



ORIGINAL RESEARCH PAPER

Prosthodontics

A SURVEY TO ASSESS THE BIOMEDICAL WASTE MANAGEMENT BY THE DENTAL PROFESSIONALS IN KASHMIR (JAMMU AND KASHMIR).

KEY WORDS:

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ABSTRACT

Objective: To find out the knowledge, attitude and behavior of dental professionals in Kashmir.

Method: A cross-sectional study was conducted for a period of four months from September 2018 to December 2018 in which a self-administered questionnaire was given to 313 certified dental professionals including faculty, post graduates, graduates and private practitioners of Kashmir.

Results: Out of 313 dental professionals 305 participated in the study. Statistics was analyzed by Dichotomisation analysis.

Conclusion: All the dental professionals need further knowledge about biomedical wastes through continuing dental education programme.

INTRODUCTION

Biomedical waste management in the hospitals gained the great importance in recent times especially in the view of rapid upsurge of HIV infection and also by the notification on the biomedical waste management and rules 19981. As per this rule all the health care institutions need to segregate, disinfect and dispose the wastes ecofriendly2. Dental clinics produce a variety of waste products including human tissues, blood soaked cotton and gauze, syringes, needles, amalgam, X-ray films and photochemicals that need to be disposed critically3.

The four step guidance note of world bank for the waste management of health care include.

- a) Segregation of waste products in various components that includes reusable and disposable materials in containers for safe storage.
- b) Transportation to waste treatment and disposal sites.
- c) Treatment and
- d) Final disposal.4,5

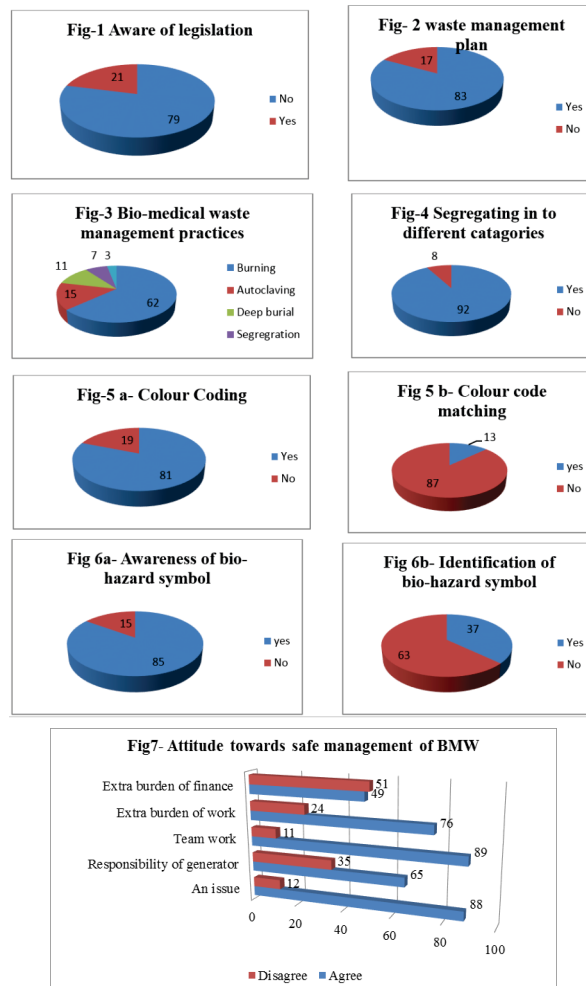
MATERIAL AND METHOD.

A pre-tested and self administered questionnaire was prepared after literature research and review. It was distributed among 313 certified dental professionals of Kashmir for a period of four months from September 2018 to December 2018. The participants include faculty, postgraduates, graduates, private practitioners, .Out of 313 dental professionals 305 responded to the questionnaire. 8 professionals rejected to participate in the study. Data management and analysis was carried out using Dichotomization Analysis.

RESULTS

As per the results obtained from this survey only few participants (21%) new about the Legislative act of the bio-medical waste (management and handling) Rules 1988, rest of the participants(79%) were unaware of the safe management of bio-medical waste (Fig-1). Waste management plan was followed by (83%) participants (Fig-2). When asked about bio-medical waste management practices most of the practitioners used burning procedure (62%) followed by autoclaving (15%), deep burial (11%), segregation (7%) and the least was incineration (3%) (Fig-3). 92% of the participants opted for the segregation of bio-medical waste in different categories (fig-4). When asked about the color coding majority of the participants (81%) agreed for the use of color coded bin but only a few (13%) were able to match the color coding exactly (Fig-5). Regarding the biohazard symbol 85% stated that they were aware of it but only 63% were able to identify the symbol correctly (Fig-6). 42% of the participants used to dispose the wastes in the bins of municipal corporation, (33%) used the general waste, (21%) in hospital waste collection and only 4% used other ways of disposing wastes. When asked about the source of knowledge regarding the management of the bio-medical wastes 73% stated that they have never attended any program regarding the bio-medical waste management and 88%

mentioned that they are not receiving any annual literature but 100% of the participants wanted to attend any program or workshop regarding the biomedical waste management. None of the participants were having any amalgam separator or filter of the disposal of amalgam. Used X-ray developers and fixers were disposed directly in the drain. No one used to send the solution for recycling.



While assessing the attitude towards the safe management of biomedical waste, majority (88%) agreed that the safe management of bio-medical waste is an issues. 65% agreed that it is the responsibility of the generator, and 89% felt that it is a team work. 76% were of the opinion that it is extra burden of work and 49% felt that it is an increase of financial burden on health care

setup (Fig-7). In the present study majority of the respondents were not aware of legal issues involved. But the positive sign regarding attitude assessment was majority percentage accepted that it is an issue and that needs to be tackled and effective management is based on team work.

DISCUSSION

In most of the countries it has been seen that the biomedical wastes from different healthcare setups including dental clinics was disposed randomly in domestic stream or in a waste paper bin or general household waste. As per a survey done by Treasure et al⁶ in Newzealand most of the dental clinics used to dispose contaminated blood swabs in waster paper bin where as 25% clinicians used to dispose sharp items in general household wastes. Panchanuwat K et al⁷ did a study in Bangkok were a he found that majority of the clinicians disposed there wastes in domestic rubbish streams. Farmer GM et al⁸ in their pilot study in Melbourne found that, up to 91% of total waste contains was cross infection control items, such as gloves, single-use cups, and protective coverings.

Thousands of tons of hazardous and non-hazardous waste are produced in the world every year. According to World Health Organization during 1999-2000, Searo and the 11 south-east Asian countries together produce both hazardous and non-hazardous waste around 3, 50,000 tons per year. It is the duty of the dentist to evaluate each waste generates from their practice should be determine whether it is hazardous waste or not. A waste that has not been evaluated must be assumed to be hazardous².

The needles should be destroyed by needle destroyers or by using syringe melting and disposal system. The mutilated sharps should be placed in puncture proof sharp container with 1%Naocl for disinfection⁹. Sharps are regarded as highly hazardous health care waste since they can cause injuries and puncture wounds. Due to exposure of the contaminated sharps, the risk of transmission of blood borne pathogens, such as HIV, Hepatitis B and C is always possible.

X-ray fixer is a hazardous material and should not be rinsed down the drain. Used fixer solution contains approximately 4000mg of silver per liter, and should compulsorily be sent for recovery unit. The „de-silvered' fixer can be mixed with water and disposed down the sewer. Spent/ used developer can be diluted with water and then poured in to the drain. Unused x-ray film can be sent to recycler. Lead containing foils should be sent for recycling, because there is a possibility of leaching of lead¹⁰.

Teeth with amalgam fillings should be neutralized ideally with "tuberculocidal disinfectant solution" by immersion method for 30 minutes in a sealed container, because amalgam vapours release during sterilization. Treated teeth can be rinsed with water and are ready to disposal. Teeth without amalgam restorations can be placed directly in to a biohazard bag or sharp container^{11,12}.

Amalgam waste should be placed in "white rigid" receptacles with a mercury suppressant, and it should be sent to mercury recovery process prior to final disposal¹³. To minimize amount of mercury vapour emitted from waste amalgam, ADA recommends that it should be stored under a small amount of "photographic fixer" in a closed container. Unused elementary mercury should be stored in a tightly sealed container, and should be sent for recycling. Scrape amalgam should be stored in "sponge type Mercontainer tm". All the dental clinics should use some type of basic filtration system to reduce the amount of mercury solids passing into the sewer system. The amalgam separators can remove 95% of mercury waste which is entering in to the sewer system¹⁴.

Pharmaceutical waste is considered to be hazardous non-infectious waste and it should be disposed off properly. Glutaraldehyde and Ortho-ptihaldehyde(Opa) which are the active ingredients of several brands of sterilizing solutions, before pouring them into the sanitary sewer, they should be neutralize with „glycine". Electronic devices, batteries, fluorescent lamps etc comes under "universal wastes" and considered, as hazardous

wastes, should be managed under the universal waste management regulations¹⁰.

CONCLUSION

The study is concluded with the fact that it is our duty to save our surroundings and environment by using the documented ways of disposing the biomedical wastes. We should have a proper knowledge about the topic and should update ourselves with the recent methods of disposal by timely attending the workshops, training programes and conferences on the management of waste disposal.

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