Original Article

Need assessment of hospital waste management in Bangladesh.

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Abstract:

This descriptive type of cross sectional study was conducted in some selected hospitals of Dhaka city among three groups of health care personnel, viz waste generator, waste handlers and supervisory persons with a sample size 725 using structured questionnaire separately for each group to explore the need assessment of hospital waste management in Bangladesh from January 2014 to May 2014. Most of the supervisory persons were male (70.8%) and 57.7% respondents had working experience more than 36 months. 84% of them informed that hospital did not supply color bag or bucket for waste segregation. According to 97.3% respondents, International Biohazards was not labeled before and after transportation of waste. 90.7% said that waste management procedure in the hospital is not environmentally friendly. 88% mentioned that there were no guidelines for safe disposal of waste and no waste management guideline hanged at the waste generation site. 70.7% of the supervisory persons did not know whether there is any legislation applicable for Hospital Waste Management. Out of 325 waste generators, 37% respondents were male. 46.5% of the respondents had working experience more than 72 months. 61.2% of the waste generators use bucket for disposal of waste while 44.9% use dustbin. Only 21.5% use plastic bags and wooden boxes. More than half of the respondents (52.9%) handled waste without gloves, 19.7% used gloves and only 7.4% used spades during handling waste. 78.5% waste generator mentioned that they never identified the site of generation of waste. Almost all the respondents (99.4%) had poor practice level. Almost half of the respondents (waste handlers 146, 44.9%) were belonging to the age group of 30-39 years & 4.6% were less than 20 years of age. 38.5% respondents had educational level up to class V ,the rest were those who attendant class VI-X 18.5%, SSC pass 5.5% and illiterate were 37.5%. 87.4% (284) of waste handlers had poor knowledge regarding waste management, types, health hazards, method of collection, transportation, storage and prevention of health hazards. Relation between age and knowledge regarding waste management was statistically significant (p-value=O.O1). Attitude towards hospital waste management between male and female was statistically significance (p value=0.002). Level of education also found to be statistically significant (p value=0.000). Relation between waste management knowledge and waste handling practice was also statistically significant (p =0.005). Waste handlers without supervision had poor performance of work (P value= 0.005). Lack of guidelines, hospital waste management policy, non availability of equipments at desired time and amount, recognition, wages, lack of training, poor and inappropriate supervision are responsible for low level of practice of waste management; hence improvement of training and supervision along with job facilities in are necessary to improve waste management situation.

Key words: Hospital waste, waste generator, waste handlers, waste supervisor, incineration, dumping.

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Introduction

Bangladesh is a densely populated country of about 126 million people in an area of 1, 47, 570 sqr.km. Within some 68,000 villages lies in the northeastern part of south Asia.[1] In our country there are different types of hospital with different bed capacity. At the district level there are 50-150 bedded, 200–250 bedded public hospitals in some district, there are specialized hospital too. There are 500–1150 bedded specialized public hospitals either separate or attached authority with

medical college hospitals.[2] According to the world Bank repot[3] in urban area of Bangladesh about 40—50% of the total generated waste is collected per day by the Municipal authority, while the rest remain uncollected waste obviously degrades the environment, creating health hazards. 3700 metric tons of waste are generated per day in Dhaka city about 200 tons are hospital waste and 40 tons are infectious waste. Waste generated per person per day is about 0.5kg[3]. There was no system for safe waste management in the life-cycle of the waste. From here waste was dumped to the nearest dustbin, some was burned and some was buried. From many point of waste life cycle, valuable are recycling either by staff or by Rag Pickers.[4]

Hospital waste is very important because it has an effect of a "Biological weapon or Bomb", which is being produced by us to kill innocent lives beyond their knowledge. Hospital waste differ from domestic waste since it's wholly consists of cotton, syringe, gauge, bandage, blood, body fluids, human flesh, vomits, placentas etc. The waste that generated from the hospital, generally on average 85% of which are non-hazardous or general or municipal waste and 15% are hazardous waste. Out of these hazardous waste 10% contain infectious waste and rest 5% are non-infectious waste.[5] Problem lies with the solid waste that causes environmental pollution and during collection many workers faces accidents by piercing by needle or get cut injury because of their careless and lack of appropriate protection. The key to effective management of health care waste is segregation of waste[6]. Hospital Segregation policy is a key element of clinical waste management and has a major influence on the option for the treatment and disposal of waste.[2]

Materials and methods: This descriptive type of cross sectional study was conducted in some selected hospitals of Dhaka city among three groups of health care personnel, viz waste generator, waste handlers and supervisory persons with a sample size 725 using structured questionnaire separately for each group to explore the need assessment of hospital waste management in Bangladesh from January 2014 to May 2014.

Result:

Group 1: (supervisory Persons)
Most of the respondents were male (70.8%) and 57.7% respondents had working experience more than 36 months. 84% supervisory persons informed that hospital did not supply color bag or bucket for waste segregation. According to 97.3% respondents, International Biohazards was not labeled before and after transportation of waste. 90.7% said that waste management procedure in the hospital is not environmentally friendly. 88% mentioned that there were no guidelines for safe disposal of waste and no waste management guideline hanged at the waste generation site. 70.7% of the supervisory persons did not know whether there is any legislation applicable for Hospital Waste Management.

Group-2: (Waste generator)
Out of 325 waste generators, 37% respondents were male. 46.5% of the respondents had working experience more than 72 months. 61.2% of the waste generators use bucket for disposal of waste while 44.9% use dustbin. Only 21.5% use plastic bags and wooden boxes. More than half of the respondents (52.9%) handled waste without gloves, 19.7% used gloves and only 7.4% used spades during handling waste. 78.5% waste generator mentioned that they never identified the site of generation of waste. Almost all the respondents (99.4%) had poor practice level.

Group-3: (waste handlers)
Almost half of the respondents 146(44.9%) were belonging to the age group of 30-39 years & 4.6% were less than 20 years of age. 38.5% respondents had educational level up to class V ,the rest were those who attendant class VI-X(18.5%), SSC pass 5.5% and illiterate were 37.5%. 87.4% (284) of waste handlers had poor knowledge regarding waste management, types, health hazards, method of collection, transportation, storage and prevention of health hazards.

Table-1: Relationship of the factors relating to waste management with practice of waste handlers

Waste management practice	Poor	Good	P value
Supervision received	52	273	0.10
Training received	52	273	0.005
Facility available	115	210	0.003
Policy	52	273	0.003

P value from pearson's chai sqare (χ^2) test
Relation between age and knowledge regarding waste management was statistically significant (p-value=O.O1). Difference of attitude towards hospital waste management between male and female was found to have statistically significance (p value=0.002). Level of education also found to be statistically significant (p value=0.000). Relation between knowledge related to waste management and practice of waste handling was also statistically significant (p =0.005). Waste handlers without supervision had poor performance of work (P value= 0.005).

Discussion:

Majority of the supervisors had long working experiences in the respective hospitals; they realize that they have some responsibility and accountability regarding the hospital waste management. However, they did not know how much waste is generated and what portion of the total waste is hazardous and infectious. Although some mentioned about the amount and percentage of infectious waste, on assumption, also shown by the study of A.R Bhyiyan[7] and Shehab.[8] Supervisory persons agreed that, staff was not aware about the consequences of hospital waste throughout its lifecycle. This lack of awareness may be due to lack of knowledge and negligence corresponds with Thu.[9] Hospital authority fails to supply color containers/ bags, operational equipment sufficiently and timely due to government policy, financial constrains and failure to transfer money from one economic code to another economic code, also supported by the study of Rabbani.[10] Majority of the respondents collect the needle and syringe, glass and blades together without precaution because of lack of cutting device and lack of policy, proper supervisions and responsibility, supported by the study of Shehab.[4] This study showed that majority of waste handlers were male, however there is no relationship between gender and attitude. Majority of the respondents were middle age group and though age has direct relationship with knowledge but not with the attitude towards waste management. Educational status of the majority of the waste handlers was found low and this might be the reason for low status and low prestigious job, as this does not require any education. Waste handlers job is not only untidy but also unhygienic and risky but the sewage is less than they required ones. This may be the reason that they don't pose good practice. Gehad,[12] Jaheer[13] accomplished in their study that performance of job of hospital waste is directly proportional with monthly income but in this study it was found that average income group had their better work. Respondents with large family possess poor knowledge and practice because they could not pay full attention to their job due to big family and a lot of social problems. However knowledge, attitude and practice and family size were not statistically related to each other, which correlates with the finding Mumtaz.[14] Storage and transportation of waste in an unaccepted way due to lack of hospital policy, available facility and negligence and lack of knowledge which is supported by the study of Shehab[8] and Akter.[15] The waste is carried out by the city corporation/powrashava van in a routine basis encourage the hospital authority to disposed the waste in the dustbin. Both existing in out transportation of wastes cause environmental pollution may be due to lack of hospital/government policy, legislation and staff's negligence. In general practice of the waste handlers was poor, similar result was shown by Akter.[3] Overall attitude of the handlers towards waste management was high. This result corresponds to the findings of Thu[9] and Rabbani.[10] There is statistically proving relationship between educational status and level of attitude.

Conclusion:

There is no particular system for identifying and segregation of waste within the hospital. Hospital authority fails to supplies color bag and bin and operational equipment for waste management regularly, sufficiently and timely as per requirement of the staffs. Majority of the respondents does not wear protective equipment during their work. There is no working incinerator in any study hospitals and any fix place / system for treatment and disposal of hospital waste. Majority of the waste generators use bare hand during work and dispose the sharp items without any precaution along with general and other infectious waste. Waste generator never chemically treats the pathological waste. The waste handlers do collect and transportation of wastes in as unhealthy and an unaccepted way without wearing protective clothing and equipment. Infected and non-infected waste collected and stored together, majority of them are disposed at the city corporation/powrashava dustbins, and some are dumped within the hospital premises and some of them were burned.Liquid waste is poured into drain. Waste handlers were not aware about personal hygiene. There is recycling of waste at many points of the life cycle of the waste. It was also noticed that lack of any guidelines, hospital waste management policy, non availability of equipments at desired time and amount, recognition, wages, lack of training, poor and inappropriate supervision encourage them for low level of practice of waste management.

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