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## Research Article

### AWARENESS OF BIOMEDICAL WASTE IN DENTAL STUDENTS: A SURVEY

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#### ABSTRACT

**Objectives:** To assess the awareness towards dental waste including mercury management and also the awareness of radiological waste, disposal of surgical waste among dental students.

**Materials and Method:** An epidemiologic survey was conducted in 109 dental students. The survey was composed of 21 self-administered questions frame based on knowledge, attitude and those regarding the practice of dentists in relation to dental health-care waste management. The resulting data were coded and a statistical analysis was done.

**Result:** The results showed that 43.11% of dental students were aware about more than 50% of questions, 20.18% of dental students were aware about more than 60% of questions and about 36.69% of dental students were not having adequate knowledge of BMW. Awareness per question shows that approximately 42.85% of dental students were aware about more than 50% of questions. Frequency of students attending about 50% of question was about 47.61% whereas 28.57% students attended all 21 questions.

**Conclusion:** It was concluded that not all dental students were aware of the BMW. A large population of the dental students were not practicing proper method of health-care waste disposal, hence there is an utmost need to educate almost the dental practitioners regarding proper practice measure.

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#### INTRODUCTION

The BMW and health care waste management is very different from house hold and industrial waste management. BMW management is one of the biggest challenge of the present day because it is related to the human health. (Kalpana V.N. et al. 2016). BMW management has recently emerged as an issue of major concern not only to hospitals, nursing homes but also to the environment. (Mathur P. et al. 2012). Medical wastes in hospitals are known as clinical waste. Normally, waste products is the term that is applied for those waste which are produced in healthcare like government hospitals, private hospitals, veterinary hospitals and research canter. So disposal of biomedical wastes has thus become emerging problem in India and worldwide. There is urgent need for planning and implementation of procedures and recent update regarding the biomedical waste management. (Chakraborty S. et al. 2014) Improper waste management generated in health care facilities causes direct impact on the community, medical staff and also

on the environment. The waste generated from the institutions consist of solid and liquid, which may be hazardous, infectious and non-infectious. It has been estimated that 85-90% of biomedical waste that generated from the hospital is non-infectious (free with body fluid that is similar to domestic waste) and remaining 10-20% of waste that is of concern because it is hazardous and infectious. In addition waste is also generated from ill manner treatment that causes environmental pollution that affect the community health. (A Rajor et al. 2012)

The biomedical waste generated in the dental scenario includes sharp instruments, used disposable items, infectious waste (blood –soaked cotton, gauze etc.) hazardous waste like mercury, lead and chemical waste like film developer, fixers, and disinfectant. (Singh R.D 2014). The major biomedical waste in our field is management of mercury and lead disposal. (M.N Bates 2006). Dentists and dental personnel have been directly and indirectly exposed to Hg emission from incinerator and Hg from waste water from different sources. (L.D.

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Hylander 2006). The release of amalgam during practice in clinics and hospitals wastewater or in solid waste is an important concern as these particles could then be released into the environment. (A. Jokstad 2006)

To protect the environment and community from these hazards, the ministry of Environment and Forest, Government of India Issued a notification on biomedical waste (management and handling) rules 1998 under environment protection Act. (ADA 2007). The present study is an effort to know the awareness and practices of dental care waste including mercury management among dental students in Lucknow. The objectives of the study was to assess the awareness and performance towards dental waste including mercury management and to assess the awareness of radiological waste and disposal of surgical waste among dental students.

**MATERIALS AND METHODS**

An epidemiologic survey was conducted to assess the awareness of biomedical waste management and mercury waste disposal among dental students. A Cross sectional questionnaire study was employed to evaluate awareness among Dental students of Northern India. The study was conducted after obtaining permission from the IEC. A verbal consent of all the patients was also taken previously. A convenient sampling technique was employed to recruit the study participants. A single investigator distributed the questionnaire to the dental students. A total of 130 questionnaire were distributed among dental students. 21 questionnaire sheets were not completely filled and hence excluded from the study. Data analysis was done on 109 survey sheets. The resulting data was coded and statistical analysis was done using SPSS software version 17.0. Percentage were calculated for the response given by the dental students.

**RESULTS**

Survey was conducted among 109 dental students with a self-administered questionnaire.

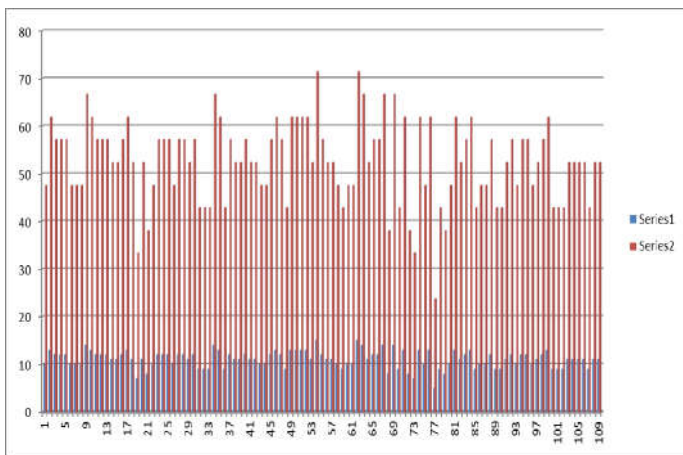


Fig 1 Awareness of participants

Approximately 43.11% of dental students were aware about more than 50% of questions, 20.18% of dental students were aware about more than 60% of questions and 36.69% of dental students had awareness less than 50% about the questions.

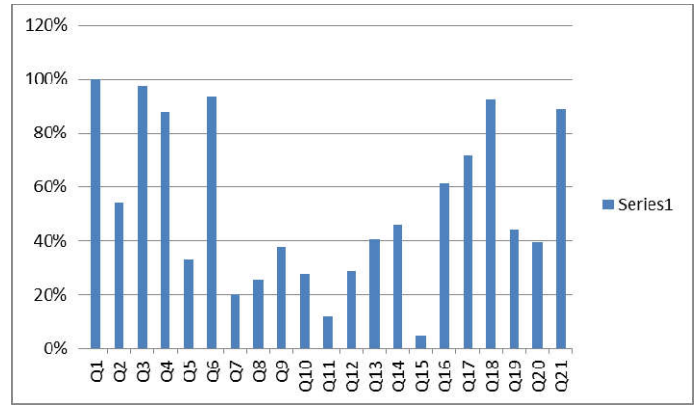


Fig 2 Awareness per question

Awareness per question shows that 42.85% of dental students were aware about more than 50% of questions.

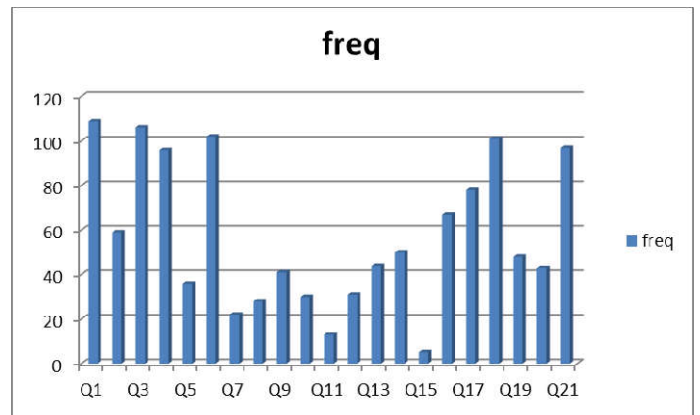


Fig 3 Frequency as per question

Precisely about 47.61% of dental student’s had attended 50% of the questions whereas 28.57% had attended greater than 80% of all questions.

**DISCUSSION**

The focus of the present study is on the knowledge, awareness and practice regarding Bio-Medical Waste management in dental students in India. A self –reported questionnaire was used for gathering information from the subjects regarding BMW management. Result of a study conducted on dental students indicated that students had good awareness and perception level about Biomedical Waste management.

Our study suggest that about 43.11% of dental students were aware about more than 50% of questions, whereas about 20.18% of dental students were aware about more than 60% of questions however, there were about 36.69% of dental students who were aware about less than 50% of question. Per question awareness shows about 42.85% students had thorough understanding about 50% of questions. When we correlate our study to similar study done by Rajiv *et al* (2013) the questionnaire was administered among 150 UG students only. In the study on an average, 59.23% of UG students were aware about BMW whereas 40.67% had incomplete knowledge about biomedical waste management therefore one could argue that the findings are not necessarily a generalization of all the UG student’s knowledge and awareness . There is essential need for better education to further improve the knowledge of BMW management by well designed seminars, programs and

workshop. In a similar study done by Singh RD *et al*(2014) suggested that 63.7% of the dentists were not aware of the different categories of biomedical waste generated in their clinic. Sudhakar V, ChandrashekarJ (2008) also did a similar study on 432 private dentists in Bangalore city & concluded that 64.3% do not segregate waste before disposal.

## CONCLUSION

Thus to conclude; the result of the present study showed that knowledge and awareness level of subjects was inadequate and there is considerable variation in practice and management regarding biomedical waste management among different studies. Safe and effective disposal of waste is not only a legal necessity but also a social responsibility. Continuing education and training programmes and short courses on cross-infection and biomedical waste management are suitable means of improving knowledge of dental students. Biomedical waste management should be strictly implemented and monitored in a systemic and simplistic manner by authoritative bodies in India and other developing countries. The government should also take responsibility to bring in the awareness regarding biomedical waste management to the dentist, dental students and also in medical hospitals.

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