International Journal of Community Medicine and Public Health
Meshram PV et al. Int J Community Med Public Health. 2017 Sep;4(9):3243-3246
http://www.ijcmph.com
pISSN 2394-6032 | eISSN 2394-6040

DOI: http://dx.doi.org/10.18203/2394-6040.ijcmph20173621

Original Research Article

Assessment of epidemiological factors and work related injuries amongst class IV workers involved in handling and disposal of biomedical wastes in a tertiary teaching hospital of Nagpur

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Received: 11 July 2017
Accepted: 26 July 2017

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ABSTRACT

Background: Biomedical wastes generated from hospital settings are a potent source of various infections and diseases like AIDS, Hepatitis and other bacterial diseases causing serious threat to health. Health care workers which include class IV workers are at greater risk of various morbidities due to their job profile, including transport and disposal of biomedical waste. The study aims to find out the work related injuries among class IV workers involved in handling and disposal of biomedical wastes. The objective of the study was to assess the epidemiological factors and describe the work related injuries among class IV workers in a tertiary teaching hospital of Nagpur.
Methods: A cross-sectional study amongst 100 class IV workers was conducted using a structured questionnaire mentioning the socio-demographic profile and injury details at the work place.
Results: Of the 100 subjects, majority (37%) fall into the age group of 40-49 years. There were 77 females and 23 males. 58% were educated till high school and there were 4 illiterates among the workers. On enquiring about the details of injury in past 6 months, 45 workers were injured during their working hour of which maximum was by needle. There were 3 workers who in spite of being injured, didn't report to higher authority.
Conclusions: Injuries at work place are fairly common and this holds truth for the class IV workers handling and disposing biomedical wastes. Proper disposal of sharps and other biomedical wastes correctly can minimize the risk of hazard.

Keywords: Bio-medical waste, Work related injury, Class IV workers

INTRODUCTION

Bio-medical waste means any solid, fluid, or liquid waste including its containers and any intermediate product which is generated during the diagnosis, treatment, or immunization of human beings or animals or in research activities pertaining thereto or in the production or testing of biological and includes categories for mentioned in Schedule 1. Schedule 1 includes 10 categories of the biomedical waste.[1]

The bio-medical waste generated from various sources has become a problem and much attention is being given worldwide to find out solution of this problem. The main concern lies with the hospital waste generated from large hospitals/nursing homes as it may pose deleterious effects due to its hazardous nature. According to a survey carried out in Bangalore, segregation of infectious waste from non-infectious wastes is done only in 30 percent of hospitals.[2,3]

It is the duty of every individual in health care settings, right from the physician to class IV worker to reduce the waste generation at the site, to ensure its efficient collection, handling, and disposal in such a way that it controls infection and improves safety for employees working in the system. Bio-medical wastes, if not handled in a proper way, is a potent source of diseases, like AIDS, Tuberculosis, Hepatitis and other bacterial diseases causing serious threats to human health. Owing to the discussed potential to threats, this waste needs prime attention for its safe and proper disposal.[4,5]

Although 75-90% of the hospital waste is non-hazardous and harmless as any of the other municipal waste, the remaining 10-25% is hazardous to humans or animals and deleterious to environment.[10] Hospital waste poses a risk for patients and personnel who handle these wastes. It is infectious and hazardous and poses serious threats to environmental health and requires specific treatment and management prior to its final disposal.[6,7]

Health care workers which include class IV workers are at greater risk of various morbidities due to their job profile, including transport and disposal of biomedical waste. Very few studies are documented on the work related injuries among class IV workers working in the hospital. Hence the research has been conducted to study the epidemiological factors and work related injuries among class IV workers involved in handling and disposal of biomedical wastes.

Objectives

1) To study the socio-demographic profile of study subjects.
2) To study the work related injuries among the participants.

METHODS

Study area

The current study was undertaken in a tertiary teaching hospital of Nagpur.

Study design

It was a cross-sectional study.

Study period

The study was conducted over a period of 2 months i.e. from July 2015 to August 2015.

Sampling procedure

The present study was undertaken in a tertiary teaching hospital of Nagpur. Currently there were 234 Class IV workers which include ward boys, attendants, sweepers, rag pickers in the hospital involved in handling and disposal of biomedical waste. Out of that 100 workers were selected randomly. Informed consent was taken by the workers in their own language, and those who agreed to be part of the study would be included according to the inclusion criteria. A pre designed structured interview schedule was used for the study. Each worker was subjected to the preformed interview schedule comprising of socio-demographic profile. Details about work related injuries were assessed. Frequency of work related injuries, type of injury and reporting of the same was asked in detail to the respondents.

Inclusion criteria

Class IV workers employed for ≥6 months, who agreed to participate and were present at the time of the study.

Exclusion criteria

Class IV workers employed for less than 6 months, who refused to participate and were absent at the time of study.

All responses were tabulated by the investigator using Microsoft-Excel 2007 Software. Data analyzed by using SPSS software version 17.0.

RESULTS

Table 1: Distribution of socio-demographic variables among the subjects.

Variables		Frequency
Age (in years)	20-29	23
	30-39	33
	40-49	37
	50-59	7
Gender	Male	23
	Female	77
Marital status	Married	89
	Unmarried	11
Religion	Hindu	57
	Buddhist	43
Education of the worker	Illiterate	4
	Primary School	4
	Middle School	11
	High School	58
	Junior College	21
	Graduate	2
Socioeconomic Status	Class I	4
	Class II	23
	Class III	42
	Class IV	31

Table 1 depicts the socio-demographic profile of the class IV workers handling the biomedical wastes. Total 100 subjects were included in the study. Majority of the workers fall into the age group category of 40-49 years.

Only 7 people belong to the age group 50-59 years. Gender wise, there were 77 females and 23 males. Eighty nine of them were married. There were 57 Hindus and rests 43 were Buddhist. Fifty eight subjects were educated till high school i.e. till 10th standard. There were 4 illiterates among the workers and 2 of them had completed their graduation. Socioeconomic status was calculated using the Modified B. J. Prasad Scale for Jan 2014. According to it, 42 falls in class III, followed by 31 in class IV, 23 workers in class II and 4 were in class I Socioeconomic status.

Table 2: Description of injury in study subjects.

Variable		Frequency
Have you sustained any unintended accidents (sharp injuries, chemical burns etc) during work in the past 6 months?	Yes	45
	No	55
If yes, by what?	Blade	2
	Nail	14
	Needle	29
	No injury	55
Frequency of injury in past 6 months	5 times	2
	No injury	55
	Once	34
	thrice	4
	Twice	5
Did you report such unintended accidents(sharp injuries,chemical burns etc) during work	Met with accident and reported	44
	Met with accident but didn't report	3
	Never had such type of injury	55

Table 2 shows that on enquiring about the details of injury in past 6 months, 45 workers were injured during their working hour of which maximum was by needle.

DISCUSSION

Socio-demographic variables among the subjects

Total 100 class IV workers were included in the study. Majority of the workers fall into the age group category of 40-49 years. Only 7 people belong to the age group 50-59 years. Gender wise, there were 77 females and 23 males. Eighty nine of them were married. There were 57 Hindus and rests 43 were Buddhist. Fifty eight subjects were educated till high school i.e. till 10th standard. There were 4 illiterates among the workers and 2 of them had completed their graduation. Socioeconomic status was calculated using the Modified B.J. Prasad classsification for Jan 2014. According to that, 42 falls in Class III, followed by 31 in Class IV, 23 workers in Class II and 4 were in Class I Socioeconomic status. Majority of the workers were educated till 10th standard. The importance of literacy is worth in making the people aware of the facts in the world. Without increasing the literacy rate and knowledge of the people it is very difficult to curb the social problems and other problems like proper management of biomedical wastes. Knowledge reflects attitude and attitude in turn reflects the skills and practice of the individual. So improving the literacy rate of the country is imperative in shaping the right knowledge and eventually the right skill and practice which is the required time of the hour.

Description of injury in study subjects

On enquiring about the details of injury in past 6 months, 45 workers were injured during their working an hour of which maximum was by needle. This again asks for proper disposal of sharps and other biomedical waste correctly which can minimize the risk of hazard. Reporting of such incident to the concerned authority is also must so as to take proper action to prevent such incidents in future. However according to the table there were 3 workers who met with such accident but didn't report. These findings were similar to the study by Jayanth et al, who mentioned that class IV workers were exposed to the needle stick injuries during their work.[8] Among the staff with needle stick injuries 147 (49.7%) were those who had a work experience of less than 1 year. Also, Sharma et al, had mentioned in their research work that about 79.5% of workers have reported one or more needle stick injuries in their carrer.[9] Their study also mentioned that only 27.5% of the health care workers reported immediately to a senior or supervisor after the injury. This was also similar to a study finding by Mathur et al, which stated that there was less reporting of injury.[10]

CONCLUSION

Injuries at work place are fairly common and this holds truth for the Class IV workers handling and disposing biomedical wastes. Injuries due to contaminated needles and other biomedical wastes product are potent source of various infections like Hepatitis B, HIV etc. Hence, proper disposal of sharps and other biomedical wastes correctly can minimize the risk of hazard. Reporting of such incident to the concerned authority is also must so as to take proper prophylaxis and to prevent such incidents in future.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Sharma AK. Bio Medical Waste (Management and Handling) Rules. Bhopal: Suvidha Law House; 1998.
2. Rao HVN. disposal of Hospital Wastes in Bangalore and their Impact on Environment, Appropriate Waste Management Technologies for Developing Countries, 3rd International Conference 25-26 Feb 1995, Nagpur, Technical Papers Volume 2. 1995.
3. Madhya Pradesh Pollution Control Board, Government of India. Biomedical Waste (Management and handling) rules 1998. Available at: http://www.mppcb.nic.in/biomedical_waste.htm#biomedical_waste_management. Accessed on 4 April 2017.
4. Singha A, Singha J, Singha AP, Singh R. Biomedical Waste Management and Their Possible Health Risks with Controlling Measures in Bareilly City, UP, India. J Env Res. 2009;2(4):296-302.
5. Babu BR, Parande AK, Rajalakshmi R, Suriyakala P, Volga M. Management of Biomedical Waste in India and Other Countries: A Review. J Int Environ Application Sci, 2009;4(1):65-78.
6. Manzurul HM, Ahmed SA, Rahman AK, Biswas TK. Pattern of medical waste management: existing scenario in Dhaka City, Bangladesh. J BMC Public Health. 2008;8:36.
7. Gayatri PV, Pokhrel K. Biomedical solid waste management in an Indian hospital: a case study. Waste Management. 2005;25:592–9.
8. Jayanth ST, Kirupakaran H, Brahmadathan KN, Gnanaraj L, Kang G. Needle sticks injuries in a tertiary care hospital. Indian J Med Microbial. 2009;27:44-7.
9. Sharma R, Rasania SK, Verma A, Singh S. Studhy of prevalence and response to needle stick injuries among health care workers in a tertiary care hospital in Delhi, India. Indian J Community Med. 2010;35(1):74–7.
10. Mathur V, Dwivedi S, Hassan MA, Misra RP. Knowledge, Attitude, and Practices about Biomedical Waste Management among Healthcare Personnel: A Cross-sectional Study. Indian J Community Med. 2011;36(2):143–5.

Cite this article as: Meshram PV, Tawale N, Jajulwar MB. Assessment of epidemiological factors and work related injuries amongst class IV workers involved in handling and disposal of biomedical wastes in a tertiary teaching hospital of Nagpur. Int J Community Med Public Health 2017;4:3243-6.