

Doctors' Perception Regarding Hospital Waste Management at Ghurki Hospital, Lahore

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ABSTRACT

Background: Proper hospital waste handling and disposal are of primary importance as it poses a great threat to healthcare workers and waste handlers, as well as to the environment and general public. Previous studies in Pakistan have shown that waste generation is around 1.35 kg per patient per day. The inappropriate disposal of healthcare waste, such as open dumping leads to contamination of other waste while uncontrolled burning releases environmental toxins. The main reason why medical waste poses such a threat is due presence of pathogens such as virulent strains of viruses and pathogenic bacteria in high numbers. On these grounds, it is imperative to ensure segregation of hazardous from non-hazardous waste, in order to reduce bulk and to prevent contamination of the non-hazardous waste, as well as to prevent water, air and soil pollution.

Aim: To assess the knowledge of doctors regarding hospital waste management and their awareness of HWM protocol at Ghurki Hospital

Setting: Outpatient departments of Ghurki Hospital, Lahore from December 2019 to February 2020

Methodology: A cross sectional study with a sample size of 112 using non-probability consecutive sampling. Sampling population was all MBBS doctors of any designation and qualification working at GTTH. Data was collected using a structured questionnaire which assessed knowledge of doctors regarding hospital waste management and awareness of HWM protocol carried out at GTTH.

Results: 19.6% of the correspondents rated their knowledge regarding HWM as good while 67.9% and 12.5% felt they had adequate and poor knowledge, respectively. 60.7% doctors wished to receive more training about waste management. 94.6% were able to correctly identify between general, infectious and hazardous waste, while 88.4% were aware of hazards of improper handling of hospital waste.

Conclusion: In conclusion we saw that most doctors working at GTTH had little to adequate knowledge however majority were well aware of waste management protocol carried out at GTTH. While the hospital offered waste management training to its infection control team, this training program should also be extended to doctors as 60.7% wished to receive more training on the subject.

Keywords: hospital waste management, contamination, segregation, incineration

INTRODUCTION

Proper hospital waste handling and disposal are of primary importance as it poses a great threat to healthcare workers and waste handlers, as well as to the environment and general public. Hospital or health-care waste is any waste produced during diagnosis or treatment of patients which may be generated from operation theatres, physicians' offices, procedure rooms, laboratories, and out-patient and in-patient departments. This comprises of general waste, used syringes, soiled dressings, diagnostic samples, blood, chemicals, pharmaceuticals, body parts, medical devices and radioactive materials. Hospital waste primarily consists of about 85% general, non-hazardous waste, while just about 15% is considered hazardous which may be infectious, toxic or radioactive¹. Out of hospital waste, sharps pose the greatest threat of causing injuries to healthcare individuals and for transmission of infections². Previous studies in Pakistan have shown that waste generation is around 1.35 kg per patient per day³ while another stated that waste generation was 2.0 kg/bed/day, of which only 0.1-0.5 kg only is hazardous⁴.

The inappropriate disposal of healthcare waste, such as open dumping leads to contamination of other waste while uncontrolled burning releases environmental toxins⁵. The main reason why medical waste poses such a threat is due presence of pathogens such as virulent strains of viruses and pathogenic bacteria in high numbers. On these grounds, it is imperative to ensure segregation of hazardous from non-hazardous waste, in order to reduce bulk and to prevent contamination of the non-hazardous waste, as well as to prevent water, air and soil pollution⁶.

According to WHO just in the year 2000, reuse of contaminated syringes in developing countries led to about 21 million hepatitis B cases, 2 million hepatitis C cases and 96000 HIV infections. Reuse of non-sterilized injections ranges between 1.5 to 69.4% in low and middle income countries, globally⁷. The reason why such a dilemma arises is as a result of improper disposal of the syringes and sharps in the first place. It was seen that scavengers and hospital janitorial staff have been involved in the collection of used syringes from waste dumps and then reselling them for a price range of US\$ 0.06 to 0.2 per syringe⁸.

Another setback in low income countries is the lack of proper implementation and management of hospital waste rules and regulations. Healthcare waste is incorrectly disposed off due to deficiency in knowledge of healthcare

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workers regarding transmission of hospital acquired infections via poor handling of waste as well as due to lack of training about hospital waste management. This dilemma is also due to the non-serious approach towards hospital discipline and failure to implement strict hospital waste management protocols⁹. In Pakistan also, previous studies have shown, most hospitals and independently working physicians, do not comply with the set guidelines for proper hospital waste management and disposal¹⁰.

According to the Pakistan hospital waste management rules 2005, some of the main principles to be followed are strict segregation of waste to be done at source into properly labeled appropriate containers, sharps are to be rendered unfit for reuse, provision of personal protective equipment to waste handlers, removal of waste daily from hospital premises, storage for under 24 hours and then incineration of hazardous and infective waste. Eventual disposal is done into appropriate, designated landfills¹¹. Though these rules exist, authorities have failed proper implementation for years and therefore, hospital waste continues to remain a menace.

Despite the dearth in proper hospital waste management and disposal, few studies have been carried out in Pakistan, and none has been carried out so far in our institute, LMDC/ Ghurki Trust Teaching Hospital (GTTH). The objective of this study is to assess the knowledge of doctors regarding hospital waste, its handling and disposal and to assess their awareness regarding existing practices for hospital waste management at GTTH.

METHODOLOGY

A cross sectional study was carried out at Ghurki Trust Teaching Hospital, Lahore between the months of December 2019 to February 2020. Ghurki Hospital is a 600-bed trust, tertiary care hospital, situated in Lahore outskirts. GTTH has a catchment area of 112 villages and covers a population of 2 million. Data was collected from outpatient departments of Medicine, Surgery, Gynecology, Pediatrics, Eye, ENT and Orthopedics departments at GTTH. Sampling technique used was non-probability consecutive sampling and a total sample size of 112 was achieved. Inclusion criteria was all MBBS doctors of any designation and qualification, working at Ghurki trust teaching hospital in the above departments, while all other health care professionals such as nurses, pharmacists, physiotherapists etc were excluded from the study. Data collection was done, after informed consent, using a structured, pre-tested questionnaire, comprising of three sections. Section 1 is about doctors' background, while section 2 assessed their knowledge about hospital waste management and in section 3 their awareness regarding HWM practices at GTTH were inquired. Statistical software SPSS version 21 was used for Data entry and analysis. Prior to commencement of this research project, ethical approval was taken from the Institutional review board of LMDC/ GTTH.

RESULTS

The doctors (n=112) had a mean clinical experience of 2.6±2.4 years, ranging from 6 months up to 13 years. The demographic profile of the doctors is depicted in Table 1,

while their knowledge is shown in Tables 2 and 3. This current knowledge regarding Hospital waste management (HWM) was mainly achieved through seminars and workshops, as pointed out by 43% of the correspondents. The remaining sources of knowledge are also shown in Figure 1.

Table 1: Demographic profile of doctors working at GTTH (n=112)

Variable	Frequency	%age
Male	60	53.6
Female	52	46.4
House Officer	57	50.9
Medical Officer	26	23.2
Postgraduate trainee	22	19.6
Consultant	7	6.3

Table 2. Knowledge regarding HWM

	Good	Adequate	Poor
Rate your current knowledge regarding HWM	22 (19.6%)	76 (67.9%)	14 (12.5%)
Questionnaire	Yes	No	
Do you wish to receive more training about hospital waste management?	68(60.7%)	44(39.3%)	
Can you differentiate between general, infectious and hazardous waste?	106(94.6%)	6(5.4%)	
Are you aware of hazards of improper hospital waste management?	99(88.4%)	13(11.6%)	

Figure 1. Source of current knowledge on HWM

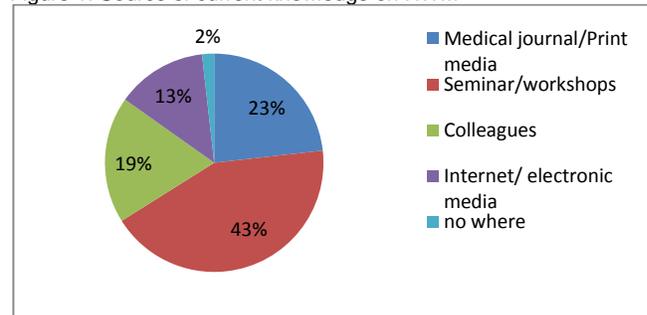


Table 3: Identification of correct color coding of hospital waste

	General waste	Infectious waste	Hazardous waste
Correctly Identified	108(96.4%)	107(95.5%)	107(95.5%)
Incorrectly identified	4(3.6%)	5(4.5%)	5(4.5%)

41(36.6%) doctors correctly identified that ensuring segregation of waste was an essential step to reduce risk of Hospital waste management, while 40 (35.7%) knew that waste segregation should be done at source. 47.3% (51) doctors were aware that on-site waste storage should not be done for more than 24 hours. In another multiple response question, doctors were asked to identify correct methods of treatment for sharps before their disposal. The correct options; incineration was identified by 51, and shredding was identified by 30 doctors only. Similarly, the correct methods for treatment of infectious waste before disposal were asked. The correct option; incineration was

identified by 51, and chemical disinfection was identified by 56 doctors. The services provided at Ghurki hospital for waste management are shown in bold in Table 4 and the

frequencies and percent of doctors who were aware of these services are also shown.

Table 4. Hospital Waste Management practices in Ghurki Trust Teaching Hospital

		Yes	No	Don't know
1	Does your hospital segregate hospital waste?	101(90.2%)	7(6%).3	4(3%).6
2	Does your hospital supply protective gear (gloves, masks etc.) for waste handlers?	101(90.2%)	8(7.1 %)	3(2.7%)
3	Does your hospital provide appropriate vehicle for internal transportation of waste?	77(68.8%)	12(10.7%)	23(20.5%)
4	Does your hospital have a proper storage facility before waste disposal?	79(70.5%)	13(11.6%)	20(17.9%)
5	Does your hospital have an incinerator?	43(38.4%)	25(22.3%)	44(39.3%)
6	Does your hospital keep record of waste generated?	50(44.6%)	21(18.8%)	41(36.6%)
7	Does your hospital have an infection control and waste management team?	73(65.2%)	7(6.3%)	32(28.6%)
8	Does your hospital provide hospital waste management training?	55(49.1%)	21(18.8%)	36(32.1%)

DISCUSSION

As pointed out before, Hospital waste continues to be a menace, with most hospitals and private physicians paying no heed to the guidelines set forth by the Hospital Waste Management Rules, which were issued by the Ministry of Environment, Government of Pakistan in August 2005. In fact, most doctors remain oblivious to these set rules and also have no formal guidance regarding HWM¹².

The WHO has laid down a systematic process for management of hospital waste which comprises of forming a waste management team, having a set hospital waste management plan, segregation of waste at source, color coding system of waste, collection of waste and transportation, provision of PPE to waste handlers, treatment before disposal and then final disposal¹³. The rules set down by the Pakistani Government also follow the same WHO guidelines¹¹.

Incineration is accepted as the most effective method of hospital waste treatment before disposal, as it not only kills pathogens but reduces bulk of the waste too. Other methods of treatment of hospital waste include chemical disinfection, autoclaving, shredding, and microwave irradiation¹².

According to Kumar et al 48% of doctors were aware that waste segregation must be done at source, while in comparison in our study only 36% of doctors were aware of this¹⁴. On the contrary, another local study stated that 86% of doctors were aware of waste segregation¹⁵. We also saw in our study that 94.6% were able to correctly identify between types of wastes, while 88.4 % knew of the hazards of improper waste disposal. These results, though lower, are almost comparable to another study carried in Pakistan where 100% doctors knew of kinds of waste and the diseases related to improper hospital waste handling¹⁵. In a quasi-experimental study carried out on healthcare workers in Rawalpindi, it was seen that knowledge increased by 20-25% in the intervention group after HWM training model intervention ($p=0.000$)¹⁶. This depicts the significance of continuous training regarding HWM. In our study, 60.7% of the correspondents wished to receive more training about HWM. As pointed out by other studies, efficient HWM requires reinforcing messages and intensive course followed by periodic refresher training^{17,18}.

The account in developed countries is something else. A study from Greece showed that, there the HWM plan not only includes the essential steps of segregation, collection, transportation and proper disposal of waste, but

also included confirmation that combustion products were safe. Emission of gases during combustion was also checked and waste water generated from hospitals was tested for level of toxicity¹⁹. Similarly, in the UK health-care waste management is dealt-with with appropriate protocol and strictly monitored to protect human health and the environment²⁰.

CONCLUSION

In conclusion we saw that most doctors working at GTTH had little to adequate knowledge, with only 19.6% who felt they had good knowledge regarding HWM, however majority were very well aware of the color coding system implemented for waste disposal. GTTH had an appropriate HWM plan implemented and most doctors were aware of the practices carried out at GTTH. At the same time, GTTH had periodic HWM training which was offered to the infection control team and paramedics only. 60.7% correspondents pointed out that they too wished to receive HWM training. GTTH should devise a new plan for HWM training which is inclusive of interested doctors as well. In doing so, the knowledge of HWM in doctors can be really enhanced.

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