ISSN (O) : 2582-3271
PubMed-National Library of Medicine - ID: 101766917

International Journal of Dental Science and Clinical Research (IJDSCR)

Dr. Angel Vaidic Publication

Available Online at: http://www.ijdscr.org

Volume – 3, Issue – 2, April - 2021, Page No. : 08 - 21

Knowledge, Level Of Awareness And Attitude About Biomedical Waste Management Among Dental Practitioners In Chandigarh: A Questionnaire Study

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Citation of this Article: Dr. Aparna Chandel, Dr. Gurpreet Kaur, Dr. Sumit Kaushal, Dr. Navneet Kaur, Dr. Mukund Khushu, "Knowledge, Level Of Awareness And Attitude About Biomedical Waste Management Among Dental Practitioners In Chandigarh: A Questionnaire Study", IJDSCR – April - 2021, Vol. – 3, Issue - 2, P. No. 08-21.

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Type of Publication: Original Research Article

Conflicts of Interest: Nil

Abstract

Background

Biomedical waste is highly hazardous and infectious in nature of utmost importance due to its hazardous and infectious nature and therefore requires proper disposal techniques. Improper handling and disposal of biomedical wastes has increased the number of cases of hepatitis B, hepatitis C, HIV and numbers of health personnel on post exposure prophylaxis medications. It is the role of every health worker to dispose biomedical waste properly.

Aim & Objective

To assess and obtain information about the knowledge, attitude and level of awareness of dental practitioners regarding biomedical waste management and to know the current system of practice, biomedical waste generation, hazards and legislation among dental professionals.

Material & Methods

A cross-sectional online survey was conducted on 250 practicing dentists and post graduate dental students in Chandigarh. The study is self-administered questionnaire-based online survey consisting of 29 questions related to demographic analysis(individual, age, gender, qualification and clinical experience) in the first part and the questionnaire consisted of knowledge, awareness and attitude regarding biomedical waste management like handling of waste, different categories and color coding of different type of waste, segregation and disposal of waste in a safe manner to protect the environment as well as human health. The questionnaire is in English format and the link prepared form was sent to dental practitioner's-mail ids. The percentage response for each question from all participants was obtained and the data was calculated and analysed using Statistical Package for Social Sciences (SPSS) software 21.0.

Results

Out of 229 dental professionals,124 (54.1%)were females and 105 (45.9%) were males.Among 229 (100%) study participants, more than half 133 (58.1%) knew about Biomedical waste generation and legislation, whereas 96 (41.9%) did not know about Biomedical waste generation and legislation. The Knowledge, Attitude and practice score regarding biomedical waste management was better among postgraduate professionals (71.9%, 67.2%,66.3%) as compared to undergraduate professionals (42.6%, 45.9%,39.3%).

Conclusion

There is a good to fair level of knowledge and awareness about Biomedical waste generation hazards, legislation, and management among postgraduate dental professionals in Chandigarh city. Safe and effective management of waste is not only legal necessity but also a social responsibility.

Keywords

Hazardous waste, Biomedical waste, dental professionals, color coded bins, Knowledge and practice.

Introduction

The bio-medical waste means any solid, liquid waste material, generated during the process of diagnosis, treatment and immunization of human being. These waste materials could cause serious hazards to health and environment in case of indiscriminate management. All the hospital personnel health worker are at a risk to get many fatal infections and injuries by these infectious materials. To avoid these hazards, discriminate waste management system should be implemented in hospitalinfrastructure.[1]

The concern for Bio-medical waste management has been felt globally with indiscriminate disposal of health care waste and rise in deadly infections such as AIDS, Hepatitis-B, tetanus and other communicable diseases. The need to educate different health care professionals/ workers about health care waste management is thus very important.[2] Hospital and Dental setup are a complex multidisciplinary system, which consumes number of items/ products for delivery of medical and dental care and it is a part of the physical environment. All these products consumed in hospitals leave some unusable leftovers, which are called hospital/ clinical wastes as they are generated as a result of some clinical activity. Bio-medical waste is a broader term applied to waste generated in the diagnosis, treatment or immunization of human beings, in research or in the production or testing of biological products. In every hospital a large amount of waste is generated daily and it has become necessary to give special attention for the proper treatment and disposal of waste. Although

hospital exists to treat illness, they can act as reservoirs of infection.

It is estimated that 10-25% of health care waste is hazardous, with the potential for creating a variety of health problems also known as “Biomedical Waste”. According to “Biomedical Waste (Management and Handling) Rules, 1998 which is now amended in 2016 under environment (Protection) Act of India “Any waste 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 biologicals." Though 75-90%of the waste produced by health care institutions is non-risk being generated from administrative and housekeeping/maintenance of health care establishment, the remaining 10-25%waste is regarded as ‘hazardous’ and may create a variety of health risks.[3]According to WHO, 85% of hospital waste is non-hazardous, 10% infective and remaining 5% non-infective but hazardous[4]. According to South-East Asia Regional Office (WHO, India)11 South-East Asian countries together produce some 350, 000 tons of health care waste per year, close to 1000 tons a day which is both hazardous and non-hazardous.[5]

Dental offices generate a number of hazardous wastes that can be detrimental to the environment if not properly managed. This includes sharps, used disposable items, infectious waste (blood-soaked cotton, gauze, etc.), mercury containing waste (mercury, amalgam scrap),

lead containing waste (lead foil packets, lead aprons), and chemical waste (such as spent film developers, fixers, and disinfectants). Studies have shown that wastewater from dental offices typically contains elevated concentrations of metals such as mercury, silver, copper, tin, and zinc. Sources of these metals include placement and removal of amalgam fillings (mercury, silver, copper, tin, and zinc) and disposal of the spent x-ray fixer solution (silver).[6]

The WHO reveals that more than 50,000 people die every day from infectious diseases. One of the causes for increase in infectious diseases is improper waste management. HIV, hepatitis, tuberculosis, pneumonia, diarrhoea diseases, tetanus, and whooping cough are the diseases which spread through improper waste management.[7] The large volumes of health care waste if not managed properly can lead to a global hazard.[8] This could not only lead to the spread of highly contagious diseases but the hazardous chemical waste produced by the use of items can cause considerable damage to the ecosystem and the environment.[9] Thus Health care waste if not manage properly will be a cause in ushering of “disasters in making” by causing air, water, soil pollutions and helping in emergence of antibiotic resistant strains of microbial ingress of pollutants in the food chain and thus becoming a part of human consumption.[10]

Hazardous waste management is a concern for every health care organization.[11] Although very little disease transmission from medical waste has been documented, both the American Dental Association (ADA) and Center for Disease Control (CDC) recommend that medical waste disposal must be carried out in accordance with regulation.[12]Safe disposal and subsequent destruction of medical waste is the key step in the reduction of illness or injury through contact with this potentially hazardous material, and in the prevention of environmental contamination.[13] The United Nations recommended appropriate procedures for collection and disposal of wastes to member countries and announced that every waste producing unit was responsible for the disposal of its own.[14]

Hence the present study was based with an aim toassess and obtain information about the knowledge, attitude and level of awareness of dental practitioners regarding biomedical waste management and to know the current system of practice, biomedical waste generation, hazards and legislation among dental professionals.

Materials and Methods

The cross-sectional questionnaire-based study was conducted from January 2021 to March 2021, to assess and obtain information about the knowledge, attitude and level of awareness of dental practitioners regarding biomedical waste management in Chandigarh city. Prior to start of study, a protocol and purpose of the present study was discussed with the participants and included those participants who were willing to participate in the study. A sample size of 250 dental professionals, specialized dentists, interns and post graduate dental students in Chandigarhwere selected and duration of study was three months.

Those Participants who were willing to participate and filled the entire questionnaire were included in the study. Also, both male and female dentists were included in the study.

Questionnaire Design

A self-administered questionnaire comprised of 28 questions were framed based on demographic data and to raise the level of awareness, knowledge and attitude about Biomedical Waste Management among dental practitioners and dental students. The questionnaire was in English format and its respective psychometric property (validity and reliability) was assessed. The content validity of questionnaire was assessed by a penal of subject experts in department of periodontology and public health dentistry.

Details of the dental practitioners were recorded: The questionnaire was divided into two sections. The first section of questionnaire consisted of demographic details such as name, gender, age, educational qualification, and experience were recorded. The second section of questionnaire consisted of questions regarding knowledge of Biomedical waste generation, handling of waste, different categories and color coding of different types of waste, segregation and disposal of waste in a safe manner to protect the environment as well as human health along withhazards, and legislation, level of awareness on Biomedical waste management practice and attitude/behaviour towards Biomedical waste. Moreover, dental professionals were asked about the interest in attending continuing dental education program or voluntary program to upgrade existing knowledge about Biomedical waste management.

Google forms which are an effective computerized questionnaire system was used to conduct the study. The questions were entered in Google forms for conducting the online survey. Email ids of dental professionals and post graduate students working and studying in Chandigarh were collected. The online questionnaire was sent to the collected email ids. Along with the link directing to the Google survey site, the purpose of the study was clearly stated. The percentage response for each question from all participants was obtained and the data was calculated and analysed using Statistical Package for Social Sciences (SPSS) software 21.0.

Results

Out of 250dental professionals a total of 229 responded positively by participating in this study. In this way the response rate was 91.6%. Rest of the dental professionals didn't complete the questionnaire and incomplete data were excluded from the survey.

Socio-demographic characters

The demographic details of the study participants are presented in Table 1, among a total of 229 participants, 105 (45.9%) were males and 124 (54.1%) were females who are practicing in different sectors and areas of Chandigarh. Majority of dental professionals99 (43.2%) has 5-10 years of teaching experience and clinical experience.48% of the study participants were of age between 25-35 years. Post graduate professionals were 107 (46.7%) and undergraduate professionals were 122 (53.3%) and both were engaged in academics and private practice.

Table 1. Distribution of the study population according to socio demographic characters

Variables		Dentists (n)	n (%)
Age	25-35 yrs.	110	48%
	36-45 yrs.	93	40.6%
	> 45 yrs.	26	11.4%
Gender	Male	105	45.9%
	Female	124	54.1%
Qualification	Undergraduate (BDS)	122	53.3%
	Postgraduate (MDS)	107	46.7%
Clinical/Teaching Experience	<5 yrs.	62	27.1%
	5-10 yrs.	99	43.2%
	10-15 yrs.	58	25.3%
	>15 yrs.	10	4.4%

Distribution of study participant based on the Knowledge score (n=229)

The knowledge section of the questionnaire comprised eleven questions. When asked about the knowledge related questionnaire on Biomedical waste management, 58.1% and 65.5% of dentists were aware of Biomedical waste management legislation and about the local dental waste management agency, respectively. Only 36.2% knew the maximum storage period for biomedical waste according to national guidelines is 48 hrs. About 31.9% and 65.5% dentists were aware of the regulation of safe transport and needs a permit for transportation of the Biomedical waste management. Safe disposal of waste was considered to be a team effort by 51.5% of dentists. When enquired about the further categorization regarding the correct knowledge of cytotoxic category for expired medicines and soiled waste category for impression materials was known by 27.5% and 43.7%, respectively. 31% of dentists correctly answered about the disposal of sharps in white translucent puncture-proof containers (Table 2).

Table 2. Distribution of study participant based on the Knowledge score (n=229)

Questionnaire		Dentists	n %
Do you know about Biomedical waste generation and legislation?	Yes	133	58.1%
	No	96	41.9%
Do you think it is important to know about Biomedical waste generation, hazards and legislation?	Yes	146	63.8%
	No	83	36.2%
According to the Biomedical waste (management and handling) rules, waste should not be stored beyond?	12hrs	81	35.4%
	48hrs	83	36.2%
	72hrs	47	21%
	96hrs	17	7.4%
Who regulates the safe transport of medical waste?	Pollution control board of India	73	31.9%
	Transport corporation of India	101	44.1%
	College administration	55	24%
Do you need a separate permit to transport Biomedical waste?	Yes	150	65.5%
	No	40	17.4%
	Cannot say	39	17%
Which statement describes one type of Biomedical waste?	Materials that may be poisonous, toxic, or flammable and do not pose disease-related risk	121	52.8%
	Waste that is saturated to the point of dripping with blood or body fluids contaminated with blood	84	36.7%
	Waste that does not pose a disease-related risk	24	10.5%
Do you know the agency responsible for dental waste management in your city?	Yes	150	65.5%
	No	79	34.5%
Safe management of dental waste is the duty of	Only Government	52	22.7%
	Teamwork of government, dental surgeons and auxiliaries	118	51.5%
	Private regulatory agencies	59	25.8%
Sharps (such as broken needles, surgical blades, and burs) should be disposed in	Yellow bag	68	29.7%
	Red Bag	68	29.7%
	White translucent puncture-proof containers	71	31%
	Do not know	22	9.6%
Expired medicines belong to which category?	Chemical waste	69	30.1%
	Cytotoxic waste	63	27.5%
	Biotechnological waste	77	33.6%
	Do not know	20	8.7%
Impression materials and infected cotton are included in which category?	Solid waste	54	23.6%
	Soiled waste	53	23.1%
	Infected waste	100	43.7%
	Do not know	22	9.6%

Distribution of study participants based on attitude/ behavior score

The attitude-based section of questionnaire comprised nine questions. Majority ofdental professional's exchange opinions/views regrading biomedical waste management and response of attitude-based questionnaire was observed to be positive. 61.1% of dentists were interested in attending voluntary programs on waste management and 41.9% and 31.9% of dentists considered that safe management of dental waste to be an extra burden on work as well as it increased the financial burden on hospital management respectively. About 57.2% dentist had a strong view about that treatment plant for disinfection of infected

water should be set up in dental colleges. When asked about the labelling of container before filling it with waste, 47.2% participants agreed that labelling on container may have a clinical significance. All the dentists considered improper waste management to be hazardous to health while 49.3% of dentists considered autoclaving of infectious waste before disposal as essential. (Table 3)

Table 3. Distribution of study participants based on attitude/ behavior score (n=229)

Questionnaire		Dentists	n %
Safe management efforts by the hospital increase the financial burden on management?	Agree	73	31.9%
	Disagree	68	29.7%
	Cannot comment	60	26.2%
	Do not know	28	12.2%
Safe management of health care waste is an extra burden on work?	Agree	96	41.9%
	Disagree	80	34.9%
	Cannot comment	53	23.1%
Do you think that an effluent treatment plant for disinfection of infected water should be set up in dental colleges?	Yes	131	57.2%
	No	52	22.7%
	Cannot comment	46	20.1%
Do you think that labeling the container before filling it with waste is of any clinical significance?	Yes	108	47.2%
	No	78	34.1%
	Cannot comment	43	18.8%
Waste management is team work no single class of people is responsible for safe management?	Agree	127	55.5%
	Disagree	78	34.1%
	Cannot comment	24	10.5%
Do you think improper waste management can be hazardous to health?	Yes	107	46.7%
	No	70	30.6%
	Cannot comment	52	22.7%
Do you think that the college should organize separate classes or a continuing dental education program to update existing knowledge about Biomedical waste management?	Yes	93	40.6%
	No	83	36.2%
	Cannot comment	53	23.1%
Do you think infectious waste should be sterilized from infectious by autoclaving before shredding and disposal?	Yes	113	49.3%
	No	80	34.9%
	Cannot comment	36	15.7%
Will you be interested to attend voluntary programs that enhance and upgrade your knowledge about waste management?	Yes	140	61.1%
	No	50	21.8%
	Not Interested	39	17%

Distribution of study participant based on the practice score

Adequate management and disposal of waste are essential to prevent health hazards. Adequate knowledge, segregation, collection and disposal of Biomedical waste management is an essential tool to prevent the health hazard and protect the environment.

The practice-based section comprised eight questions. 78.6% dentists had registered with the BMW disposal service provider. 56% dentists responded well that waste disposal practice by their hospital is correct. When asked about the method of disposal of lead foil in x-ray

films,14.8% dentists responded that they still threw it in common dustbins. Only 35.4% reported the correct disposal of X-ray film lead foils while 9.6% of dentists disposed the needle in sharp container which is white translucent puncture proof container. Excess and leftover silver amalgam was reported to be stored in fixer by 28.4% of dentists while 38.4% dentists throw them in common dustbin. The approximate proportion of infectious waste among totalwaste generated from a health care facility is 30-40% and 27.5% dentists agreed with this statement.(Table 4).

Table 4. Distribution of study participant based on the practice score (n=229)

Questionnaire		Dentists	n %
How do you dispose X-ray film lead foils?	Common dustbin	34	14.8%
	Handover for offsite disposal to a certified agency	81	35.4%
	Burn and dispose	84	36.7%
	Don not knows	30	13.1%
Is the waste disposal practice correct in your hospital?	Yes	42	56%
	No	8	10.7%
	Cannot comment	25	33.3%
Objects that may be capable of causing punctures or cuts, that may have been exposed to blood or body fluids are considered Biomedical waste. How should these objects be disposed of?	Black bag	103	45%
	Yellow bag	1468	29.7%
	Clear bag	36	15.7%
	Sharp container	22	9.6%
The approximate proportion of infectious waste among totalwaste generated from a health care facility is (%)	10-20%	83	36.2%
	30-40%	63	27.5%
	50-60%	52	22.7%
	80-90%	31	13.5%
Are you registered with a certified waste carrier service to dispose Biomedical waste of your clinic?	Yes	180	78.6%
	No	49	21.3%
All the following steps should be followed after an exposurewith infected blood/body fluid and contaminated sharps except	Exposed part to be washed with soap and water	109	47.6%
	Pricked finger should be kept in antiseptic lotion	64	27.9%
	Splashes to eyes should be irrigated with sterile irrigants	38	16.6%
	Splashed to skin to be flushed with water	18	7.9%
How do you dispose excess leftover silver amalgam?	Common dustbin	82	35.8%
	Store in fixed solution	65	28.4%
	Store in container with water	58	25.3%
	Do not know	24	10.5%
All of the following statements about hazardous waste containers are true, except for	Containers must be closed except when removing or adding waste	101	44.1%
	Containers must be clean on the outside	59	26.2%
	Contents must be compatible with the type of waste containers	44	19.2%
	Any type of container, including food containers, can be usedto contain hazardous waste	24	10.5%

Among 229 study participant, 122 (53.3%) were undergraduate professional and 107 (46.7%) were post graduate professional. Participants with both qualifications were engaged in academics as well as private practitioners. Knowledge, Attitude and Practice of management of biomedical waste was assessed among BDS and MDS professional. Positive response to structure questionnaire gave by Dental professional were tabulated in table 5.

MDS professional answered better than BDS professional towards Knowledge, attitude and practice of Biomedical waste management. Out of 107 MDS professional 71.9% gave correct answered to Knowledge questionnaire, 67.2% and 66.3% responded well to Attitude and practice questionnaire respectively. It was observed that higher qualification and clinical practice for dental professional increased the awareness of biomedical waste management activity (Table 5).

Table 5. Response by Dental professional towards Knowledge, Attitude and practice of Biomedical Waste Management

Biomedical Waste Management	BDS Professional	n %	MDS Professional	n %
Knowledge	52	42.6%	77	71.9%
Attitude	56	45.9%	72	67.2%
Practice	48	39.3%	71	66.3%

Discussion

Waste generated in a dental hospital is similar to that generated by other hospitals which include a large component of general waste and a smaller proportion of hazardous waste. Dentists have an ethical responsibility to the environment and themselves. Because of the nature of their profession, dental professionals are at a greater risk for acquiring cross infection while treating patients as well as handling the waste in the clinics. This is evident from the fact that most of the human pathogens have been isolated from oral secretions. Dental hospitals use instruments and materials that are directly exposed to blood and saliva and are therefore potential sources of infection. Many chemicals such as acrylics, impression materials, and mercury used for restorative purposes have an environmental and human health impact if not handled properly. Concern regarding Biomedical waste management is mainly due to the presence of pathogenic organisms and organic substances having adverse effect on human health. There could be significant numbers of organisms in the waste, including virulent strains of viruses and pathogenic bacteria. Dental practice involves many hazardous exposures and this calls for proper segregation and disposal of Biomedical waste management.[15]

The dental sector endows considerably toward the production of hazardous Biomedical waste management. Hence, it is the responsibility of dentists to abide by the government rules of waste disposal to prevent environmental pollution. Contribution of human element toward waste management over technology was emphasized to be more important by the WHO.[16,17] Hence the study was conducted to assess and obtain information about the knowledge, attitude and level of awareness of dental practitioners regarding biomedical waste management among dental practitioners of Chandigarh city. It was a cross sectional study conducted by means of self-administered close-ended

questionnaire. The result of this study provides a valuable insight into correct practices in dental health care waste management and in the corresponding need for improvements to educate the dentists.

In the current study 45.9% were male and 54.1% were female dental professionals suggestive of higher female dental professionals than male in Chandigarh city. This finding is in line with other studies where female dental professional were comparatively more than male dental professional. Majority of the dental professionals had BDS(53.3%) qualification and only 46.7% had MDS qualification in the present study which is similar to the study done by Malvika et al[18] where the dental practitioners with BDS qualification was higher, whereas in a study conducted by krishnaveni et al[19] MDS(84.7%) qualified dentist were higher than BDS(15.3%)qualified dentist which is in disagreement with present research. This may be due to the level of interest in undergoing postgraduation differs from one state to another state.

In the present study that more than half of the participants (58.1%) were aware of the biomedical waste generation and legislation which was similar to the results obtained by Shah et al[15] (65%) and Khandelwal et al[20] (41%) knew about biomedical waste generation and legislation. Although lesser awareness was found about the legislative policies but the knowledge and practice were adequate with the amendment of the clinical establishment act 2018. Regarding the maximum time limit for storage of biomedical waste according to national guidelines about 36.2% were aware of the fact that it was 48 hours.Storage of biomedical wasteshould be emphasized in future training programs. Detailed discussion should be done that Biomedical waste management should not be stored more than 48 hours. 51.5% of dentists considered safe dental waste management to be a team effort of government, dentists, and auxiliaries similar to findings obtained among dentists in a study conducted by Sharma A et al[21]where 91 (65%) healthcare personnel agreed that waste management requires teamwork and no single team member is responsible.

Only 31% dental professionals were aware of sharps should be disposed in white translucent puncture-proof containers to prevent injuries by puncture and cuts as per Biomedical waste management rules, 2016. Pharmaceutical waste such as expired medicines belong to cytotoxic category were known by only 27.5% of dentists similar to findings obtained in studies conducted in Southern region of India by Charania and Ingle[22] (30%)and Northen part of India by Bansal et al[23] (24%).Only 23.1% of dentists had correct knowledge about impression materials and infected cotton belonging to the category of soiled waste similar to findings of studies conducted by Bansal et al[23] (16%).This signifies that the knowledge among dentists about categorization of wastes was considerably less and measures need to be initiated toward it.

Aasim Farooq Shah et al[15] conducted a study among Dental Health Care Personnel (Dentists-and Auxiliaries) majority of the dentist had positive attitude only 10.78% had poor attitude towards Biomedical waste management. This is in line with the results of the present study where 45.9% and 67.2% of BDS and MDS dental professionals have a positive attitude towards Biomedical waste management. The same positive attitude was observed by Deborah Gonmei et al[24] in Karnataka among Post Graduate students. Majority of them felt that safe management and segregation of healthcare waste management is important and all agree that they have limited knowledge regarding Biomedical waste management and require further training of the

same. The present study participants felt that safe management of biomedical waste increases the financial burden (31.9%) on the hospital management which was similar to the study done by Sharma A et al[22] among health care personnel.

In the present study, 61.1%of the participants felt that college organized lectures, continuing dental programmes or training programmes to enhance and upgrade their knowledge regarding the knowledge ofBiomedical waste management. Similar finding was noted instudy done by Naresh et al[25] and Malini et al.[26] This study has also madeus realize that biomedical waste management training programs should be conducted once a year for technicians, nursing staffs and resident doctors as well as auxiliaries' personals and should be a part of academic curriculum for all health workers which may emphasize on biomedical waste management and bio-safety.

The essential components of hospital infection control programme are proper segregation, storage, transportation and safe disposal of Biomedical waste management. If the process is not done in a prompt way it will be hazardous to not only health care personnel but also to communities and environment. It is the ethical responsibility of dental practitioners to ensure proper implementation of health care waste management policies in their dental clinics and in hospitals. Registration with local Biomedical waste management carrier agency is essential. However,78.6% dentists were aware of being registered similar to the findings of the study conducted earlier itself in 2014 by Khatri et al (74.66%).[28] The ideal practice of the disposal of X-ray film lead foils was conducted by only 34.9% of dentists in our study. On the other hand, 41.9% dentists dispose the x-ray film lead foils into common dustbin which is not permitted because lead is a heavy metal that affects neurological development and functions. It should not be incinerated nor treated as general waste. It potentially leaches from landfills and can contaminate soil and ground water. Thus, proper training programs involving the dental auxiliary staff would help in proper Biomedical waste management disposal.[12] About 35.8% dentists dispose scrap amalgam into common dustbins where as 28.4% dentists dispose the scrap amalgam into the fixer solution which is a strong recommended method by American Dental Association or it can be sent to a recycler who will retrieve the silver and use it for other purpose. Mercury-containing wastes should not be incinerated or autoclaved. On incineration, mercury volatilizes while it tends to escape from autoclave doors on opening them, thereby mercury vapors entering atmosphere can lead to mercury toxicity.

The data presented in this study showed that Knowledge, Attitude and practice score regarding biomedical waste management was better among postgraduate professionals (71.9%, 67.2%,66.3%) as compared to undergraduate professionals (42.6%, 45.9%,39.3%). This may be attributable to their lack of training and educational qualification. It was difficult to change the execution of biomedical waste management to a greater extent, a very stringent curriculum which emphasis the need of biomedical waste management right from the 1st year of BDS. Furthermore, undergraduate curriculum should include this topic along with practical demonstration classes on waste disposal. In our study, we had used a self-reported questionnaire which may have led to subjective bias. Thus, we recommend further studies with a larger sample size and also repeated timely surveys to be conducted to monitor the change in practices which will help furthermore to formulate strategies to promote

inculcation, upgradation, and adoption of Biomedical waste management rules.

In the developing countries like India the regulatory approach is the best method to bring about the changes for the better tomorrow. Government has taken many initiatives to treat the disease like Hepatitis B and HIV but this can be prevented to certain extent if biomedical waste management is done in a proper method. If the government establishes a Biomedical waste management plant at every district it will surely cut down on the cost and reduce the financial burden on the dentist.

Conclusion

It can be concluded that in the present study even though the dental professionals have good level of awareness and knowledge regarding the biomedical waste management and also all the participants have positive attitude towards biomedical waste management but they have limited execution of Biomedical waste management in the hospitals as well as dental clinics even after providing the health education. Thus, there is an urgent need for continuing dental education on dental waste management practices. It should be strictly implemented and monitored in a systemic manner by authoritative bodies in India. It is imperative that waste should be segregated and disposed of in a safe manner to protect the environment as well as human health because "Everyone wins, when the environmental health is respected and safe guarded."

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