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RESEARCH ARTICLE

DENTIST KNOWLEDGE, ATTITUDE AND PRACTICES TOWARDS BIOMEDICAL WASTE MANAGEMENT

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ABSTRACT

The management of biomedical waste is very crucial for prevention of infection as it can bring risk and hazard for people and environment. Health care unit especially dental and medical professionals can bring harm to their patients for every seconds if the waste is not managed properly as they are the ones whom being exposed to patients. Good level of awareness and adequate knowledge will help to minimize the risk transition of infection. Hence, this survey is conducted to assess the students' knowledge and attitude towards biomedical waste management. In regards, proper intervention and continuous education will be needed to increase their level of understanding.

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INTRODUCTION

Biomedical waste can be determined scientifically as "any solid, fluid or liquid waste, including its container and any intermediate product, which is generated during its diagnosis, treatment or immunization of human beings or animals, in research pertaining thereto, or in the production or testing of biological and the animal wastes from laughter houses or any other like establishment." (Acharya and Singh, 2000) In layman's term, it is defined as "any waste that is generated during diagnosis, treatment, or immunization of human being or animals, or in the research activities pertaining to or in the production or testing of biological and includes categories mentioned in schedule I of the Biomedical Waste (Management and Handling) rules 1998." (Govt.of India, 1998; National guidelines on Hospital waste management, 1998) There is about 350 000 tons of health care waste that is produced every year which nearly to 1000 tons daily with both hazardous and non hazardous. It is produced from 11 South-East Asian countries as stated in World Health Organization, SEARO. (Survey of Hospital waste management in SEA region, 1999) Biomedical waste which comes from hospital should be managed properly as it is hazardous and has high risk to bring infection to environment. (Yadannavar *et al*., 2010) Dental professionals not only bring relief to the sick but also cause harm to their patients if the waste is not disposed properly. (Mathur *et al*., 2011) Dental waste is a part of hazardous biomedical waste which has two types of effects; environment and on the health of the person handling it. (Sampath and Doggalli, 2012; Narang *et al*., 2012) This includes materials such as sharps, cotton, plastic, latex, body tissue and others that basically contaminated with saliva and blood. (Sampath and Doggalli, 2012; Government of India, 1998) Amalgam particles, extracted teeth, lead foils, unused medicines, and x-ray film pockets are also potentially harmful for cross infection. (Kizlary *et al*., 2005) Besides, dentalwaste can also produced from dental practices especially during restoration. For instance, mercury, silver amalgam and various chemical solvents. (Schaefer, 1991) Awareness with good knowledge and attitude towards dental waste is of paramount importance to minimize transmission of disease and environment degradation. A study was done by (Rudraswamy *et al*., 2002) showed a good level of attitude towards waste management contrarily with another study by (Sharma *et al*., 2013) which concluded a low level of knowledge and poor awareness among the health and dental professionals. Waste segregation protocol had been implemented for practicing dentists and dental hospital since there is increase demand of dental treatment amongst public as stated by (Boghele *et al*., 2013).

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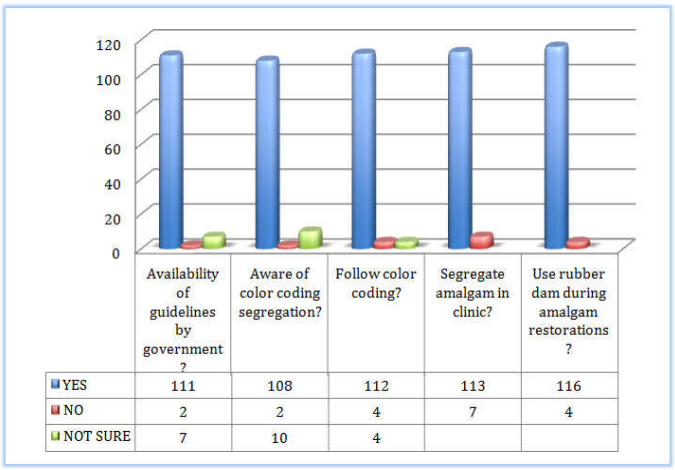
MATERIALS AND METHODS

This study was conducted online through SurveyPlanet.The survey consists of 10 multiple-choice questions regarding the knowledge, attitude and practice towards biomedical waste disposal. Particularly, they are aged between 20 to 23 years old. The questions were designed in a manner of terms of color coding, segregation of biomedical waste and the methods adopted to dispose dental amalgams and extracted teeth.

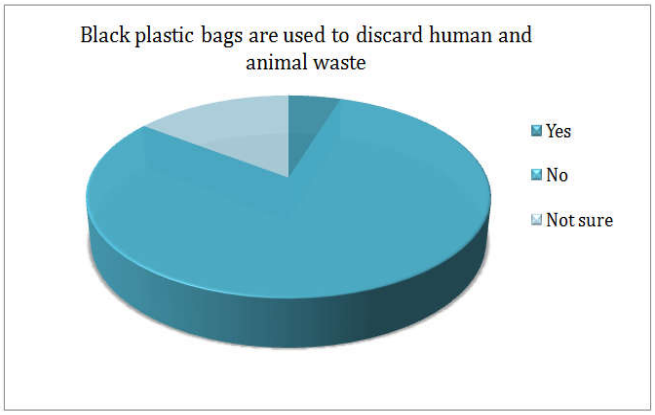
Questionnaire on knowledge, attitude and practice towards biomedical waste management

1. Do you know if there are any guidelines laid down by government for biomedical waste management?
2. Are you aware of various color coding bags used to dispose waste?
3. Do you follow color coding for segregation of waste in clinic?
4. How do you dispose infected needles?
5. Extracted teeth are disposed of in which bags
6. Used impression materials and cotton comes under which category
7. Black plastic bags are used to discard human and animal waste?
8. Yellow bag is used to discard microbiological and biotechnological waste.
9. Do you segregate amalgam in clinic?
10. Do you use rubber dam while placing or removing amalgam restorations?

Questionnaire Analysis



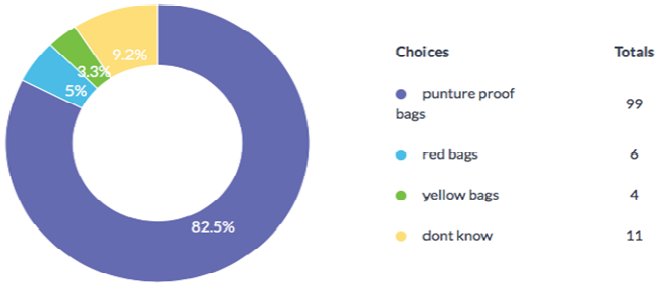
	Availability of guidelines by government ?	Aware of color coding segregation?	Follow color coding?	Segregate amalgam in clinic?	Use rubber dam during amalgam restorations ?
YES	111	108	112	113	116
NO	2	2	4	7	4
NOT SURE	7	10	4		



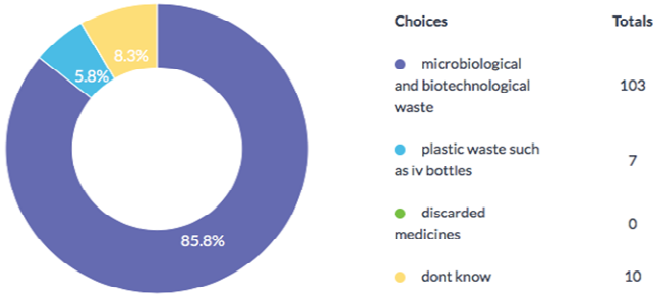
DISCUSSION

The waste generated either in dental hospitals or general hospitals is the same that contains both large amount of general waste and less portion of hazardous waste. (Sudhakar and Chandrashekar, 2008)

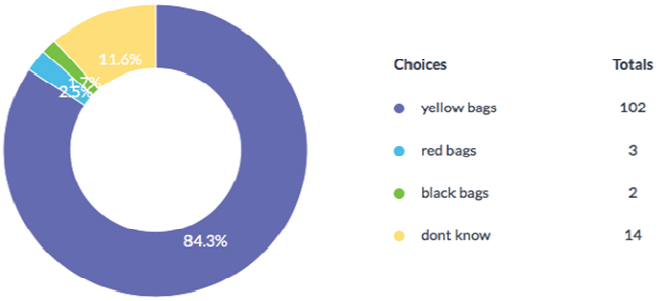
How do you dispose infected needles?



Yellow bag is used to discard



Extracted teeth are disposed of in



Knowledge and awareness regarding the hazards related with biomedical waste management and the methods of segregation are vital among dental practitioners. (Shah *et al.*) Based on the above questionnaire analysis, we can conclude that most of the respondents are completely aware of biomedical waste management, which is of paramount importance to reduce the risk of possibly infections material and waste that maybe faced the individuals handling these wastes.Among the respondents, 92.5% of them knew the availability of any guidelines laid down by government for biomedical waste management.Union Ministry of Environment and Forests had brought the rules of biomedical waste management into focus under the provision of Environment (protection) act, 1986. (Sunil Kumar *et al.*, 2012) About 87.8% of the respondents were aware of various color coding bags that are used to dispose waste. However, a small percentage, approximately 10 respondents were not sure about that. It is statistically significant that 93.3% of the total respondents were following the color coding system to

segregate waste in clinics. 94.2% members of the study segregate amalgam in their clinic whereas others were lacking this practise. This study present that dental practitioners had fairly higher good level of attitude and practice. It is observed that more than 95% of the respondents use rubber dam routinely during placing or removing amalgam restorations, and the rest 3.3% of them were not using rubber dam during amalgam restorations. Using rubber dam during operative procedures is important for patient safety. Plus, one study stated that the use of rubber dam during removal of an amalgam restoration had significantly reduced the peak mercury level rise in the patient's plasma. (Gilbert *et al*., 2010) In this survey, 80% of dentists disagreed that black plastic bags are used to discard human and animal waste. Remaining 5% and 15% of them agreed and were not sure about it respectively. 82.5% of the respondents were disposing infected needles in puncture proof bags, meanwhile 5% had opinion that they should be thrown in red bags and 3.3% chose yellow bags. More than eighty-five percent were using yellow bags for disposal microbiological and biotechnological waste. Next, it was found that 84.3% of the participants were using yellow bags to throw extracted teeth and only 4.2 percent of them preferred red and black bags to discard extracted teeth.

Conclusion

It can be concluded from this survey that, though many dental practitioners showed high level of awareness and good knowledge about biomedical waste management but still they are lacking and not practicing diligently. It is imperative that waste should be managed in effective and safe manner and it is a social responsibility. There is need of continuing education and training programmes on the management of waste in various dental teachings hospitals at all levels to improve their level of understanding and associated risks.

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