

Original Research

Awareness of Dental Health Care Waste Management among Dentists- A Cross Sectional Study

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ABSTRACT:

Background: The present study was conducted to determine awareness of dental health care waste management among dentists. **Materials & Methods:** The present study was conducted on 580 private practitioners of both genders. A self-administered questionnaire was designed to record type of practice, years of practice, additional training, knowledge and practices on hazardous dental waste and knowledge and practice of safety measures against cross-infection. **Results:** Out of 580 subjects, males were 320 and females were 260. Amalgam disposal method is under water (35%), sewage (17%), under sodium thiosulfate (8%), under developer (5%), general waste (15%) and did not know (20%). Pathological waste be incinerated (52%), burn (5%), disinfect (4%), bury (3%) and in general waste container (36%). The difference was significant ($P < 0.05$). Drugs were to be incinerated (54%), burn (12%), put in general waste (11%), bury (6%), back to pharmacy (9%), did not know (8%). Developer and fixer to be drain separately (63%), both mixed and drain (25%), and Silver collected from fixer and stored in separate container but developer flushed in drain (12%). The difference was significant ($P < 0.05$). **Conclusion:** Authors found that dentists had good knowledge and practice about dental waste management.

Key words: Dental material, knowledge, Practice.

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INTRODUCTION

The term biomedical waste has been defined as "any waste that is generated during the diagnosis, treatment, or immunization of human beings or animals, or in the research activities pertaining to or in the production or testing of biological."¹ According to the World Health Organization (WHO) between 10% and 25% of biomedical waste generated is regarded hazardous due to its composition. The remaining 75% to 90% poses no risk

of infection transmission, as it is comparable to domestic waste.

WHO reported a 50% reuse in India of syringes and needles which are meant for single use. Hospital acquired infections have been estimated at 10% in the South-East Asia region and identified as one of the indicators needed for the management of waste; an alarming situation. Dental practices also produce small amounts of waste mercury, silver amalgam and various chemical solvents.²

Private dental practitioners provide approximately 85% of the dental care in India but no surveys of waste management procedures in private dental practices have been reported in the country. Several surveys of cross infection control procedures in dental practices, which includes information about clinical waste handling have been reported elsewhere.³

Amalgam is an acute neurotoxin; it's the most toxic nonradioactive element and also the most volatile heavy metal. Mercury can pose a threat due to release of mercury into environment from dental practices and industries due to poor disposal. Other materials may contain potential hazards like polystyrenes, barium, strontium which may cause harm if correct use and disposal is not instilled.⁴ The present study was conducted to determine awareness of dental health care waste management among dentists.

MATERIALS & METHODS

The present study was conducted in the department of Community Dentistry. It comprised of 580 private practitioners of both genders. The study protocol was previously approved from institutional ethical committee. All participants were also informed and written consent was taken.

Data such as name, age, gender etc. was recorded. A self-administered questionnaire was designed to record type of practice, years of practice, additional training, knowledge and practices on hazardous dental waste and knowledge and practice of safety measures against cross-infection. Data were compiled and subjected to statistical analysis. P value less than 0.05 was considered significant (P< 0.05).

RESULTS

Table I Distribution of participants

Total- 580		
Gender	Males	Females
Number	320	260

Table I, shows that out of 580 subjects, males were 320 and females were 260.

Table II Knowledge about dental products

Products	Percentage	P value
Amalgam disposal Methods		0.01
Under Water	35%	
Sewage	17%	
Under sodium thiosulfate	8%	
Under developer	5%	
General waste	15%	
Did not know	20%	
Pathological waste		0.01
Incineration	52%	
Burn	5%	
Disinfect	4%	
Bury	3%	
General waste container	36%	

Table I, graph I shows that amalgam disposal method is under water (35%), sewage (17%), under sodium thiosulfate (8%), under developer (5%), general waste (15%) and did not know (20%). Pathological waste be incinerated (52%), burn (5%), disinfect (4%), bury (3%) and in general waste container (36%). The difference was significant (P< 0.05).

Graph I Knowledge about dental products

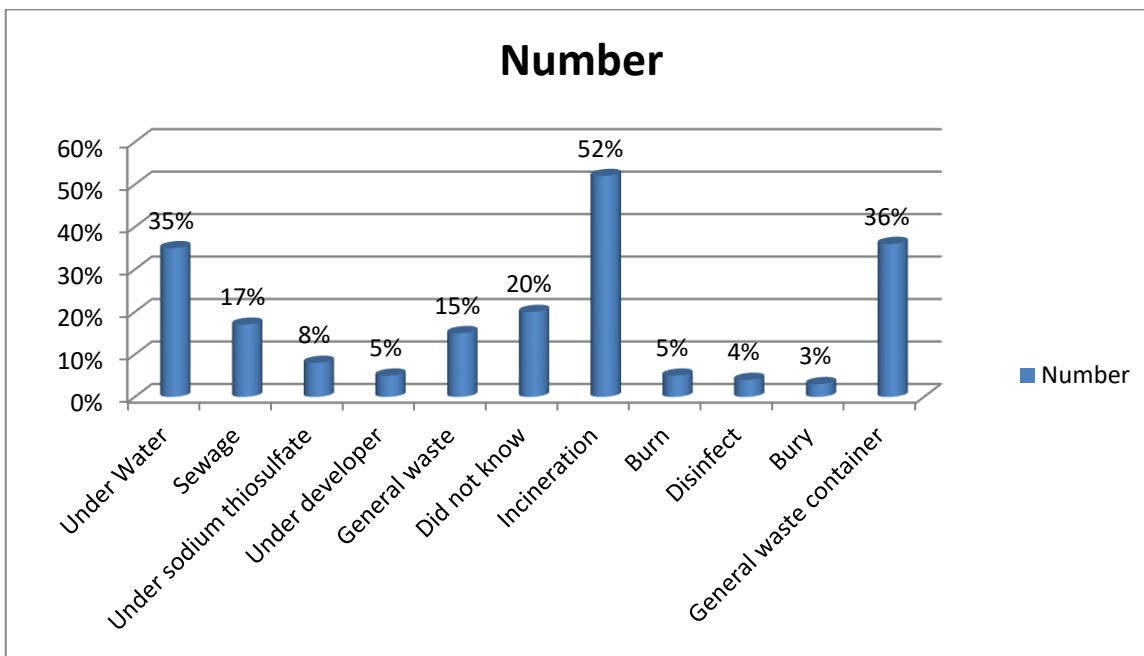


Table III Practice about dental products

Drugs	Percentage	P value
Incineration	54%	0.01
Burn	12%	
General waste	11%	
Bury	6%	
Back to pharmacy	9%	
Did not know	8%	
Developer/fixer		0.01
Drain separately	63%	
Both mixed and drain	25%	
Silver collected from fixer and stored in separate container but developer flushed in drain	12%	

Table III, shows that drugs were to be incinerated (54%), burn (12%), put in general waste (11%), bury (6%), back to pharmacy (9%), did not know (8%). Developer and fixer to be drain separately (63%), both mixed and drain (25%), and Silver collected from fixer and stored in separate container but developer flushed in drain (12%). The difference was significant ($P < 0.05$).

DISCUSSION

Poor waste management practices pose a huge risk to the health of the public, patients and professionals and contribute to environmental degradation. Dental practices generate large amounts of waste such as cotton, plastic, latex, glass and other materials, most of which may be contaminated with body fluids. Dental practices also produce small amount of other types of waste, such as mercury, silver amalgam and various chemical solvents.

US medical waste tracking system found that dentist generate only 3% of total medical waste.⁵ In India health care providers have failed to assure safe and quality disposal of waste generated while imparting health care to people. The concern of the public which is rightly emphasized by the media, led to the enacting of biomedical waste [management & handling] rules 1998 by the Ministry of Environment and Forests, Govt. of India.⁶ The present study was conducted to determine

awareness of dental health care waste management among dentists.

In this study, out of 580 subjects, males were 320 and females were 260. Mcmanus et al⁷ in their study, questionnaire was e-mailed to the seven hundred fifty dentists randomly selected from list of Indian dental association. Overall response rate was 67.92% (n=494). Obtained response for each question from participated dentist was calculated in percentage. Calculated data showed that there was very high discrepancy between knowledge and practice of dental professionals regarding hazardous waste management.

We found that amalgam disposal method is under water (35%), sewage (17%), under sodium thiosulfate (8%), under developer (5%), general waste (15%) and did not know (20%). Pathological waste be incinerated (52%), burn (5%), disinfect (4%), bury (3%) and in general waste container (36%).

Jockstad et al⁸ found that eighty-two percent of the respondents said that amalgam was toxic if disposed improperly with only 10.7% indicating pollution to be a consequence of improper disposal of amalgam. Seventy seven percent of the respondents did not know the hazardous effects of improper disposal of amalgam. Only half of the respondents stored waste amalgam under water, 25% said they did not know how to dispose amalgam. All (100%) knew about occurrence of cross-infection with improper disposal of bloody waste but only 56.1% said they incinerated bloody body waste while 24.4% disposed off bloody waste with general waste 35.7% of the respondents indicated that sharps were hazardous if improperly disposed. Only 52.4% incinerated their pathological waste. On expired drugs, 7.3% disposed them off as part of general wastes.

We observed that subjects responded that drugs were to be incinerated (54%), burn (12%), put in general waste (11%), bury (6%), back to pharmacy (9%), did not know (8%). Developer and fixer to be drain separately (63%), both mixed and drain (25%), and Silver collected from fixer and stored in separate container but developer flushed in drain (12%).

Hazardous wastes in dental offices can be categorized as infectious waste (used cotton and gauze pieces etc.), sharps (infected needles etc.), lead containing waste (lead aprons, lead foil packets), mercury waste (such as squeezed mercury, amalgam scrap), and chemical waste (such as lead film developers and fixers, disinfectants etc.).⁹Waste water from dental offices typically contains high concentrations of metals such as mercury, silver, copper, tin, and zinc. Hazardous healthcare waste is deleterious to people and the environment, and unlike the non-hazardous healthcare waste, has to be treated in a special way.¹⁰ There are regional guidelines on this subject Biohazardous wastes may lead to cross infection because they may contain pathogenic organisms causing transmission of diseases such as Hepatitis B and HIV

especially in the presence of open wounds³ hazardous wastes are potentially carcinogenic such as chromium.

CONCLUSION

Authors found that dentists had good knowledge and practice about dental waste management.

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