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Knowledge, attitude and practices of biomedical waste management among interns of SDMCMSH, Dharwad

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ABSTRACT

Background: Total biomedical waste produced globally is 484 tonnes per day (TPD). 447 TPD is treated and 37 TPD is untreated. Hospital waste causes contamination of environment and leads to serious health consequences in healthcare workers and general public due to poor handling as a result of inadequate and improper treatment knowledge. Every health care professional should have a proper knowledge and capacity to guide others regards proper management of biomedical waste. The objective of the present study was conducted to assess the knowledge, attitude and practice of biomedical waste management among interns of SDMCMSH, Dharwad.

Methods: A cross-sectional hospital based study was conducted to assess knowledge, attitude and practice of biomedical waste management among interns of SDMCMSH, Dharwad. There were 100 interns in the institute and all 100 were included in the study after obtaining informed consent. Pre-tested, semi-structured questionnaire was used to collect the data.

Results: Out of 100 responses obtained, 81 were complete in all respect hence, and others were excluded from the analysis. Majority, 55.5% were females. 15% of the interns were not able to name correctly color codes of bags. Only two-third were aware about where and how bio-medical wastes are treated. In general, males gave correct answers more often compared to female interns and this was statistically significant (p<0.05).

Conclusions: Though interns are aware about the seriousness of the biomedical waste to the public health, there still exists a knowledge attitude and practice gap. This needs to be identified and suitably addressed.

Keywords: Bio-medical waste, Interns, Knowledge, attitude and practice

INTRODUCTION

Biomedical waste (BMW) constitutes all such waste that is generated while diagnosing, treating, and immunizing as well as conducting research activities on humans or animals. Health institutions aim to provide health care services to remove potential health risks to people. During such processes, the wastes are generated. Improper management of BMW is a hazardous risk to everyone concerned like patients, healthcare providers, the community and environment. Compared to other wastes, the waste of healthcare activities has higher risk

for infection and damage. Higher income countries generate more healthcare waste than low and middle income countries.¹

General, non-hazardous waste forms over 85% of the total amount of waste produced by health-care activities. Hazardous material, which forms the remaining 15%, is often infectious, toxic or radioactive. Globally, around 16 billion injections are administered to patients every year. However, after administration not every needle and syringe is scientifically disposed off. Open burning and incineration emits dioxins, furans and particulate matters.

By ensuring safe and environmentally-sound management of health care wastes one can prevent adverse health and environmental impacts including those due to unintended release of chemical or biological hazards as well as drug-resistant microorganisms. This is possibly only way to protect the health of patients, health workers and the general public.

Healthcare wastes form an important part of monitoring Sustainable Development Goal 6. Regulatory framework, planning issues, waste minimization and recycling, handling, storage and transportation, treatment and disposal options, and training and other relevant concerns regarding the healthcare waste are discussed in the first global and comprehensive guidance document developed by the WHO, safe management of wastes from healthcare activities. It is aimed at managers of hospitals and other health-care facilities, policy makers, public health professionals and managers involved in waste management.² Every single worker generating these wastes should be aware about their proper disposal.³

Among all the healthcare professionals, interns are commonly involved in activities generating biomedical waste like administering procedures like catheterization, biopsies, intubation, taking samples for laboratory investigations etc. Awareness of the risks involved with such waste and knowledge about handling them, reduces to a lot extent the risks to other people in such hospital environments. Data regarding the gap of knowledge and practices helps the hospital administration to take suitable measures to reduce the risks. It was with this background that this study was carried out.

Objectives

The objectives of the present study were to assess the knowledge, attitude and practice (KAP) of BMW management among interns of SDMCMSH Dharwad.

METHODS

The study was conducted at SDMCMSH Dharwad. Karnataka. The study was conducted from October 2018 to November 2018. It was a hospital based crosssectional study. Study participants included the interns, working in the institute. The study was conducted by using pretested, semi-structured proforma. The data collected includes details of various demographic variables and details regarding KAP for BMW handling and its management. All interns were invited individually to participate in the study after obtaining the informed consent. Ethical clearance was taken from institutional ethical committee. All the study participants were assured about their confidentiality and anonymity. KAP were evaluated on correct and wrong responses. The data was tabulated in MS Excel and interpretation was done using percentages and chi-square using IBM SPSS version 23.0. Probability value of <0.05 was taken as statistically significant.

RESULTS

Out of 100 responses received, 81 were complete in all respect. Only these 81 are included in the analysis. Majority 45% (36) were males and remaining 55% (45) were females. All of them were in the age group 22-23 years. 76 of them belonged to Hindus religion while 5 belonged to Muslim religion.

Table 1: Showing knowledge, attitude and practice correct response.

Question	Related domain	Answered correctly by (%)	
Correct response on color coded bags with respective waste.	Knowledge	45.70	
Knowledge about color coded bags.	Knowledge	86.40	
Attitude of interns on bio-medical waste (BMW) management categorization need.	Attitude	97	
BMW management necessary and reduction of health hazard	Attitude	97	
Disinfecting BMW.	Practice	65	
BMW treatment	Practice	72	

Table 2: Knowledge of BMW management among male and female interns.

Knowledge	Male (%)	Female (%)	P-value
Diseases from BMW	86.10	46.70	< 0.001
Color coded bags	97.20	77.80	0.011
Steps of disposal	100	80	0.004
Bio hazard symbol	83.30	62.20	0.036

It can be seen from Table 1 that, majority 86.40% (70) has good knowledge about color coded bags for disposal of BMW. While only 45.70% (37) have knowledge about

color coded bags with their respective waste. Attitude towards BMW management is almost similar in all the interns. The practice of disinfection and treatment of BMW was correctly explained by 65% (53) and 72% (58) interns respectively.

Attitude towards BMW management is not statistically different among males and female interns. BMW management practice is also not statistically significantly different among male and female interns (p>0.05). However, there is a significant difference in the knowledge about BMW management among boys and girls with (p<0.05) as shown in Table 2.

DISCUSSION

In current study, majority, 55.5% were females. 15% of the interns were not able to name correctly color codes of bags. It was observed that 86.4% interns had knowledge about color coding for disposal of BMW only 45.7% had correct knowledge about color coded bags with their respective waste. Attitude towards BMW management was excellent among all respondents. Only two-third were aware about where and how BMW are treated. In general, males gave correct answers more often compared to female interns.

Knowledge regarding the source of BMW was 86% in a study done by Pandey et al which is comparable to our study. This study by Pandey et al, found that 68% had knowledge of segregation of waste in respective color coded bags which is more than that observed in our study (45%). 88% answered that record maintenance was essential for BMW management.⁴

Another study, by Manali et al found that <20% has knowledge about categories, color coding and different wastes that are not included in BMW management, while attitude was similar to that observed in our study. Over 50% has faulty practice regarding disposal of BMW.⁵

In a study done at Navi Mumbai found that all 100% were aware about BMW, 72% had the knowledge regarding the regular maintenance of BMW register and 93% population had the knowledge that proper segregation of BMW products. These numbers are far more than that observed in our study. 60% had the knowledge about the health hazards associated with BMW while our study found that this knowledge was statistically better among male interns compared to female interns. 6

A study carried out in Ujjain (Madhya Pradesh) found that the staff who had received training in medical waste management had significantly (p<0.05) better knowledge. This study was among nursing staff and other workers. Interns are exposed to this sort of information during their undergraduate training but the information may have been forgotten as seen by the results.⁷

CONCLUSION

Interns have fair knowledge and positive attitude towards BMW management. However there still exists a KAP gap. This needs to be identified and suitably addressed. Best way of addressing this gap would be by providing a training program for the interns in order to reduce the KAP gap and thereby reduce the health hazards associated with BMW products.

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Ethical approval: The study was approved by the

Institutional Ethics Committee

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