The Factors Affecting Level of Infection Control Practice in Benadir Hospital Mogadishu - Somalia

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Abstract

Infection control is a discipline proposed to prevent hospital acquired infections (HAIs) for those vulnerable the incidence of nosocomial infections (WHO, 2016). Nosocomial infections or hospital acquired infections are infections that can occur within 48 hours of hospital admission, three days after discharge and/or after one month of surgery and is a major global issue that affect for both patients and health-care workers (Rajabi et.al, 2016). The aim of this study was to investigate factors affecting level of infection control practice in Benadir hospital Mogadishu Somalia. The specific objectives of this study were; To assess the level of hand hygiene compliance by the health care workers (HCWs) in Benadir hospital, To determine health care workers utilization level of personal protective equipments (PPEs) and To evaluate biomedical waste disposal management of Benadir hospital. This study adapted a descriptive cross-sectional design and the study area is Benadir hospital in Mogadishu. the whole population of our study was 60 registered health care workers in Benadir hospital but 52 respondents were participated the study because 8 of the respondents were absent at day of data collection. The data were collected during May 2017 using structured questionnaire, observation checklist and interview. The data were compiled and analyzed by using SPSS version 20. we were observed that water sinks, solid soap and gloves weren't available in two wards and their status of use were rarely use accounting 37.5% and 25% were never use, while the liquid and solid soap were not available at all, whereas alcohol based hand rub were not available in seven wards. The other PPEs such as facemasks, gowns & Aprons weren't observed at wards. We also observed that biomedical wastes of the hospital were collected inside the hospital without segregation. In addition one of the hospital administrators told us that hospital doesn't have infection control

policy. Conclusion: Respondents were asked how often you wash hands after dressing wounds. The majority of respondents 24 (46.2%) said rarely. Respondents were asked how often do you recap used needles by hand. And the majority 29 (55.8%) said always. Respondents were asked how you would describe the infection control in this hospital. And the majority 27 (51.9%) replied poor, also we observed that HHC of the HCWs were poor, utilization level of PPEs and Biomedical waste management were very poor. The study recommends creating national policy for infection control practice to be adhered by the hospitals, to provide trainings for health workers about infectious control practice, to make sure availability of infection control facilities and To segregate the waste before it is disposed.

Keywords: *Infection control, Hand hygiene, Personal protective equipment, Biomedical waste management*

1.0 Background

Infection control is a discipline proposed to prevent hospital acquired infections (HAIs) for those vulnerable the incidence of nosocomial infections (WHO, 2016). Nosocomial infections or hospital acquired infections are infections those occurring within 48 hours of hospital admission, three days after discharge and/or after one month of surgery and is a major global issue that affect for both patients and health-care workers (Rajabi *et.al*, 2016). HAIs mostly caused by multiresistant pathogens, and they results prolonged hospital Stay for patients and their family, probable disability, high costs, and occasionally death (Nejad *et.al*, 2008).

To transmit the infection from person to another there must be three factors: the source of infection, vulnerable host, and the mode of transmission. These infections transmit from staff to the patient, from patient to the staff, from patient to patient or among the staff themselves or via infected instruments and/or environment through one of these modes: through contact whether direct or indirect, vehicle borne, respiratory droplets, and airborne transmission (Amy S. Collins 2008). Proper utilization of infection control measures minimizes the occurrence of HAIs as the WHO guidelines for infection control including; hand washing, sterilization/disinfection, immunization/vaccination, surveillance, isolation, and using of personal protective equipments (PPEs) such as gloves, gowns, goggles, and facemasks etc.

Health care associated infections are a major global problem for patient safety. In United States HAIs cause deaths more than heart diseases which is the most leading cause of death in USA (Reed *et.al*, 2009). Although HCAIs affects worldwide the problem is more likely in developing countries than the developed countries, it affects between 5 to 10 percent of admitted patients in developed countries and the problem exceeds 25 percent in developing countries (pittet *et.al* April, 2008).

Medical devices are major rout of HAI transmission as shows the national nosocomial infection surveillance report in 2006; they detected 8833 instrument related infections in older patients those participated healthcare services. There were 3759 catheter related urinary tract infections (UTIs) that was collected from hundreds of areas, the catheter associated UTIs were counts the most reported infections. While 2681 cases were vascular catheter related infections and 2393 ventilator related pneumonias from more than five hundred areas (Reed *et.al*, 2009).

In developing countries, the extent of the problem still remains underestimation or even unidentified, because HAIs' identification is difficult and surveillance activities to guide intervention needs proficiency and resources. These challenges increase the extent of the problem. As well as, overcrowding and shortage of staff in hospitals results poor infection control practices, and lack of infection control policies, guidelines and trained professionals also increases the scope of the problem (WHO 2011).

Although Somalia is one of the developing countries, those have been reported to be higher incidence of hospital acquired infections than developed countries; there is no evidence that shows the infection control systems in Somalia. The diminished infection control systems in Somalia is attributed several barriers including; lack of financial, lack of well trained professionals, unavailability of equipments, poor hospital policies and procedures for infection control practice, low hospital report and records, less surveillance and isolations. As well as overcrowding and low staff number, knowledge and motivation increase the burden of the problem. Therefore this study will try to investigate the factors affecting level of infection control practice in Somalia especially Benadir hospital Mogadishu.

The specific objectives of this research are:-

   1. To assess the level of hand hygiene compliance by the health care workers (HCWs) in Benadir hospital.

   2. To determine health care workers utilization level of personal protective equipments (PPEs).

   3. To evaluate biomedical waste disposal management of Benadir hospital

2.0 Methods and Materials

2.1 Research design:

This research is designed as follows. The research design is descriptive cross sectional research design. Because this design is suitable in this study as it is cost effective design and enables to collect data in one time and one place. The researchers focused on health care workers in Benadir hospital and the study continued from December-2016 to July-2017. The researchers used cross-sectional designs with both quantitative and qualitative measurement approach with non manipulation of the variables. The research also used surveys to investigate the factors affecting level of infection control practice in Benadir hospital. And finally the data obtained were analyzed by using statistical tools such as statistical package for the social scientists (SPSS) version 20.

2.2 Study area and target population:

This research was conducted in Benadir hospital in Mogadishu. The target population of the study was the whole HCWs in the hospital which is 60 registered HCWs including; the manager or one of top level managers, doctors, nurses, laboratories, midwifes those are present at the day of study.

2.3 Sample Size and Instrument for data collection

The sampling technique of this study was non probability sampling technique. And the whole population of our study was 60 registered health care workers in Benadir hospital, as the member of top level managers of the hospital (Eng Mohamed Adam) told us that 60 HCWs present each day. But 52 respondents were participate the study because 8 of the respondents was absent at day of data collection.

The researchers used structured questionnaire, observational study and interview with the hospital management to gather reliable data.

2.4 Statistical data analysis

Qualitative and quantitative (mixed) data analysis was used for this study and the data were analyzed by the aid of SPSS version 20. The data were presented as a percentage, tables and graphs. Then the researchers interpreted the quantitative data into qualitative data to measure the hospital infection control level as a qualitative measurement such as follows; 0% — 25% equals very poor, 25% -- 50% equal's poor, 50% -- 75% equals fair and 75% -- 100% equals good.

2.5 Ethical Consideration and Approval

The research was done in the way that no one can harm or suffer adverse consequence from research activities. Therefore researchers were asked permission to the hospital administrators to investigate the factors affecting level of infection control practice. The research was conducted with respect to ethical values, confidentiality, and moral expectations of the respondents. The ethical approval was obtained from ethical review committee of Jamhuriya University of science and technology (JUST).

3.0 Findings
The results of the study were presented using frequency tables and figures.

3.1 How often do you wash hands after dressing wounds?

Washing hands after dressing wounds	Frequency	Percent (%)
Always	23	44.2
Sometimes	3	5.8
Rarely	24	46.2
Never	2	3.8
Total	**52**	**100.0**

Table 3.1 How often do you wash hands after dressing wounds?

Respondents were asked how often do you wash hands after dressing wounds? And replied as follows 24 (46.2%) said rarely, 23 (44.2%) said always, where 3 (5.8%) said sometimes, while the rest 2 (3.8%) said never with same question.

3.2 How often do you wash hands after removing gloves, masks, uniform, white coats and when leaving clinic?

Washing hands after removing gloves, masks, uniform & when leaving clinic	Frequency	Percent (%)
Always	18	34.6
Sometimes	8	15.4
Rarely	13	25.0
Never	13	25.0
Total	**52**	**100.0**

Table 3.2 How often do you wash hands after removing gloves, masks, uniform, white coats and when leaving clinic?

Respondents were asked How often do you wash hands after removing gloves, masks, uniform, white coats and when leaving clinic? And replied as follows18 (34.6%) said always, Where 8 (15.4%) said some times, whereas 13 (25%) said rarely, while the rest 13 (25%) said never with the same question.

3.3 How often do you use new pairs of gloves before handling waste?

Using new pairs of gloves before handling waste	Frequency	Percent%
Always	18	34.6
Sometimes	11	21.2
Rarely	19	36.5
Never	4	7.7
Total	**52**	**100.0**

Table 3.3 How often do you use new pairs of gloves before handling waste?

Respondents were asked how often do you use new pairs of gloves before handling waste? And replied as follows 19 (36.5%) said rarely, 18 (34.6%) said always, while 11 (21.2%) said sometimes and the rest 4 (7.7%) said never with the same statement.

3.4 How often do you use new pairs of gloves before handling new procedure?

Using new pairs of gloves before handling new procedure	Frequency	Percent%
Always	17	32.7
Sometimes	9	17.3
Rarely	21	40.4
Never	5	9.6
Total	**52**	**100.0**

Table 3.4 How often do you use new pairs of gloves before handling new procedure?

Respondents were asked how often do you use new pairs of gloves before handling new procedure? And replied follows 21 (40.4%) said rarely, 17 (32.7%) said always, while 9 (17.3%) said sometimes and the rest 5 (9.6%) said never with the same question.

3.5 How often do you use other PPEs such as facemask and apron?

Using other PPEs such as facemask and apron	Frequency	Percent%
Always	12	23.1
Sometimes	17	32.7
Rarely	17	32.7
Never	6	11.5
Total	**52**	**100.0**

Table 3.5 How often do you use other PPEs such as facemask and apron?

Respondents were asked how often do you use other PPEs such as facemask and apron? And replied as follows 17 (32.7%) said sometimes, another 17 (32.7%) said rarely, where 12 (23.1%) said always, while 6 (11.5%) said never with the same question. Although 23.1% of the respondents said always and another 32.7% said sometimes when asked how often do you use other PPEs such as facemask and apron? We were observed that facemasks and aprons were not available in the observed eight wards and their status in use was 0%.

3.6 How often do you recap used needles by hand?

Recapping needles by hand	Frequency	Percent%
Always	29	55.8
Sometimes	6	11.5
Rarely	8	15.4
Never	9	17.3
Total	**52**	**100.0**

Table 3.6 how often do you recap used needles by hand?

Respondents were asked how often do you recap used needles by hand? And replied as follows 29 (55.8%) said always, 9 (17.3%) said never, where 8 (15.4%) said rarely, while 6 (11.5%) said sometimes with the same question.

3.7 How often do you use color coding scheme to dispose the biomedical waste?

Using color coding scheme to dispose the biomedical waste	Frequency	Percent%
all the time	7	13.5
Sometimes	4	7.7
Rarely	5	9.6
never at all	36	69.2
Total	**52**	**100.0**

Table 3.7 How often do you use color coding scheme to dispose the biomedical waste?

Respondents were asked How often do you use color coding scheme to dispose the biomedical waste? And replied as follows 36 (69.2%) said never at all, followed by 7 (13.5%) said all the time, where 5 (9.6%) said rarely, while 4 (7.7%) said some times with the same question.

Respondents were asked if yes why don't you use the color coding scheme all the time? And replied as follows 33 (63.5%) said the material is not available, 16 (30.8%) said inadequate material, where 3 (5.8%) said the material is not accessible with the same question.

3.8 How you would describe the infection control in this hospital?

Describing the infection control in this hospital	Frequency	Percent%
Good	13	25.0
Fair	12	23.1
Poor	27	51.9
Total	**52**	**100.0**

Table 3.8 how you would describe the infection control in this hospital?

Respondents were asked how do you describe the control of waste in this hospital? And replied as follows 27 (51.9%) said poor, While 13 (25%) said good, and 12(23.1%) said fair with the same question.

4.0 Discussion

28 out 52 (53.8%) of the respondents said always when asked the question saying how often do you perform hand hygiene before patient contact? 26 (50%) of the respondents said always when asked the question saying how often do you perform hand hygiene after patient contacts.

Although the majority of the respondents said ALWAYS the above two question we were observed that water sinks and solid soap aren't available in two of the observed 8 wards and their status of use were POOR 37.5% rarely use and 25% never use, while liquid solid soap were not available at all whereas alcohol based hand rub were not available in seven wards 87.5%, alcohol based hand rub were available only in ICU while its status in use were VERY POOR. Therefore hand hygiene will be poor if the hand hygiene facility such as sinks, alcohol based hand rub, and solid soap and liquid soap are not available or less available.

24 (46.2%) of the respondents said rarely when asked the question saying how often do you wash hands after dressing wounds? 18 (34.6%) of the respondents said always when asked the question saying how often do you wash hands after removing gloves, masks, uniform, white coats and when leaving clinic? Where 13 (25%) said rarely whereas another13 (25%) said never. This shows that infection control of Benadir hospital is lower.

According to (Tenna A, *et.al*, 2014) research on infection control knowledge attitude and practice of HCWs in Addis Ababa Ethiopia shows that they made a survey participated by 261 respondents 51 percent was doctors and 49 percent was nurses, Whereas the respondents knowledge on hand washing was good. The doctors reported that they wash their hands 7 percent before and 48 percent after patient contact. They said the barriers for performing hand hygiene include; 77 percent lack of hand hygiene products, 67 percent itching and dryness of hand hygiene agents, 50 percent lack of appropriate training, and 30 percent hand washing sinks.

23 (44.2%) said sometimes when asked the question saying how often do you use new pairs of gloves before patient contact?, 19 (36.5%) said always when asked the question saying how

often do you use new pairs of gloves when examine new patient?, 21 (40.4%) said rarely when asked the question saying how often do you use new pairs of gloves before handling new procedure?. In our observation gloves were not available in two wards while their status in use were 50% sometimes use, 25% always use, 12.5% rarely use and the rest 12.5% never use.

41 (78.8%) said sharp waste when asked what types of wastes do you mainly generate in the hospital/your department?

Proper management of biomedical waste has become a worldwide humanitarian topic today (Mathur P *et.al*, 2012). But there is still gap in biomedical waste management. According to (Askarian *et.al*, 2004) Their survey in 15 private hospitals of Fars province (Iran) results indicated that the waste generation rate is 4.45 kg/bed/day, which includes 1830 kg (71.44%) of domestic waste, 712 kg (27.8%) of infectious waste, and 19.6 kg (0.76%) of sharps. Segregation of the different types of waste is not carried out perfectly.

5.0 Conclusion

28 out of 52 (53.8%) of the respondents were female while 24 (46.2%) were males. 28 (53.8%) were between ages of 25-34. 26 (50%) of the respondents were married. 20 (38.5%) of the respondents profession were nurses, 17 (32.7%) were doctors, 7 (13.5%) were lab technician, while 8 (15.4%) were midwife. The majority of the respondents 44 (84.6%) were university level. 26 (50%) have experience between 2 to 3 years, where 13 (25%) have less than 1 year of experience, while 13 (25%) have 4 to 5 years of experience.

Respondents were asked how often do you perform hand hygiene before patient contact? 28 (53.8%) said always, 26 (50%) said always when asked how often do you perform hand hygiene after patient contact? However in our observation water sinks and solid soap weren't available in two wards and their status of use were poor 37.5% rarely use, 37.5% sometimes use and 25% never use, while liquid and solid soap were not available at all, whereas alcohol based hand rub were not available in seven wards 87.5%, alcohol based hand rub were available only in ICU while its status of use were very poor. Table 4.10 and Figure 4.10 shows that respondents were asked how often do you wash hands after dressing wounds? And the majority 24 (46.2%) said rarely.

Respondent's response when asked how often do you use new pairs of gloves before patient contact? The majority 23 (44.2%) said sometimes. the majority 19 (36.5%) of the respondents replied rarely when asked how often do you use new pairs of gloves before handling waste?

Respondents were asked how often do you use new pairs of gloves before handling new procedure? And the majority 21 (40.4%) said rarely. Respondents were asked how often do you use other PPEs such as facemask and apron? And replied as follows 17 (32.7%) said sometimes, while another 17 (32.7%) said rarely. Respondents were asked how often do you recap used needles by hand? And the majority 29 (55.8%) said always.

Respondent were asked what types of wastes do you mainly generate in the hospital/your department? And replied the majority 41 (78.8%) said sharp waste. Respondents were asked how often do you use color coding scheme to dispose the biomedical waste? And the majority 36 (69.2%) said never at all and the majority 33 (63.5%) claimed the material is not available. Respondents were asked how you would describe the infection control in this hospital? And the majority 27 (51.9%) replied poor.

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