

# AWAWARENESS ABOUT WASTE DISPOSAL AMONG POST GRADUATES OF SAVEETHA DENTAL COLLEGE - A QUESTIONNAIRE

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## ABSTRACT

### AIM:

To conduct a survey about the awareness of biomedical waste management among post graduates of Saveetha dental college.

### OBJECTIVE:

To assess and evaluate the knowledge about biomedical waste disposal among 100 post graduates of Saveetha dental college.

### BACKGROUND:

Waste generated from hospitals carry a higher risk of infection compared to other types of waste. These wastes are a health hazard and pose significant risks to environment if handled without proper knowledge

### REASON:

Insufficient knowledge about biomedical waste management may lead to the spread of various fatal infections. Hence it is essential that the health care professional are aware of the management of biomedical waste. This survey is conducted to assess the knowledge of post graduate students about the biomedical waste disposal.

**KEYWORDS:** Color coding, post graduates, waste management

## INTRODUCTION

Biomedical waste (BMW) means any solid, fluid, or liquid waste including its containers and any intermediate product which is generated during the diagnosis, treatment, or immunization of human beings or animals or in research activities pertaining thereto or in the production or testing of biological and including 10 categories <sup>(1)</sup>. 75% to 90% of the waste generated by the healthcare professionals is non-risk or general and the remaining 10% to 25% is estimated as hazardous with the possibility for creating various health problems <sup>(2)</sup>. The waste produced in healthcare industry carries an increased potential for infection and injury compared to other types of waste <sup>(3)</sup>. It is a prime concern as hospital waste have multidimensional consequences to the medical staff, patients and even affect the health of the general population <sup>(4,5)</sup>. Biomedical waste requires proper handling, treatment and disposal which constitute the basis of health care infection control programme <sup>(6)</sup>.

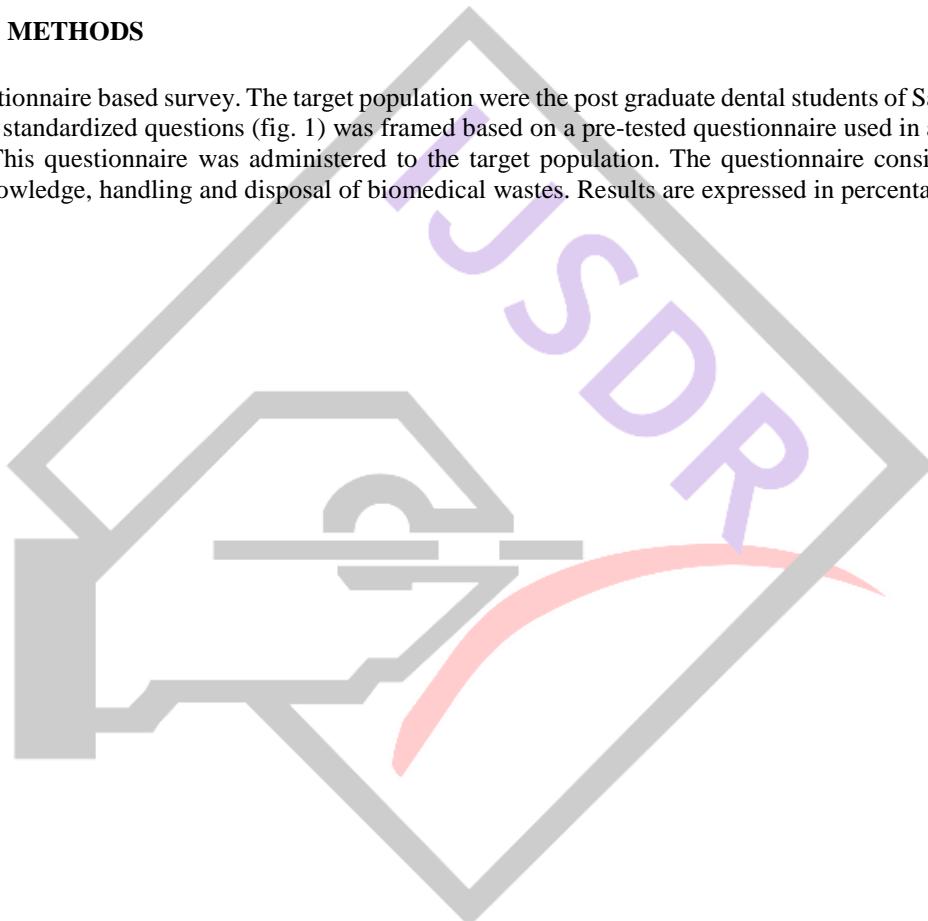
The centre for Disease Control advises disposal of health care wastes to be carried out in agreement to the standard regulations <sup>(7)</sup>. The goal of biomedical waste disposal is chiefly to minimize waste generation, to guarantee its effective collection, handling, and ensure safe disposal in a way that it confines the spread infection and alleviates safety for health care employees <sup>(8)</sup>. Biomedical waste management has become of significant importance to both medical and general community. Almost one fourth of biomedical waste is considered to be hazardous. It equally affects the health of both medical personnel and general community.

Inappropriate handling of these biomedical wastes aid in transmission of diseases<sup>(9)</sup>. About 10-25% of health care waste generated is hazardous. Due to its high potential for infection than any other type of wastes it can lead to a variety of health problems. Wastes generated from dental offices have high contaminating and infectious potential if not properly disposed of. Dental waste which is a subset of hazardous biomedical waste include sharps, used disposable items, infectious wastes like blood-soaked cotton, gauze, chemical waste such as film developers, fixers and disinfectants and toxic wastes like mercury, amalgam scrap, lead containing waste like lead aprons etc<sup>(10,11)</sup>. The proper management and disposal of hospital waste requires segregation and removal of hazardous waste from the hospitals such that it will not be a source of health hazards<sup>(12,13)</sup>. Biomedical waste is segregation, identification and disposal into color coded garbage bags is the key to minimisation and appropriate disposal of biomedical wastes<sup>(14)</sup>.

Previous studies have shown that there is deficient knowledge about waste disposal and waste generation among health care professionals and hospitals<sup>(15,16)</sup>. Health care providers exposed to clinical wastes should act in accordance to the universal precautions which includes awareness about types of infectious diseases, personal care using protective barriers and proper handling of wastes to prevent health hazards<sup>(17)</sup>. All health care providers are supposed to have adequate knowledge regarding the collection, handling, and disposal of BMW<sup>(18)</sup>. Lack of understanding and improper disposal of these wastes will prove hazardous to the environment. This survey was conducted to assess the knowledge and practise of biomedical waste management among post graduate dental students.

## MATERIALS AND METHODS

The study was a questionnaire based survey. The target population were the post graduate dental students of Saveetha dental college. A questionnaire with standardized questions (fig. 1) was framed based on a pre-tested questionnaire used in a survey among health care personnel<sup>(10)</sup>. This questionnaire was administered to the target population. The questionnaire consisted of 24 questions regarding general knowledge, handling and disposal of biomedical wastes. Results are expressed in percentage.



## Results

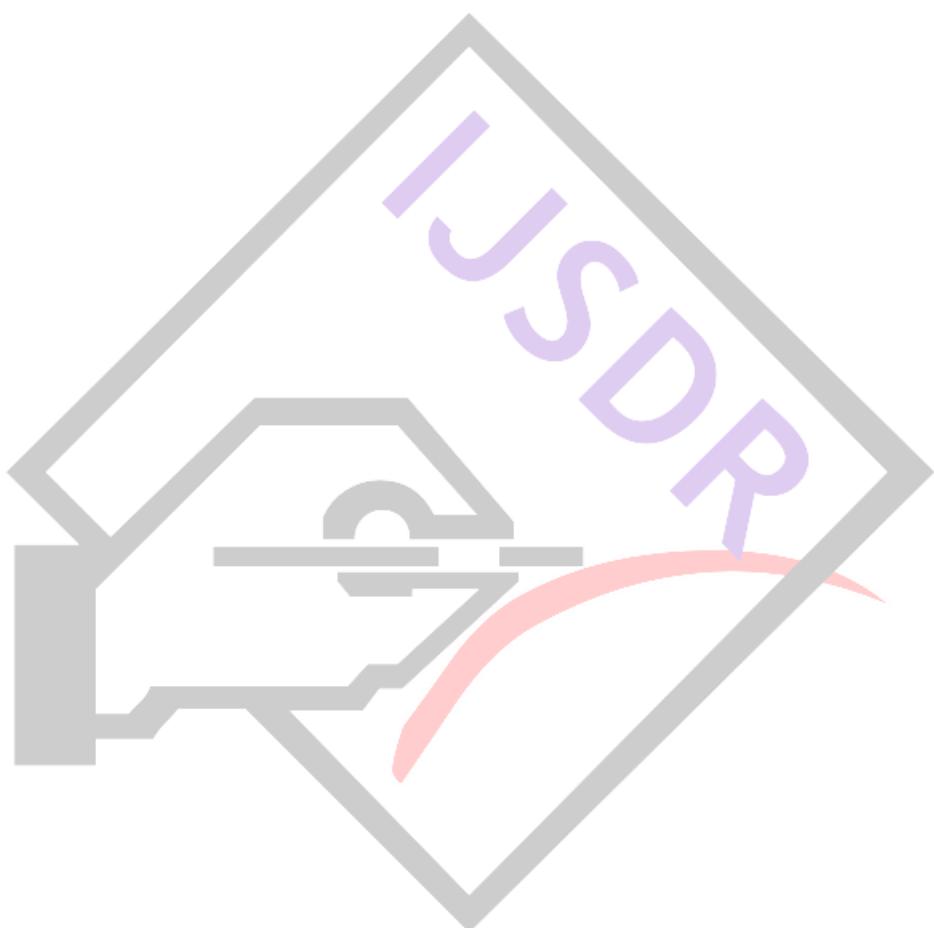
Fig. 1: Questionnaire with answers in percentage

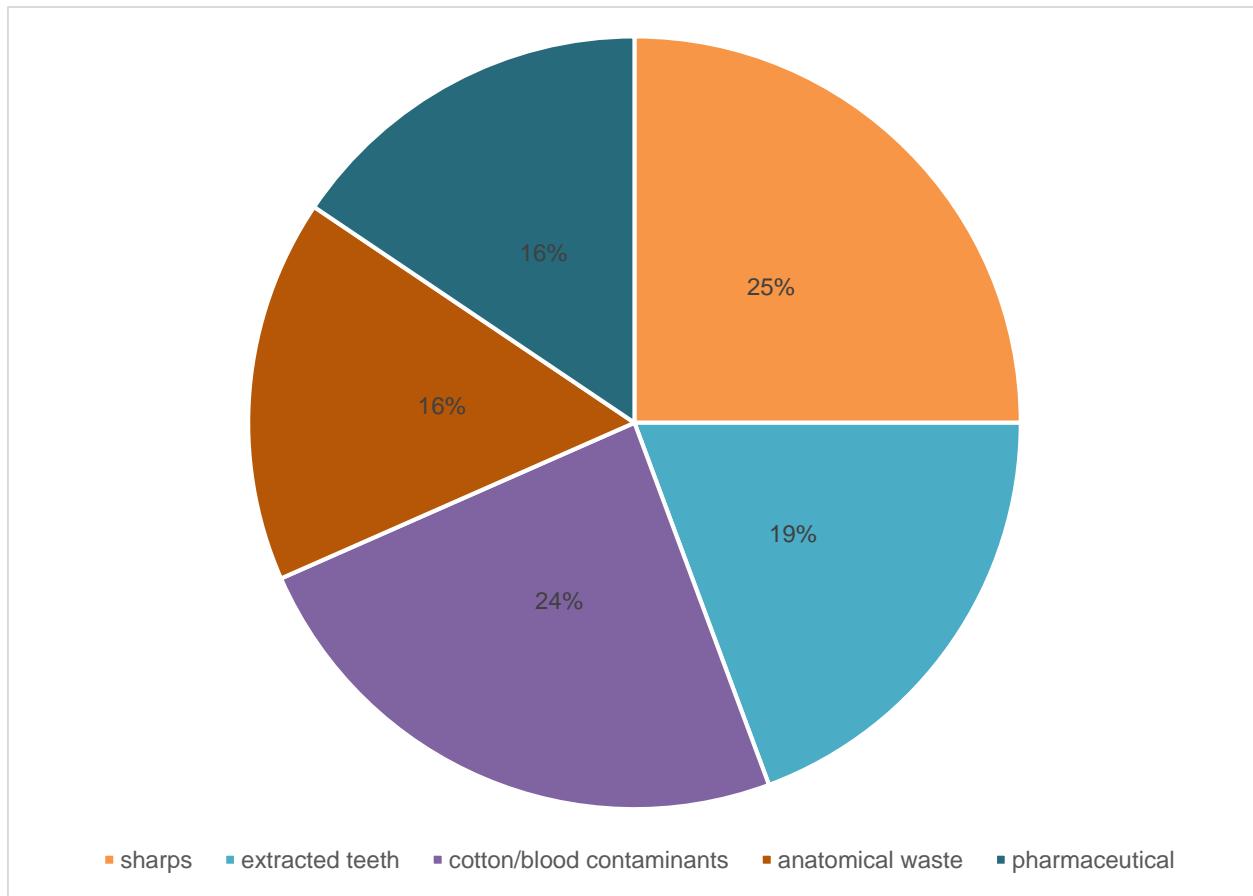
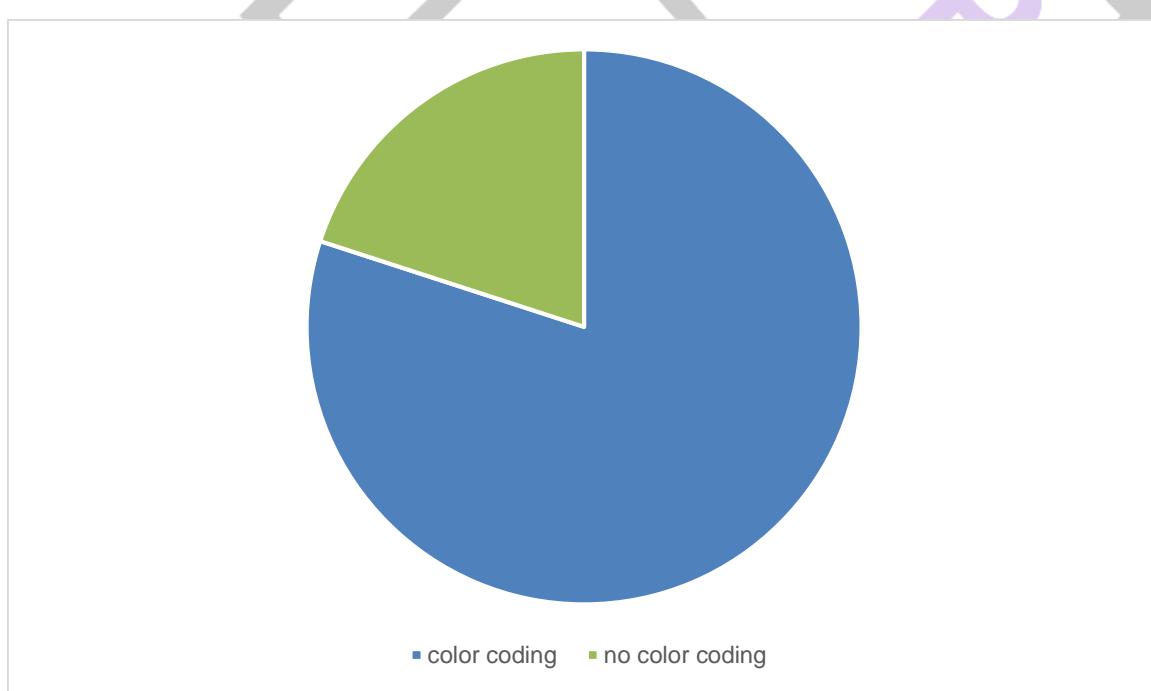
1.Are all healthcare wastes hazardous?	Yes	78
	No	22
2.Are you aware that biomedical waste management rules are applicable to dentists?	Yes	87
	No	13
3.Can any plastic bag be used for waste disposal?	Yes	43
	No	57
4.Do you dispose all kinds of waste into general garbage?	Yes	17
	No	83
5.Do you segregate the biomedical waste according to different categories?	Yes	85
	No	15
6.Are you aware of the different categories of waste generated?	Yes	64
	No	36
7.Do you agree that biomedical wastes should be segregated into different categories?	Yes	79
	No	21
8.Are you aware of the colour coding for different types of biomedical waste?	Yes	80
	No	20



	black bag	6
<b>14.How do you dispose needles and sharps?</b>	Red bag	11
	yellow bag	8
	blue bag	28
	black bag	53
<b>15.How do you dispose an extracted teeth?</b>	Red bag	19
	yellow bag	41
	blue bag	13
	black bag	27
<b>16.How do you dispose human anatomical waste?</b>	Red bag	32
	yellow bag	34
	blue bag	19
	black bag	15
<b>17.Have you had any training in Biomedical waste management?</b>	Yes	11
	No	89
<b>18.Do you feel that biomedical waste management should compulsorily be made part of dental undergraduate curriculum?</b>	Yes	90
	No	10
<b>19.Do you think your knowledge regarding biomedical waste management is adequate?</b>	Yes	45
	No	55

<b>20. Do you think you require any further training on biomedical waste management?</b>	Yes	60
	No	40



**Fig 2: Awareness of various biomedical waste disposal****Fig 3: Awareness about color coding for biomedical waste management**

## DISCUSSION

Dental practice involves various hazards as biomedical waste and calls for proper segregation and disposal of this biomedical waste. All Biomedical waste was considered to be hazardous by about 78% of the respondents. Almost 87% of the respondents knew that biomedical waste management was applicable in dentistry too. These results correspond to high values obtained in studies conducted among health care personnel in a dental college by Sanjeev R, et all<sup>(10)</sup> and survey among health care personnel by Alok

Sharma et all<sup>(18)</sup>. About 43% felt that any plastic bag could be used for waste disposal and a majority of 87% agreed that all wastes cannot be disposed of in the general garbage.

64% of the respondents were aware of the different categories of wastes being generated. 79% agreed that biomedical waste has to be segregated with 80% of the respondents aware of colour coding. Very low understanding of color coding was seen in other studies<sup>(20,21)</sup>. Also 85% claimed to follow the segregation in clinical practise.

A better awareness about the need for segregation and existence of color coding was seen in a similar study conducted by Sanjeev R<sup>(10)</sup>. Regarding maximum time limit for storage of biomedical waste, about 27% admitted that they were not aware and only 33% were aware of the fact that it was 48 hours. A majority of 72% recommended cleaning the suction tip daily. 50% of the respondents choose to dispose the mercury in plastic bags. More than half of the respondents knew the proper colour coding for disposal of sharps (53%) whereas a study among undergraduate students in Saveetha Dental College<sup>(22)</sup> showed a higher percentage of awareness about the management of sharps disposal and its importance. Proper disposal of extracted teeth (41%) and cotton and other items contaminated with blood (51%) was found to have better awareness whereas the disposal of anatomical waste (34%) and pharmaceutical waste (33%) had a significantly lower awareness. Similar poor scores were obtained for clinical practise related questions in the survey conducted among health care personnel in dental colleges by Sanjeev R, et all<sup>(10)</sup>.

A highly positive attitude is observed as 90% of the post graduates felt that the topic should compulsorily be made part of the dental undergraduate curriculum. Almost over a half 55% of the respondents felt that they had insufficient knowledge regarding biomedical waste disposal and 60% felt they required further training in biomedical waste segregation and disposal. Similar results were seen in a study by Dr. Monika Bhardwaj et all<sup>(9)</sup> where about 93% who were willing to get training for biomedical waste management.

The knowledge about biomedical waste segregation in clinical practise was surprisingly low for post graduates who were aware of the need and existence of health care waste management. This is similar to scores by dentists in a study conducted in Jaipur<sup>(8)</sup>. This can be attributed to the fact that the actual segregation of the wastes was carried out by the clinical assistants and not themselves.

## CONCLUSION

Though the knowledge was sufficient among the post graduate students, our study revealed a low clinical practise of proper biological waste management. Hence it is necessary to provide proper awareness and impart the importance of biomedical waste management system before clinical practise.

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