

# Knowledge and Attitude in Regards to Dental Care Waste Management amongst Dental Students-Questionnaire Study

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## Abstract:

### Objective:

- 1.To assess the dentistal students awareness about dental care waste management.
- 2.To assess the awareness of dentistal students regarding colour coding of biomedical wastes.

### Materials and method:

A cross sectional questionnaire study was conducted among 150 dental students of saveetha dental college, chennai,tamilnadu, India. Simple random sampling technique was used to select the study unit. A predesigned and pretested questionnaire for the study was used for data collection. Data were collected, compiled and tabulated using Microsoft Excel and analyzed for the calculation of percentages.

### Conclusion:

There is a definite need to create awareness, improve knowledge, inculcate responsible attitude, and adopt proper methods to dispose dental health care waste to minimise its harmful effects.

**Key words:**Dental students,saveetha dental college,dental waste, amalgam, mercury, color coding,radiographic fixer.

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## INTRODUCTION:

Bio medical wastes have become a very important source of spreading infections in the society. Hospitals are supposed to be seat of healing, but have become a seat of infection. This is true when it comes to hospital acquired infections which are a frequent picture in those hospitals where health care waste is not managed appropriately. 1 Hospital waste is not only infectious but also hazardous and contributes significantly to environmental pollution. 2 It is ironical that we as dental professionals, providing dental care in hospitals and clinics that bring relief to the sick can create health hazards due to improper management of waste generated in those places. 3

Dental waste is a subset of hazardous biomedical (BM) waste. It includes various materials like cotton, sharps, extracted teeth etc. which are usually contaminated with body fluids like blood and saliva. 5,6 Dental waste can also have two types of effects i.e. the environmental and on the health of the person handling the waste. 6,7 Though India has well-established protocols for handling and management of biomedical wastes, namely, the BMW (Management and Handling) Amendment Rules, 2000, but still there is a great lack of knowledge, attitude and practice of proper waste management among various healthcare professionals. 8,9,10,11,12 Thus, with this background the present study was undertaken with to access the knowledge, attitude and practices among dental students regarding bio-medical waste management in Saveetha dental college, Chennai.

## MATERIALS AND METHOD:

The present cross-sectional questionnaire based study was conducted in saveetha dental college amongst the dental students. The study sample included a total of 150 dental students of second, third and final year. Each group consists of 50 students of both the sex. All participants were given a structured questionnaire which included 16 questions of yes or no type. The questions were designed in a manner to obtain information about disposal of dental waste in terms of categories, colour coding, and segregation of waste of biomedical waste and the methods adopted to dispose dental amalgam, extracted teeth, x ray films and fixing solutions and expired medicines.

## DESCRIPTION OF THE QUESTIONNAIRE:

The following questions were put forth to the dental students to assess their knowledge and awareness about the dental care waste management.

1. Are you aware of the existing medical waste management policy in India? ( yes/no)
2. Do you hand over dental waste to your nearby municipal garbage collector?( yes/no)
3. Do you contact a certified waste carrier services to recycle or dispose the biomedical waste of your clinic?(yes/no)
4. Do you use specific colour coded containers and plastics to dispose bio medical waste?(yes/no)
5. Do you collect amalgam scraps and hand them over to waste management service for recycling purpose?(yes/no)
6. Do you discard extracted teeth containing amalgam directly into regular garbage?(yes/no)

7. Do you have radiography at your clinic?(yes/no)
8. Do you follow manufacturer's recommendations on disposal of used fixer solutions?(yes/no)
9. Do you use puncture proof containers for using sharps?(yes/no)
10. Extracted tooth comes under infected category?(yes/no)
11. Outdated and contaminated medicines comes under cytotoxic/chemical waste category?
12. Used impression materials and cotton comes under infected waste/soiled waste category ?
13. Awareness of colour coding for different types of biomedical waste?(yes/no)
14. Orange bag is used to discard the animal house waste?(yes/no)
15. Incineration and other high temperature waste treatment systems are sometimes described as thermal treatment(yes/no)
16. Segregation of waste must be done at the point of generation(yes/no).

### RESULT:

150 students were included in this study.. About (94.5%) of students were aware of biomedical waste .Various categories of biomedical waste about (85.4%) were known to all students and 4<sup>th</sup> year student outnumbered the other groups for having knowledge of categories of waste.

About (76%) of students hand over the dental waste to the municipal garbage collector. Whereas others were lacking this practise.

Only (31.1%) of students contact a certified waste carrier services to recycle or dispose the biomedical wastes of their clinic

Although statistically insignificant but 60.2% of the total participants were following the colour coding system of waste disposal. 50.3 % members of the study practised a systematic method of segregation of waste

Sharps were being disposed in puncture proof containers by only 35.4% of the total participants.

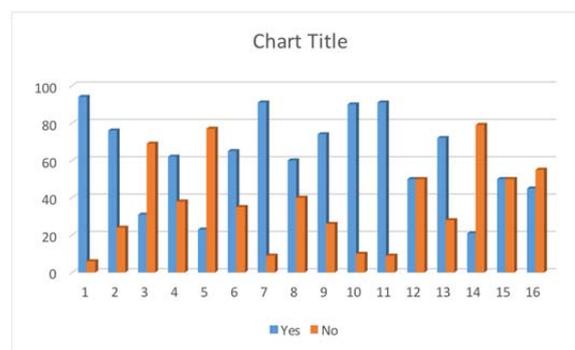
77.2 % of the study population agreed that they did not have knowledge of using mercury spill kit and this ignorance was noticed maximum in students. 74.5 % gave consent that amalgam separator was not being used in their practice

Regarding disposal of silver fillings and extracted teeth with silver fillings, use of regular dust bin was discouraged by 60.9 % of all. Maximum number of Dental practitioners (69.2%) reported that regular dust bins were not being used by them.

Silver fillings were not being flushed in the drain by 97.3% of the study population. Disposal of silver in a fixer container and in red hazardous bag has been suggested by 49.3 % and 10.9% of the total participants. It was also observed in our study that 86 % of the study population was not recycling the discarded silver fillings.

Human anatomical waste (extracted teeth and biopsy specimens) was being disposed in yellow plastic bags by 45.9 % of the total sample size. About(68%) of students tells that extracted tooth comes under infected category followed by third yr students (57.4%)

All the students(65.2%) are unaware of colour coding for different biomedical waste.(94.5%)of the students were aware that the outdated and contaminated medicine comes under cytotoxic waste category.



### DISCUSSION:

Infectious, chemical , and hazardous contents in dental health care waste make its management very complex.Poor dental waste management exposes the workers of health care facility , waste handlers and community as a whole to infection, toxic effect and injury. Lack of information continues to lead dental professionals to contribute to environment degradation.The present study was a small effort to assess the attitude of dental students towards dental waste management.

There are different categories of biomedical waste Segregation of different categories of waste plays an important role in the entire process of waste management. Hazardous and non hazardous waste should be segregated in order to reduce the rate of infections. Separate containers should be used to help distinguish between medical and general waste. All containers for biomedical waste must display the biohazard symbol and the words Biohazard in a color contrasting the container as per color coding system.

All sharps must be disposed using appropriate guidelines. Sharps should be managed by collecting them in separate container which should be rigid, leak poof , puncture resistant , sealable and remain in good condition during their entire usage. This may contain 1 % sodium hypochlorite solution which should be changed at least once daily. Unfortunately sharps were being disposed in regular bin by majority. This is in line with findings of literature and where it is concluded that sharps were collected in bags without bins, thus exposing waste handlers to sharps injuries.

These findings suggest that training is required at all levels of dental practice for proper disposal of sharps. Induction programmes should be conducted for all new recruits and concept of universal precautions should be explained to all dental health care workers. Information about risks from sharps injuries and desired methods for sharps handling can be displayed on posters in all dental health care clinics and institutes.

Accidental mercury spills are not uncommon in dental practice. A spill is considered small if there are less than 10 grams of mercury present and large if it is more than 10 grams. Small spills can be cleaned safely using commercially available mercury clean up kits which chiefly

contains a pair of nitrile gloves, scoop and scraper, absorbant activator bottle, safety shield, mercury caution label and instructions. In present survey 77.2 % of the participants were ignorant about the mercury spill kits. This shows that there is a need to inform all students involved in the handling of mercury and dental amalgam regarding the potential hazards of mercury vapour and inculcate responsibility of observing good mercury hygiene practices.

Human anatomic waste include body parts, biopsy tissues and extracted teeth. This should be disposed in yellow bags or containers. When refrigerated storage is available, anatomical waste shall be frozen or chilled to minimise decomposition of the material during on site storage. The containers must not be filled more than 3/4 full and must be sealed tightly shut to prevent escape of the waste. This practice is found in only 45 % of the sample size. This could be explained by the fact that there is lack of knowledge about the categories of the waste and colour coding system of the waste disposal.

Expired medicines should be collected in black bags and should be disposed in secured landfill as they are cytotoxic but majority are not following this.

Gypsum waste like dental casts and models should be sent for recycling and disposed in a landfill in a separate and specific cell. Most dental study models will contain gypsum which, when land-filled, can produce hydrogen sulphide gas therefore they can no longer be disposed of in normal commercial/trade waste (or as clinical waste). Local authority waste departments should be able to identify appropriate local facilities where this waste can be taken to be either recycled or appropriately disposed of. Results of various research have indicated that calcium sulphate dehydrate can be reproduced using previously fabricated casts.

The present study reveals that there is lack of knowledge and awareness about proper dental waste management among dental students.

#### CONCLUSION:

Training should be provided to all personnel involved in dental health care i.e. doctors, nurses, dental technicians, auxiliary staff, sanitation attendants, students and waste handlers. Training should be interactive and have demonstrative sessions. Biomedical waste management chapter should be included in study curriculum of students and continuing dental education programmes. Responsible attitude and abiding by laws to minimise dental waste production and proper handling of waste will benefit our society and environment.

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