SHORT REPORT

Knowledge, attitude and practice regarding management of health care waste among private dental practitioners

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Abstract

A knowledge, attitude and practice cross-sectional survey was conducted among dental practitioners doing private practice in district central, Karachi after checking eligibility and taking their written informed consent. The practitioners were interviewed by the principal investigator with the help of a pre-tested structured questionnaire developed specifically for this study. The study results revealed that 175(88.8%) of the participants were aware that waste management guidelines are applicable to them, 184(93.4%) were aware that healthcare waste is a source of infection whereas 145(73.6%) were aware about the colour coding of healthcare waste bags/containers. Moreover, 165(84.1%) thought that health care waste disposal protocol lessens the chance of injuries and infections whereas 182(92.0%) were in favour of the need to continue medical education about health care waste management. It is recommended that healthcare waste should be segregated and disposed of in a safe manner to protect the people at risk and the environment.

Keywords: Knowledge, Attitude, Waste Management, Dentists.

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Introduction

Healthcare waste is defined as the total waste produce from a healthcare activity; between 70-90% of the waste is nonhazardous, domestic or general waste, the remaining 10-25% health care waste is regarded as infectious/ hazardous/ healthcare risk waste; the nonhazardous waste or domestic waste contains paper, plastic packing and leftover food stuff, the hazardous waste or health care risk waste contains infectious agents, sharps, hazardous chemicals or pharmaceuticals, and is genotoxic and radioactive.[1]

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The institutions involved in generation of health care waste are hospitals, clinics, laboratories, blood banks, mortuaries, physician's offices, dental clinics and pharmacies; the individuals exposed to healthcare waste and thereby at risk of becoming injured or infected include doctors, nurses, sanitary staff, hospital maintenance personnel, in and out-patients, their visitors, workers in support services linked to healthcare facilities such as laundries, waste handling and transportation services and general public particularly the children.[1]

In 2016, the average total, general and infectious hospital waste generation rates in Pakistan have been reported to be 0.667, 0.497 and 0.17kg / bed / day respectively; 73.85% of it consisted of general, 25.8% consisted of hazardous/infectious while 0.87% consisted of non-hazardous waste.[2]

Effective management of healthcare waste essentially depends upon proper identification and segregation of the waste.[3] The latest guidelines for segregation of bio-medical waste recommend the following colour coding: highly infectious waste, pathological, anatomical and other infectious waste is to be held in a yellow container, marked "HIGHLY INFECTIOUS", with biohazard symbol; Sharps waste is to be held in a strong, leak-proof and puncture-proof yellow plastic bag or a container marked "SHARP" with biohazard symbol and capable of being autoclaved; chemical and pharmaceutical waste to be held in a brown plastic bag or rigid container labeled with appropriate hazard symbol; radioactive waste to be held in a lead box, labeled with radiation symbol and general health-care waste to be held in a black plastic bag.[1]

Waste management and treatment options should first protect the healthcare workers and the population and then minimize the indirect impacts from environmental exposures to health care waste.[1] For this purpose it is essential that healthcare professionals and waste handlers have necessary awareness and are properly trained to manage healthcare waste.

Although literature reports that there is a lack of knowledge regarding healthcare waste management among dental practitioners of Karachi,[4] to the best of

authors' knowledge, the attitude and practice of dental practitioners in this regard have not been evaluated yet. In order to expand the relevant local data base, this study was therefore conducted to determine knowledge, attitude and practice regarding dental waste management among dental practitioners of Karachi.

Methods and Results

A knowledge, attitude and practice survey was conducted in private dental clinics of district central, Karachi, from May 2018 to October, 2018. The study population consisted of conveniently sampled dental private practitioners from district central, Karachi. Graduate or post graduate registered dental practitioners doing private practice in district central, Karachi whereas dental internees were excluded from the study. Using the percentage frequency of the study outcome as 50% for maximum sample size, with 95% confidence interval, 7% precision, and factoring in a population size of 100000, the calculated sample size was 196 practitioners. A pretested structured questionnaire specifically designed for the study was given by the principal investigator to the dental practitioners after taking their written informed consent and taken back once they had filled it. The questionnaire was developed after a thorough literature review and was then pre-tested on 5% of sample size to check for face validity and reliability and was modified accordingly to yield a Cronbach's alpha

Table-1: Correct responses with regard to knowledge.

Variables (n=197)	n	%
Awareness regarding the term healthcare waste	181	91.9
Awareness that healthcare waste management guidelines are applicable to dentist	175	88.8
According to healthcare waste management and handling guidelines waste should not be store beyond 24 hours	86	43.7
Awareness that healthcare waste can be a source of infection	184	93.4
Knowledge about the different categories of healthcare waste generated in clinics	157	79.7
All of the infective agents, sharps and chemicals are included in hazardous waste	134	68.0
If classification of waste item is uncertain, as a precaution it should be placed in a container used for hazardous waste	124	62.9
Dental clinic waste should not be collected and disposed of with domestic waste	105	53.3
Awareness regarding the colour coding of healthcare waste bags/containers	145	73.6
Sharps should be disposed of in a yellow puncture proof container	119	60.4
Extracted teeth and human tissues should be disposed of in a yellow puncture proof container	46	23.3
Fixer and developer should be disposed of in a yellow puncture proof container	25	12.7
General healthcare waste should be disposed of in a common bin	35	17.8
Healthcare waste management is the combined responsibility of government, dental surgeons and auxiliaries	132	69.2

Table-2: Correct response with regard to attitude and practice.

Variables (n=197)	n	%
Segregation of the waste at source increase the risk of injury to waste handler	110	55.8
It is important to have colour coded bags/containers for healthcare waste disposal at clinic	128	65.0
Following healthcare waste disposal lessens the chances of injuries/infections	165	84.1
It is important to inform sanitary staff to empty waste bags/container once it is completely filled	174	88.3
There is a need of continued medical education on health care waste management	182	92.4
Do you recap the used needles?	158	80.2
Do you discard the used needles immediately?	178	90.4
Do you deform discarded needles in your clinic?	154	78.2
Do you use colour coded bags in your clinic for healthcare waste disposal?	121	61.4
Do you dispose of sharps in colour coded bags ?[1]	112	98.2
Do you dispose of extracted teeth and human tissue in a colour coded bag?[2]	111	98.8
Do you dispose of used restorative material, impression material, plaster of Paris and expired materials and drugs in a colour coded bag?[3]	108	96.4
Do you dispose of fixer and developer in a colour coded bag?[1]	105	92.1
Do you dispose of general healthcare waste in a colour coded bag?[1]	106	93.0

[1]n=114
[2]n=113
[3]n=112

value of 0.701. Data were analyzed by SPSS version 21 while descriptive analysis was performed by calculating means and standard deviations for continuous and frequencies and percentages for categorical variables.

A response rate of 100% was recorded for the study. The mean age of the study participants was 34.16±7.37 years, 50.8% of them were females, 39.1% were graduates, 41.1% had <5 years' experience, 41.1% had less than 50000 rupees monthly incomes whereas 56.9% practiced in a rented clinic.

In all 181(91.9%) of the dentists were aware of the term healthcare waste, 175(88.8%) knew that waste management guidelines are applicable to them, 184(93.4%) had the knowledge that healthcare waste is a source of infection, 157(79.7%) knew that different categories of healthcare waste generated in clinics whereas 145(73.6%) knew about the colour coding of healthcare waste bags/containers (Table-1).

Moreover, 165(84.1%) thought that health care waste disposal protocol lessens the chance of injuries and infections, 182(92.0%)were in favour of the need to continue medical education about health care waste management, 158(80.2%) of them recapped the used needles, 178(90.4%) discarded the used needles immediately, 154(78.2%) deformed the discarded needles in their clinic, 112(98.2%) disposed sharps in a colour coded bag whereas a similar percentage of them disposed extracted teeth and human tissues in a colour coded bag, 108(96.4%) disposed off used restorative material impression material plaster of Paris and expired materials in a colour coded bag, 105(92.1%) disposed fixer and developer in a colour coded bag whereas 106(93.0%) disposed general health waste in a colour coded bag (Table-2).

Conclusion

In line with the published literature,[5,6] majority of the study participants were aware about the term healthcare waste and that healthcare waste management guidelines are applicable to dentists. In all 93.4% of the participants were aware that health care waste is a source of infection; similar results were reported by Ahmed AAM et al., in 2014.[7]

Moreover 79.7% of study participant knew about the different categories of healthcare waste generated in clinics. Similarly Bansal M et al., in 2013 reported 86% of the respondents to have similar knowledge.[8]

More than 2/3rd of the participants knew that infective agents, sharps and chemicals are included in hazardous waste and were aware about colour coding of healthcare waste bags/ containers; similar results have been reported earlier as well.[6,9] Contrary findings were reported by Ismail IM et al., in 2013 though.[10]

As reported by Sanjeev R et al., in 2014,[6] 60.4% of study participants correctly knew that sharps were disposed in yellow puncture proof containers, Furthermore, 69.2% of the study participants responded that healthcare waste management is the responsibility of the government as well as teamwork of dental surgeon and auxiliaries. Similar results were reported by Sharma A et al., in 2013.[11] As reported previously,[12,13] a majority of the participants thought that it is important to have color coded bags/containers for healthcare waste disposal at their clinics and to inform sanitary staff to empty waste bags/container once it is completely filled. Furthermore, 92.2% of the study participants thought that there is a need of continued medical education on healthcare waste management, again a finding well in line with published literature.[6,10,14]

In our study 80.2% of the participants recapped the used needles. Unlike our results NK Gupta et al., in 2017 reported that 20.0% of the respondents interviewed recapped the used needles.[15] Moreover 90.4% of study participants discard the used needles immediately. NK Gupta et al., in 2017 reported similar findings.[15]

Furthermore, 61.4% of the participants used colour coded bags in the clinic for healthcare waste disposal. Abhishak KN et al., in 2016 reported likewise.[14] Literature though reports contrary findings as well.[10] Moreover, 98.2% of the study participants disposed sharps in colour coded bags. Though less frequently, Ismail IM et al., in 2013 reported similar results.[10]

Due to resource limitation, this survey could not be conducted with a larger sample size.

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