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Original Research Article

KAP study on bio-medical waste management among interns in a tertiary care hospital in Maharashtra

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ABSTRACT

Background: Biomedical Waste Management is Hazardous and can lead to many infections and diseases. Interns are the future physicians of tomorrow and they should be conscious about safe disposal and segregation practices. So, the present study was undertaken to assess the knowledge and awareness about Biomedical waste management in Interns. The aims and objectives were to assess the knowledge and awareness about biomedical waste management in Interns.
Methods: This cross sectional study was carried out in 51 interns. A pretested self-administered questionnaire on BMW management was given to the interns.
Results: Out of 51 interns 26 were girls and 25 were boys. 63% knew correct definition of biomedical waste. 23.5% said that authorization is required by CPCB. 15% had undergone training but 60% were keen to attend training programme. 86% had correct knowledge about sources of generation of BMW and 94% had knowledge of Biohazard symbol. Only 68% had knowledge of segregation of waste but none had knowledge of correct colour coding. 88% answered that record maintenance was essential for biomedical waste management. 94% said that BMW is teamwork.
Conclusions: There is a need for rigorous training programme for interns and monitoring is needed.

Keywords: Biomedical waste management, training, Interns, Disposal

INTRODUCTION

Over the past few decades there have been many advances in the field of health care. However, ironically the health care systems that restore and maintain the health in the community are also threatening their well-being. Hospital waste management is a burning issue today. The term biomedical waste is defined as any waste that is generated during diagnosis, treatment or immunization of humans or animals or in the research activities pertaining to or in the production or testing of biological and includes categories mentioned in schedule 1 of the Government of India's biomedical waste.[1]

Almost 75-90% of the waste produced by hospitals is non-hazardous and it is estimated that remaining 10-25% carries a high potential for infection and injury.[2] Poor hospital waste management practices are posing a high risk to the general health of the people, and also the medical community. Among all the health problems, the ones which are of major concern are hepatitis B, C and HIV/AIDS. According to WHO statistics, hepatitis virus can survive for 7-10 days in dry conditions.[3] More than 8 million hepatitis B, over 2.3 million hepatitis C and, more than 8000 cases of HIV, are estimated to occur yearly from the reuse of syringe and needles without sterilization.[4]

India generates about 3 million tons of medical waste per year and it is expected to grow about 8% annually.[5] Lack of awareness and inadequate knowledge has led to the hospitals becoming hub for spreading illness.

Thus collection and disposal of biomedical waste has become an area of significant concern for both the medical and general community. The biomedical waste management and handling rules (1998) state that every concerned health personnel should have proper knowledge, practice and capacity to guide others for waste collection and management.

Medical interns, who are just at the start of their medical career after completing graduation are exposed to various hazards like blood and blood products, injections etc. in various settings while conducting deliveries, assistance during surgery, collection of blood samples, immunization OPDs in the hospital. It is essential that they are fully aware of safe handling practices and related biomedical waste management. Even in their student life, they are exposed to similar hazards during their clinical postings in various subjects like gynaecology, obstetrics, surgery, etc. thus making them vulnerable to infections.[6]

Thus, knowledge of safe biomedical waste management practices is important and lack of this knowledge poses a occupational hazard for all health care professionals. The present study was done on interns as their clinical experience is less and they are at risk of various hazards from improper biomedical waste management practices So, with this background, this study was undertaken.

Aims and objectives

To assess the knowledge and awareness regarding various aspects of biomedical waste management amongst interns in a tertiary care rural hospital.

METHODS

The prospective cross-sectional study was carried out in the tertiary care rural hospital, Pune, Maharashtra, during the period of January 2015 to February 2015. It was carried out amongst the interns of the newly passed out batch. There were 71 students who had cleared the Final MBBS exam. Out of those, 51 interns participated in the study. A pretested, self-administered questionnaire on knowledge and awareness of bio-medical waste management policy and practice were given to the interns. Before administering the questionnaire the purpose of the study was explained to all. Anonymity of all participants was maintained. Informed consent was also obtained from them.

Statistical analysis was done using Microsoft Excel Epi Info version 7 software.

RESULTS

Among 51 interns, there were 25 males and 26 females. 63% interns knew the correct definition of Biomedical waste. 23.5% interns were aware that authorization is required for biomedical waste management by Central Pollution Control board. Only 15% of the Interns had undergone the training programme and 60% were keen to attend training program for biomedical waste management. 86% knew about sources of generation of BMW and 94% had knowledge of biohazard symbol. 68% had knowledge of segregation of waste but none had knowledge of correct colour coding. 88% said that record maintenance was essential for biomedical waste management. 94% agreed that BMW is teamwork.

Table 1: Definition of biomedical waste.

	Males		Females		Total right answer
Defn. of BMW	Right ans.	Wrong ans	Right ans.	Wrong ans	
	29.4%	23.5%	33.33%	13.72%	63%

Table 2: Waste management practices.

	Males (%)	Females (%)	No answer (%)
Use of PPD for collection	49.01	48	3
Segregation at source	33.33	45.09	21.58
Correct colour coding	0	0	29.5
Disinfection of liquid waste	47.05	39.21	13.72
Maintenance of register	43.13	43.13	13.72
Hepatitis immunisation	49	51	

Table 3: Attitude assessment.

	Agree	Disagree	Don't know
BMW management teamwork	48	-	2
Training not required	4	44	3

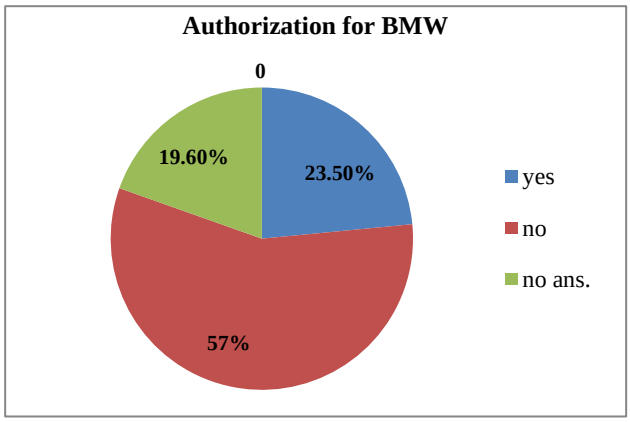

Figure 1: Authorization from CPCB.

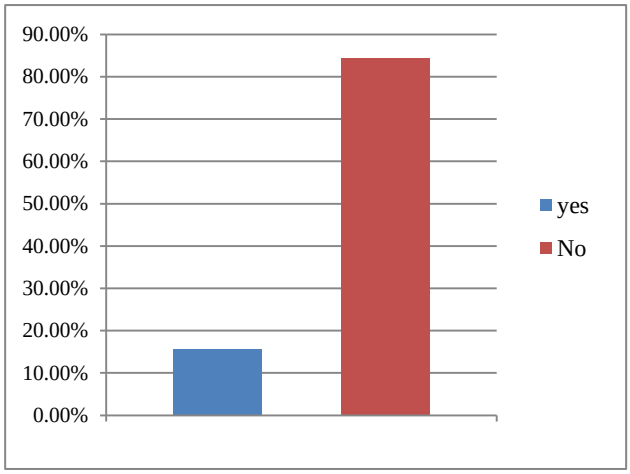

Figure 2: % of Interns Attended Training programme in BMW.

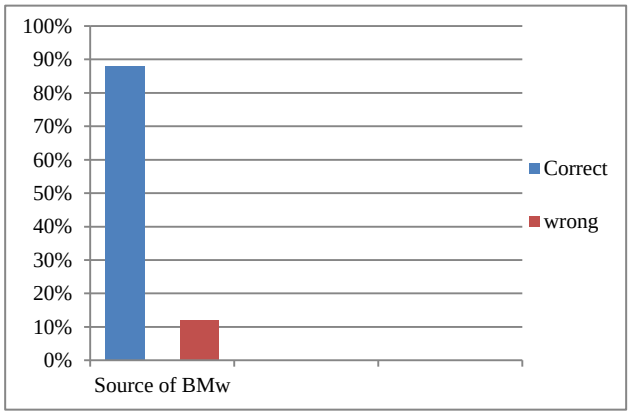

Figure 3: Source of bio medical waste.

DISCUSSION

In our study, out of 51 interns, 48 (94.1%) had heard about Biomedical waste management. Our findings are similar to the study of Madhavi et al, in their study 94.78% had heard about biomedical waste management and 68% knew about the biomedical waste management rules.[7]

In the study carried out by Basu et al 99.1% had heard about biomedical waste management and 94.4% knew about the biomedical waste management rules.[8]

In our study, 63% interns knew the correct definition of biomedical waste (Table 1).

Despite being doctors only 23.5% answered that authorization is required for biomedical waste management by Central Pollution Control board whereas 57% answered that authorization is not required. 20% had no clue whether any permission is required or not. Deo et al in their study reported almost half (47.8%) of the staff were aware about the biomedical waste law (Figure 1).[9] In our previous study, 72.22% interns knew about authorization to be obtained from PCB but only 5.56% interns could answer when it is required.[10]

We have a regular training programme on Biomedical waste management in the hospital premises itself, but only15% of the Interns had undergone the training programme (Figure 2). When asked if they would like to attend any training programme, 60% answered that they were interested in attending the training programme for Bio Medical waste management (Figure 3).

When interns were asked about the sources of generation of biomedical waste, almost 86% answered correctly.

In our study, 94% interns had knowledge of biohazard symbol, which is similar to the findings by Kanchi et al (93%).whereas in a study by Madhavi et al, they reported 65.2%.[1,7]

Regarding segregation of waste at source, which is the golden rule in management of biomedical waste, 68.6% interns answered correctly which is similar to the study by Madhavi and just slightly lower than that that reported in a study by Basu et al (78.8%).[7,8] However in a study by Kanchi 93% of their population had correct knowledge about segregation of waste.[1]

All the participants answered that personal protective devices were essential to handle the biomedical waste, which is similar to the study by Kanchi.[1]

It was observed, in our study, that there was a lack of knowledge about colour coding in biomedical waste management that needs to be addressed. Regarding colour coding, 99% of the participants answered that it is essential but, when asked about exact categories, 30% did not answer at all and the rest could not tell which category of waste belonged to which colour container. There was no statistical association seen between training programme attended and knowledge about colour coding.

This is very surprising since it is in contrast to the study done by Kanchi in which 86% of the participants had knowledge of the colour coding.[1] However study done by Deo et al, also reported poor knowledge among the

medical staff (20%).[9] However, 88.2% of the interns answered correctly that liquids needed to be disinfected before disposal.

When asked about maintenance of record for Biomedical Waste, 88% answered correctly which is more than that reported in the study by Kanchi et al (72%).[1] Almost all the interns had taken vaccination against Hepatitis B. (Table 2)

When attitude of the interns was assessed, 94% of the interns said that biomedical waste management is essentially teamwork and involves everyone from Class 1 to class IV workers (Table 3).

86.2% interns said that training was essential for efficient biomedical waste management but ironically only 15% had participated in the training programme in the hospital.

Our findings reveal, interns had good knowledge about source/ generation of biomedical waste, bio-hazard symbol, segregation of waste, PPD, maintenance of biomedical waste management records. They also had good attitude towards biomedical waste management rules and guidelines. But our study showed interns had poor knowledge regarding color coding however they were willing to undergo biomedical waste management training programme. Our study also revealed though interns were aware /heard about biomedical waste management rules; they were unaware from where to obtain the authorization.

CONCLUSION

In our study, we observed that interns had good knowledge and attitude towards biomedical waste management. However they have to be motivated, so that they can bring this into their routine practice. We hereby recommend that there is a need for rigorous training programme for the interns in order to reduce the health hazards associated with biomedical waste products.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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