



(RESEARCH ARTICLE)



Preventive practice on communicable diseases transmission among the health workers of some selected tertiary level hospitals of Chattogram city, Bangladesh

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Abstract

This descriptive type of cross sectional study was carried out to assess the preventive practice on communicable disease in two selected tertiary level hospital of Chittagong city with a sample size of 160. The study revealed that 70.6% of the respondents were in age groups 16-30 years with the mean age 28.92 + 4.834 years. Among the respondents 92.5% were female and rests of them 7.5% were male and most of them 90% were married and rests 10% were unmarried. It was found from the study that 78.1% had higher secondary, 20.6% had bachelor and rest of them had master level education. Among the respondents 81.9% were staff nurses and 7.5% were student nurses. All of the respondents 1.2%, 13.1%, 63.1% and 22.6% had income as BDT <10000, 10000-20000, 20001-30000 and > 30000 respectively. The study also revealed that 94.4% nurses used unsafe scissors, needle, syringes and 50% of the respondents washed hands, 28.1% used gloves, 6.9% used disposable syringe, 90.8% used sterile instruments and also 93.2% did proper disposal of waste materials respectively as preventive measure for disease spread. As infection prevention for communicable disease is important a general awareness were only the health worker should be educated by motivational and training program.

Keywords: Preventive practice; Communicable diseases; Transmission; Health workers; Tertiary level hospitals; Chattogram city

1. Introduction

Infectious diseases are rampant in Bangladesh. About 70% of all health problems and deaths in Bangladesh are attributed to infectious diseases [1]. Approximately two-thirds of the health problems in Bangladesh are due to infectious diseases. The Health System has introduced the General Health Plan in 1956 which has been expanded by focusing on primary health care, and a comprehensive network-like Health System has been developed; the most basic unit is Sub-Health center in each Village Development Committee level [2]. The transmission of infection (pathogens) in the health-care setting has become a matter of increasing public interest and concern over the past number of years. There have been several reports of Health-Care Workers (HCWs) infected with blood-borne pathogens, who had been involved in exposure-prone procedures. There have also been reports of infections being transmitted due to contaminated equipment [3]. Transmission of infection means the transfer of infectious agent from the reservoir or environment to new host. Microorganisms (germs) are transmitted in hospitals and health facilities by several routes. There are five main routes of transmission-contact, droplet, airborne, common vehicle and vector borne. However, contact transmission plays a significant role in typical health care associated infections [4]. Without the proper precaution, health care facility can cause the spread of infections and disease when providing health services. Infections are transmitted when normal flora are introduced into an area of the body where they are not normally found or when

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pathogens are introduced into the body. Transmission of infection during the provision of health care requires three elements: a source of infecting microorganisms, a susceptible host, and a means of transmission for the microorganism. In health care settings, because agent and host factors are more difficult to control, interruption of transfer of microorganisms is directed primarily at transmission [5].

The most important and frequent mode of transmission of health care associated infections (HAI), is divided into direct and indirect contact transmission which plays a significant role in typical health care associated infection. Direct-contact transmission consist of direct body surface to body surface contact and physical transfer of bacteria between a susceptible host and an infected or colonized individual. Finger contamination with dressing, urinary and fecal discharge or contaminated needles, also pay an important role in direct transmission. Such infection when acquired in the hospital, is known as nosocomial infection. The costs of treating hospital acquired infection, including extended length of stay, is around £1,000 million each year [6]. Indirect-contact transmission involves contact of a susceptible host with a contaminated object such as medical instruments, dressings, gloves that are not changed between patients or unwashed hands. It takes place through the intervention of intermediate means, which could be vehicle born, vector born, and air born. It also encompasses fomets born transmission. Human sources of microorganisms are healthcare workers (HCWs), patients and visitors [7].

There are several guidelines, manuals and principles for preventing infection transmission in health care facilities. Almost all recommend some common standard precautions to minimize the risk of exposure to infectious materials by both clients and staff like: hand hygiene, use of personal protective equipment, safe use and disposal of sharps waste and education of patients, their careers and healthcare personnel to .maintain correct environment cleanliness [8]. In health care settings, hand hygiene is the single most important thing to prevent transmission of infection. Although health care providers know the importance of hand hygiene, studies continue to show health care providers perform hand hygiene less than half the time they should. Proper hand washing requires the use of soap and water and vigorous washing under a stream of running water for approximately ten seconds. Personal protective equipment includes: gloves, masks/respirators, eyewear, caps, gowns, aprons and other items which protect patients from microorganisms present on staff working in the healthcare setting [9]. Gloves are the most important physical barrier to protect hands from infectious materials and to protect patients from microorganisms for preventing the spread of infection. Masks wearing provide protection of the health care provider's nose and mouth from likely splashes and sprays of blood or body fluids. This prevents the transmission of microorganisms to the health care provider's mucous membranes in their eyes, nose and mouth to reduce infection. Aprons provide a barrier along the front of the health worker's body. It keeps contaminated fluids off the healthcare worker's clothing and skin [10]. All health care professionals who have a clinical responsibility must update their knowledge and skills. The training emphasize the key role that health care professionals play in minimizing the spread of infection.12 Healthcare workers, including support staffs who work in these settings also are at risk of exposure to serious, potentially life-threatening infections. In the US, more than 800,000 needle stick injuries occur each year despite continuing education and vigorous efforts aimed at preventing such accidents. In many developing countries, however, the risk of needle stick injuries and accidental exposure to blood or body fluids is even higher. Moreover, because introduction of needle less injection systems is not feasible in countries with limited resources, it is important that healthcare staff know and use recommended infection prevention practices to minimize their risk of accidental exposure or injury [11].

As infectious diseases do not stay contained within geographical boundaries, it is critical that neighboring provinces and territories be aware of how a disease is developing and progressing in order to prepare and predict their own prevention and control needs. The knowledge of specific public health communicable disease practice refers to the professional practice, procedures and protocols required to achieve the best possible results in infectious disease prevention and control efforts. The finding of this study is expected to identify the barriers of preventive practice in handling patients for health care workers. More over this study will help health care providers to develop or strengthen their ability to protect themselves, their clients, and members of the surrounding community from infections.

1.1. Research question

What are the preventive practices on communicable disease transmission among the health workers of few selected tertiary level hospitals of Chittagong city?

Objectives

- General Objective

To find out the level of preventive practice on communicable disease transmission among the health workers of Chittagong city.

- Specific Objectives
- To assess the socio-demographic factor of the respondents.
- To assess the knowledge related factors of the respondents.
- To find out the practice related factors of the respondents.
- To observe the service related factors of the respondents.
- To explore the IEC related factors of the respondents.

2. Material and methods

2.1. Study design

The study design was a descriptive type of cross sectional study.

2.2. Study population & Sample

Entire health workers under the Chattogram city was the study population for this study. Among this study population, sample population was selected purposively from the selected hospitals.

2.3. Study site

The study site was carried out Chattogram Medical College Hospital & General Hospital of Chattogram city.

2.4. Study period

The study period was conducted for four months started from September 2013 to December 2013.

2.5. Sample size

The sampling size was determined by the following formula. Sample size for that proposed study was calculated by the following formula-

$$n = \frac{z^2 pq}{d^2}$$

Where,

n = required sample size

z = standard normal distributaries with 95% confidential level 1.96

p = proportion of dependent variable =40%.14 = 0.40

q = 1-p = 1 - 0.40 = 0.6

d = decision or proportion of error %; usually set as 5% =0.05

$$n = \frac{196^2 \times 0.40 \times 0.6}{0.05^2} = 368.7936$$

So, total sample size is 369. Due to shortage of time and lack of funding source researcher took 160 samples according to guide's decision.

2.6. Inclusion and Exclusion Criteria

2.6.1. Inclusion Criteria

- Those Health workers who gave consent and participated in the interview.
- Those health workers who worked under the ministry of health and population, district public health office, Chittagong.
- Those who were the in-charge of health facility.

2.6.2. Exclusion Criteria

- Those who refused to give informed consent and interview.
- Willing to participate.
- Present on the study of interview.
- Absent on the study on interview.

2.7. Sample Technique

Non-randomized Purposive sampling method was applied for the study.

2.8. Data Collection tools

A pre-tested modified self-administered semi structured questionnaire was used to collect the data.

2.9. Data collection technique

By face to face interview.

2.10. Data management and analysis plan

All the data were entered and analyzed by using Statistical Packages for Social Science (SPSS) software version 16.0, (Chicago). Processed data was presented in the form of percentage, tables and charts. Further, it was analyzed significantly with the help of Chi-square test and P-value. Finally the data was interpreted on the basis of study findings.

2.11. Limitation of the study

- The findings were associated with information and selection bias but using inclusion and exclusion criteria and statistical modeling data collection and analysis the biases was minimized.
- As a student, the budget and other resources were limited.
- Because of the time and resources constrains the study area was selected purposively.

3. Results

This cross sectional type of descriptive study was conducted in preventive practice on communicable disease transmission among the health workers of selected tertiary level hospital of Chittagong city with a sample size of 160. A pre tested modified self-administrated semi structured questionnaires was used to collect the information.

- Section-1: Socio-demographic characteristics;
- Section-2: Knowledge related variables;
- Section-3: Practices related variables;
- Section-4: Service related variables;
- Section-5: IEC related variables.

All the data were entered and analyzed by using Statistical packages for social science (SPSS) software version 16.0 (Chicago).The analyzed data were presented under followings:

Table 1 Shows that 70.6% of the respondents ranged from 16-30 years 28.2% were aged 31-45 years 1.2% were aged 46-60 years respectively with Mean age 28.92 + 4.834 years. Most of the respondents 92.5% were female and rest of them 7.5% were male. Highest 53.1% were Muslim belonged to 32.5% was Hindu, 13.1% were Buddhist and rest of them 1.3% was Christian. Of the respondents 90% were married and rest of them 10% were unmarried. Majority of the respondents 78.1% educational status were higher secondary followed by 20.6% were bachelor level and rest of them 1.2% were master level respectively. It was found that 1.2%, 13.1%, 63.1% and 22.6% of the respondents were income group BDT <10000, 10001-20000, 20001-30000 and >30000 respectively. Family member of the respondents 36.9% were 1-2 persons, followed by 35.6% were 3-4 persons and rest of them 27.5% were 5-6 persons. Most of the respondents 81.9% were Senior Staff Nurses belonged to 10.6% were staff nurses and rest of them 7.5% were Pupil Nurses respectively.

Table 2 it was found that most of the respondents (87.2%) had knowledge about infection transmission to health workers and rest of them (12.8%) were did not have. Most of the respondents (87.5%) mode of disease transmission were by contract with contaminated instruments, needle, gloves etc. followed by 8.8% were all of above and rest of them (3.8%) were by contact with patients body fluid and excretion. Highest number of the respondents 94.4% mode of transmission of infection during activities were by using contaminated scissors, needle, syringe etc. belonged to 4.4% were during physical examination of patient and rest of them 1.2% were during the surgical procedure. Preventive measures of infection transmission were 50% hand washing as it was 28.1%, 6.9%, 90.8% and 93.2% were using gloves, disposable syringe, sterile instrument and proper disposal of waste materials respectively.

Table 1 Distribution of the respondents according to Socio-demographic characteristics (n=160)

Variables	Characteristics	Frequency (n)	Percent (%)
Age (in years)	16-30	113	70.6
	31-45	45	28.2
	46-60	02	1.2
	Mean \pm SD= 28.92 \pm 4.834		
Sex	Male	12	7.5
	Female	148	92.5
Religion	Muslim	85	53.1
	Hindu	52	32.5
	Buddhist	21	13.1
	Christian	02	1.3
Marital status	Married	144	90.0
	Unmarried	16	10.0
Educational status	Higher Secondary	125	78.1
	Bachelor level	33	20.6
	Master level	2	1.2
Monthly family income (in taka)	Up to 10000	02	1.2
	10001-20000	21	13.1
	20001-30000	101	63.1
	Above 30000	36	22.6
Family member	1-2 persons	230	36.9
	3-5 persons	118	35.6
	6-7 persons	29	27.5
Designation	Staff nurse	17	10.6
	Senior Staff Nurse	131	81.9
	Pupil Nurse	12	7.5

Table 3 Reveals that there is a significant association between age and Knowledge about malnutrition such as with Normal body weight of a newborn baby whereas (p value= 0.001).

Figure 1 reveals that majority of the respondents 78.1% washed hand with soap and running water (tap), followed by 20.6% were soap and bucket water and rest of them 1.2% were with water only.

Figure 2 Shows that most of the respondents (94%) disposed the sharps items at sharps disposal container as well as 4.8% were dust bin and 1.2% were normal container.

Figure 3 Shows that majority of the respondents (73.1%) were did not training on infection prevention and 26.9% were training on infection prevention.

Figure 4 Shows that half of the respondents 56.2% did not monitoring checklist used by the supervisor followed by 24.4% were monitoring checklist used and rest of them 19.4% were don't know.

Figure 5 Shows that source of information of the respondents were 8.2%, 29.4%, 45.6%, 1.2%, 26.2% and 2.4% were by radio, TV, newspaper, billboard, health worker and family members respectively.

Table 2 Distribution of the respondents by knowledge about transmission and prevention of infection (n=160)

Variables	Characteristics	Frequency (n)	Percent (%)
Disease Transmission	Yes	126	77.6
	No	34	22.4
Infection Transmission	Yes	142	87.2
	No	18	12.8
Mode of disease transmission	By contact with patients body fluid and excretion	6	3.8
	By contact with contaminated instruments, needle, gloves etc.	140	87.5
	All of above	14	8.8
Transmission of infection during activities	During physical examination of patient	7	4.4
	By using contaminated scissors, needle, syringe etc.	151	94.4
	During the surgical procedure	2	1.2
Preventive Measures*	Hand washing	80	50.0
	Using gloves	45	28.1
	Using Disposable syringe	11	6.9
	Using sterile instruments	148	90.8
	Proper disposal of waste materials	152	93.2

*Multiple responses

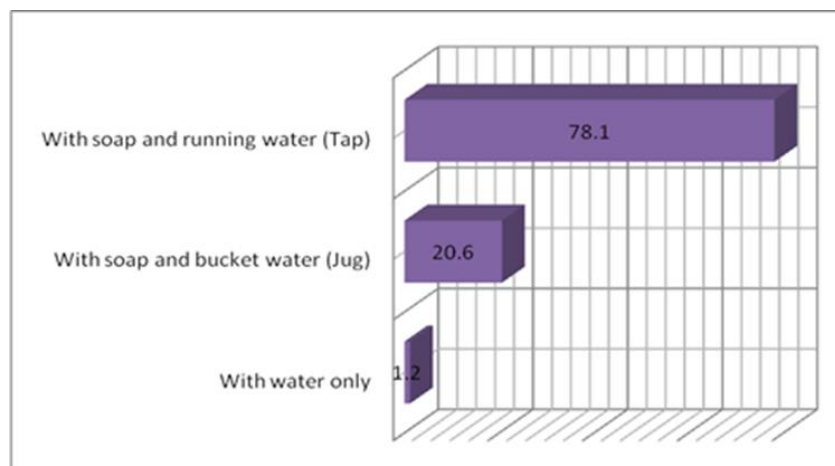


Figure 1 Distribution of the respondents by hand washing (n=160)

Table 3 Distribution of the respondents by association between knowledge and age of the respondents (n=160)

Infection Transmission	Age in years			Total	P-value
	16-30	31-45	46-60		
Yes	109	44	2	155	0.001
No	4	1	0	5	
Total	113	45	2	160	

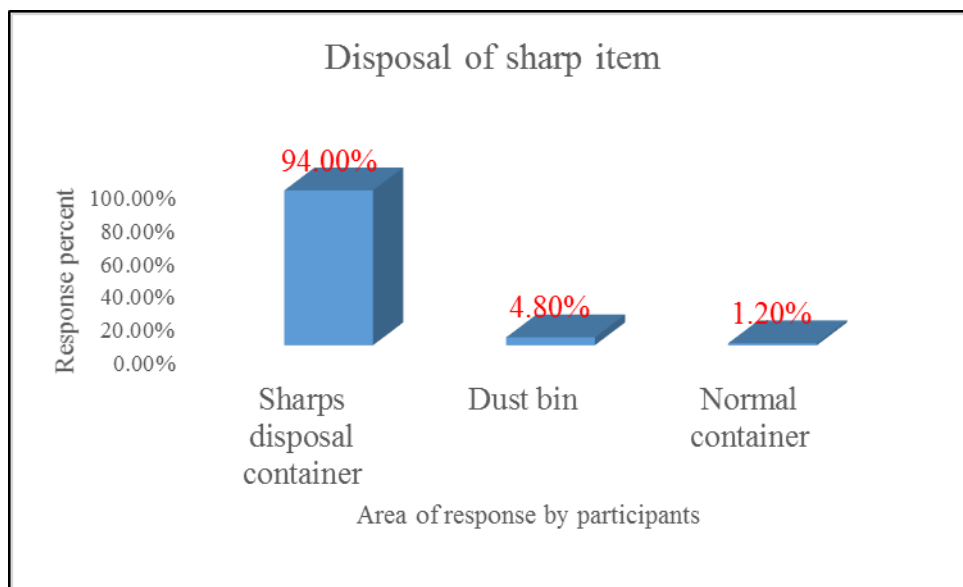


Figure 2 Distribution of the respondents by disposal of sharp item (n=160)

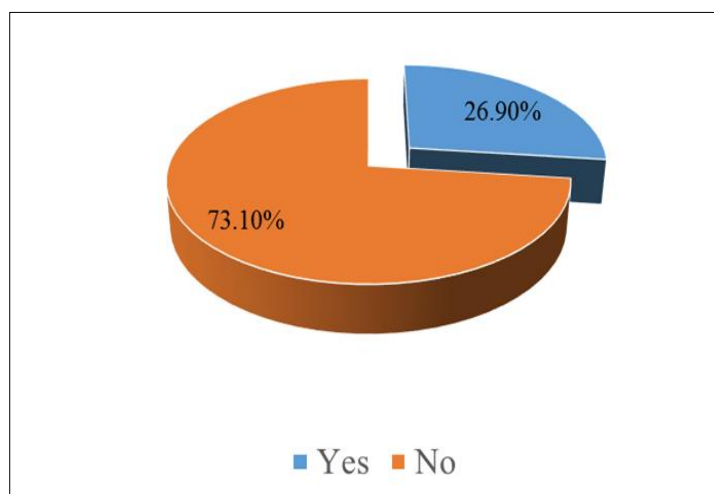


Figure 3 Distribution of the respondents by training on infection prevention (n=160)

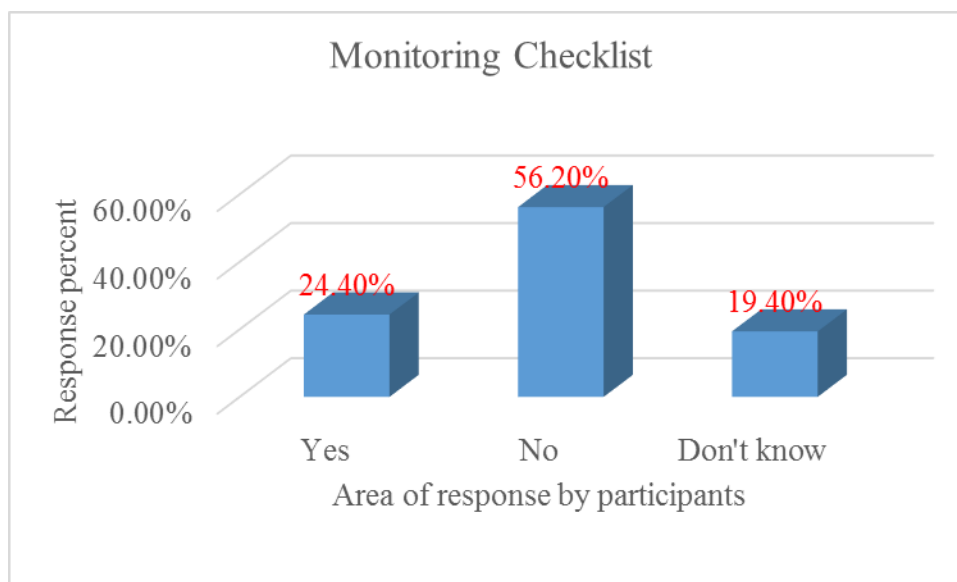


Figure 4 Distribution of the respondents by monitoring checklist used (n=160)

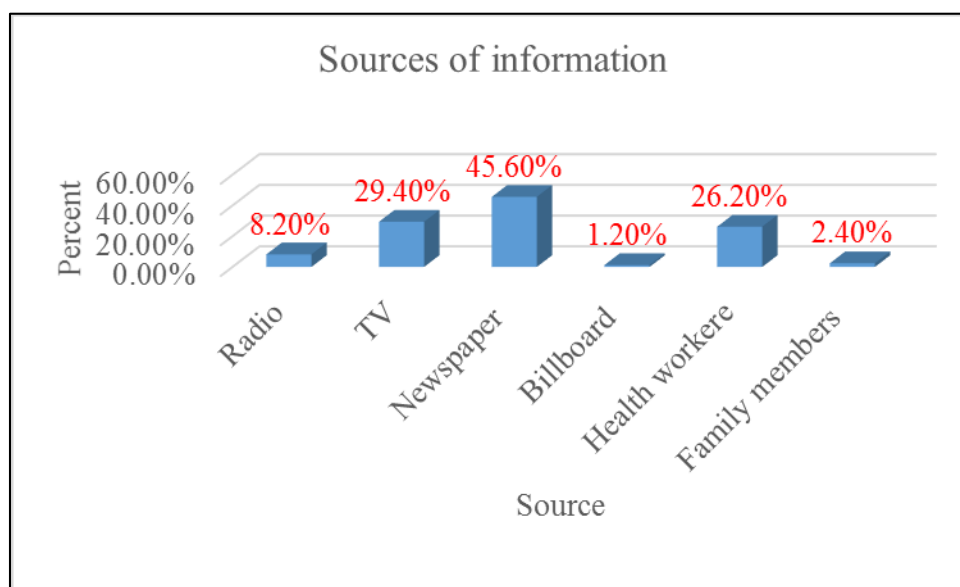


Figure 5 Distribution of the respondents by source of information (n=160)

4. Discussion

This descriptive type of cross sectional study was conducted a preventive practice on communicable disease transmission among the health workers of selected tertiary level hospital of Chittagong city with a sample size of 160. A pretested modified questionnaire was used to collect the data. All the data were entered and analyzed by using Statistical Package of Social Science (SPSS) 16.0 versions. It was found that among 160 study respondents most of the participants in age group 16-30 years (70.6%) followed by 31-45 years (28.2%) and 46-60 years (1.2%), respectively with Mean age 28.92 + 4.834 years.

This study showed that most of the respondents (92.5%) were female and rests of them (7.5%) were male respectively. Most of the respondents (53.1%) were Muslim belonged to (32.5%) were Hindu, (13.1%) were Buddhist and rest of them (1.2%) were Christian. Showed that most of the respondents (90%) were married and rest of them 10% were

unmarried. Majority of the respondents (78.1%) educational status were higher secondary followed by (20.6%) were bachelor level and rest of them (1.2%) were master level respectively.

It was found that (1.2%), (13.1%), (63.1%) and (22.6%) of the respondents were income group BDT <10000, BDT 10001-20000, BDT 20001-30000 and BDT >30000 respectively. Showed that family member of the respondents (36.9%) were 1-2 persons, followed by (35.6%) were 3-4 persons and rest of them (27.5%) were 5-6 persons. Most of the respondents (81.9%) were sr. staff nurse belonged to (10.6%) were staff nurse and rest of them (7.5%) were PN. Nurse respectively.

Current study showed that majority of the respondents (77.6%) were ever heard about infection prevention and rest of them (22.4%) did not ever heard about infection prevention. It was found that most of the respondents (87.2%) were infection can be transmitted to health workers and rest of them (12.8%) were did not infection can be transmitted to health workers. Most of the respondents (87.5%) were by contract with contaminated instruments, needle, gloves etc. followed by (8.8%) was all of above and rest of them 3.8% was by contact with patient's body fluid and excretion.

The study showed that most of the respondents (94.4%) were by using contaminated scissors, needle, syringe etc. belonged to (4.4%) were during physical examination of patient and rest of them (1.2%) were during the surgical procedure. It was found that preventive measures of infection transmission in sub health post (50%) were hand washing followed by (28.1%) were using gloves, (6.9%) were Using Disposable syringe, (90.8%) were Using sterile instruments, (93.2%) were Proper disposal of waste materials and only (13.8%) all of above respectively. Majority of the respondents (78.1%) hand washes were soap and running water (tap), followed by (20.6%) were soap and bucket water and rest of them (1.2%) were with water only, which is similar findings with the above mentioned study [12].

We found that most of the respondents (94%) use to dispose the sharps were Sharps disposal container belonged to (4.8%) were dust bin and (1.2%) was normal container. Majority of the respondents (73.1%) were did not training on infection prevention and (26.9%) were training on infection prevention. Half of the respondents (56.2%) did not monitoring checklist used by the supervisor followed by (24.4%) were monitoring checklist used by the supervisor and rest of them (19.4%) were don't know.

It was found that source of information of the respondents (8.2%), (29.4%), (45.6%), (1.2%), (26.2%) and (2.4%) were followed by radio, TV, newspaper, billboard, health worker and family members. Revealed that there is a significant association between age and Knowledge about malnutrition such as with Normal body weight of a new born baby whereas (p value= 0.001). A highly significant association between Knowledge on infection can be transmitted to health workers and monthly family income (p value= 0.000).

5. Conclusion

The present study was preformed among the health workers of Chittagong city to assess the preventive practice on communicable disease transmission. The study showed that majority of the respondents (77.6%) were heard about infection prevention and rest of them 22.4% did not. It was found that most of the respondents (87.2%) were infection can be transmitted to health workers and rest of them 12.8% were did not. The study revealed that most of the respondents (87.5%) had knowledge about mode of transmission by contract with contaminated instruments, needle, gloves etc. followed by 8.8% were all of above and rest of them 3.8% were by contact with patient's body fluid and excretion. Most of the respondents (94%) use to dispose the sharps were sharps disposal container belonged to 4.8% were dust bin and 1.2% was normal container. Preventive practice was found less in comparison with the level of knowledge of the respondents.

Recommendations

- The health workers should utilize their potential knowledge for the preventive practice on communicable disease transmission.
- The health workers should promote the proper hand washing and use of protective barriers like gloves, apron, disposable syringe, etc.
- Proper counseling is important for the health worker to follow the preventive measures of communicable disease transmission.
- Supervision and observation of the health worker and health facilities should be mandatory in regular basis.

Compliance with ethical standards

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Disclosure of conflict of interest

None to declare

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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