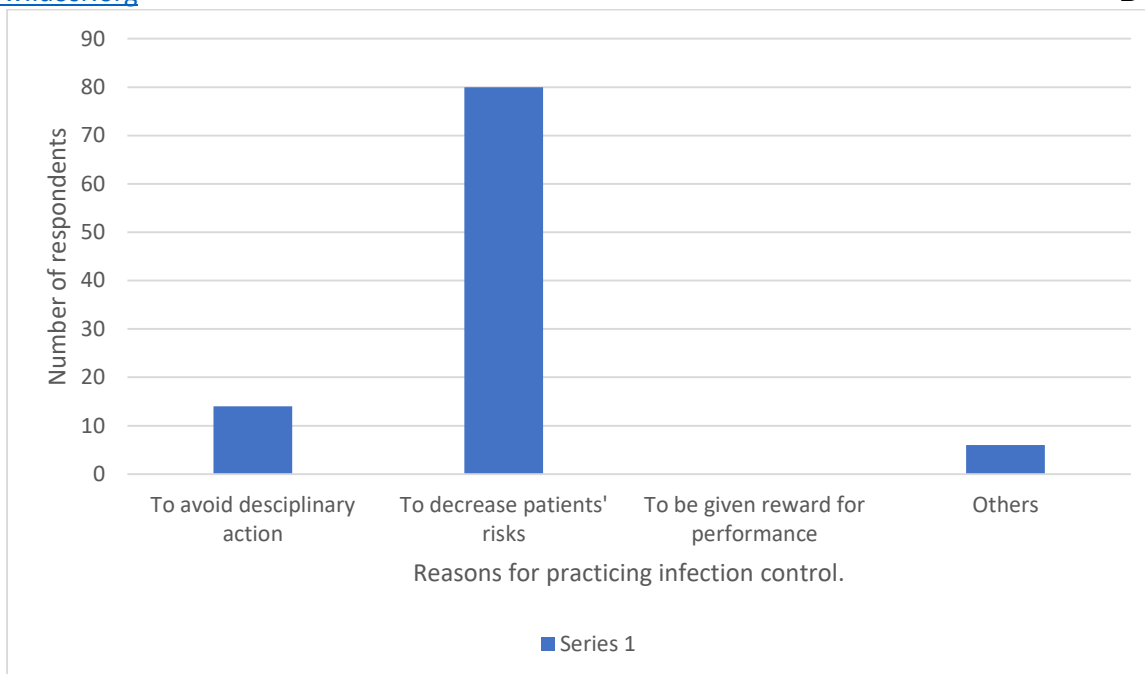


Figure 3. Reasons why the respondents practiced infection control.

Figure 3. Highlights that majority of the respondents 80(80%) practiced infection control to decrease risks of transmission of disease to patients, it was also established that 14(14%) practiced infection control to avoid disciplinary

action against them, 06(06%) of the respondents had other reasons and none of the respondents was driven by an award for his/her performance in infection control.

Table 6. Response to statements on infection control tasks.

Statement on infection control tasks.	Response		
	Positive (%)	Negative (%)	Total (%)
Feeling about role in infection control.	95.0	05.0	100.0
Feeling about wearing of a mask.	82.0	18.0	100.0
Suggestions about segregation of wastes.	87.0	13.0	100.0

Table 6. Outlines that almost all over 80% of the responses pertaining infection control tasks were positive. That is, the

majority 95%, 82%, and 87% giving positive responses for preventing infection spread.

Table 7. Suggestions of staff regarding infection control.

Suggestions	Frequency	Percentage (%)
Provision of more protective clothing and cleaning materials.	64	64.0
Provision of training and close supervision of staff members in infection control and related disciplines.	36	36.0
Total	100	100.0

Table 7. Shows that when the respondents were asked to make suggestions on

infection control, 64 (64%) suggested that there should be provision of adequate

supply in terms of protective clothings and more cleaning material, while the rest 36(36%) suggested that training and close

supervision of staff members in the area of infection control would make infection control practice a success.

DISCUSSION

The study results show that half 50(50%) of the respondents chose airborne infections as the most frequently experienced illnesses acquired by hospitalized patients possibly due to the fact that these diseases are very contagious and if combined with other factors such as overcrowding, efficiency of their spread is enhanced. For instance considering a patient with an active infectious respiratory disease like tuberculosis placed on the same ward with other patients due to lack of enough facilities, the pathogenic organisms are spread into the air once he/she coughs or sneezes and these organisms are easily accessible by everyone sharing the room with the patient hence increasing the likelihood of acquiring the disease by individuals. In a similar study by Duse [15] it was documented that among all patients that need hospitalization in developing countries, 25% or more develops a nosocomial infection irrespective of age and route of infection transfer. However other potentially dangerous and equally effective modes of infection spread include infected body fluids, contact with infected persons, needle stick injuries, nursing procedures such as catheterization and support ventilation equipment and they should not be under looked.

Majority 47(47%) revealed that the very young children are the most prone category of hospitalized patients to infections probably because the individual category has a weak immunity and are unable to withstand even minor infections. More than 90% knew that overcrowding eases the spread of infections on hospital wards, and this could be because overcrowding reduces patients.

More than half of the respondents 74(74%) used apron only when potential of getting infected is anticipated, that is when visiting theatre, attending to a mother giving birth in delivery room and other procedures that may involve getting into contact with the patient's body fluids that

may be infectious rather than wearing an apron all the time.

When an apron is worn all the time it may turn out a potential source of infection since a health worker may rotate in various units of the hospital a day hence causing infection to the patients he or she sees after visiting isolation rooms. Many studies have documented the potential of disease transmission through protective clothings of health workers.

All respondents 100(100%) knew how to use the masks correctly and in clinically reasonable situations such as attending to a tuberculosis patient with active disease or a sick health personnel with a respiratory illness may put on a mask to protect his or her patient from contracting the illness. A similar study by Mmalahla [1] among general assistants showed that 35% of them knew the correct use of masks. The deviation from these results could be inclined to the fact that the respondents in this study were interviewed by the researcher himself and the interaction was face to face this could have influenced the results since the asking of questions and interpretation of answers was consistent since it was the same interviewer.

All respondents 100(100%) agreed that gloves do not protect health workers from needle stick injuries. This study found similar results as did Dodds *et al.* [23] that wearing gloves alone does not protect one from injury with sharp instruments like needles. Dodds *et al.* [23] reported that the rate of occurrence of glove puncture during usual surgical procedures was 11.5% to 53%.

Majority of respondents emptied bins whenever they got full and one of the reasons for this practice was to avoid spillage or scattering of the wastes as most hospital wastes are potentially infectious. There are publications about waste management but a document that was specifically about frequency of emptying bins in a hospital setting was not accessed. From the results, it is noted that all 100(100%) respondents knew they have a

role in infection control. A similar study by Mmalahla [1] in South Africa revealed that 84% reported to have a role in infection control. This shows that in any healthcare setting, the majority of the staff are aware that they have a role to play as pertains infection control.

More than three quarters of respondents 80(80%) in this study practiced infection control to reduce patients' chances of acquiring disease as many knew that this is one of the ways of providing quality healthcare without patients' worry about their safety in the hospital. In a similar study by Okhiai *et al.* [24] among 30 theatre personals in Irrua, specialist teaching hospital it was also revealed that 80% agreed that infection control applies to all patients regardless of presumed health status.

Above three thirds of respondents 90(90%) agreed that they are responsible for lining the bins after they have been emptied, this should be that it makes the hospital environment tidy and reduces chances of disease spread due to scattering of wastes after spilling or falling off the full bins. In a similar study conducted by Okhiai *et al.*

Based on the findings, the following conclusions were made; All the respondents 100 (100%) knew that they have a role in infection control; however, there is lag in practice and compliance to standard precautions of infection control leading to poor infection control. Although hand-washing campaign has been on going from years back, the practice is less observed in clinical practice and has become one of the major pit falls health workers make and it contributed to a spread of many diseases.

Due to limited supplies, and inadequate knowledge about most medical

Derick [24], it was found that 90% knew proper handling of wastes through observation of standard precautions and guidelines.

Majority 86(86%) agreed that hand washing is necessary every time the health worker touches a patient and before touching the next patient. In a similar study by Dhyana *et al.* [25] about hand washing also inferred that majority 94.7% of the staff strongly agreed that they follow hand washing before and after treating patients This could be one of the reasons why the rest of the respondents 14(14%) did not agree. 80(80%) gave positive response to infection control tasks. In a similar study by Okhiai *et al.* [24] revealed that 83.3% of the respondents had positive attitudes towards standard precautions of infection control.

More than half 64(64%) of respondents recommended provision of adequate supplies in terms of protective clothings and more cleaning materials. In a similar study conducted by [26-27] revealed that lack of self-protection and inability to access necessary equipment or facility are one of the factors that negatively influence compliance.

CONCLUSION

instruments like cleaning and sterilization machines, infection spread is still ongoing in hospitals or any other health facility without these measures. There is need for education on importance of hospital waste management. Overcrowding on patient wards is the leading cause of transmission of airborne infections due to closeness of the patients and attendants. The very old and the very young hospitalized individuals are more likely to develop illness in hospitals due to low or reduced immunity at extremes of age as compared to the adult youths.

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