

Knowledge and Practice of Healthcare Workers Regarding the Healthcare Waste Management

TIKKA KHAN FAISAL¹, GULNAZ BANU², SHAGUFTA EMMANUEL², JACOLLIN GEORGE², FARAH NAZ²¹Lahore School of Professional Studies, University of Lahore, Pakistan.²Department of Nursing, College of Nursing, University of Child Health Sciences-Children Hospital, Lahore-PakistanCorrespondence to Miss. Gulnaz Banu, E-mail: gulnaz.khokhar9@gmail.com; Tel+92-306-4030113

ABSTRACT

Background: Healthcare waste management (HWM) issues are getting worse in Pakistan since there are more and more hospitals, clinics, diagnostic labs, etc. One of the major individuals in charge of properly managing healthcare wastes at any healthcare facility is the medical staff. But how well you perform will rely on how much you know and do about waste management.

Aim: To ascertain the knowledge and practice of healthcare professionals about the management of healthcare waste.

Study design: Cross-sectional descriptive study.

Methodology: The Children Hospital Lahore has conducted the current study. The current study included 400 participants. Structured, pre-tested, and self-administered questionnaires were used to collect data. The survey was cleaned, revised, and reviewed for completeness. The analysis of the data was done using SPSS 23.

Results: 400 individuals were involved, 174(43.5%) of whom had sufficient understanding of health care waste management, whereas 226(56.5%) had insufficient knowledge. Of the 400 participants, 188(47%) had good practice managing medical waste, whereas the remaining 212(50%) had bad practice.

Practical Implication: This study helped researchers investigate the knowledge and practice of health workers. It would help in estimating the practice and knowledge of health waste management by health care workers.

Conclusion: It was determined that most workers had inadequate knowledge of waste management and had poor practice on health care waste management. All employees must receive the appropriate training and supervision in HCW management, as well as pertinent and continuous in-service training, to ensure that they have the necessary information, attitudes, and safe practices.

Keywords: Health Care Workers, Waste Management, Knowledge, Practices and Training.

INTRODUCTION

Healthcare establishments, such as hospitals, medical research centers, pharmaceutical industries, pharmacies, blood banks, and home health care operations, produce wastes known as healthcare wastes (HCW). These wastes can be roughly divided into general trash and hazardous waste¹. The terms "biomedical throwaway," "hospital garbage" "medical debris," and "healthcare disposal" are all interchangeable². Because they contain potentially dangerous substances and can affect persons exposed to them, healthcare waste falls under a particular category of wastes. Poor handling of these wastes exposes healthcare professionals, personnel deal with medical waste, waste pickers, patients and their families, as well as the general public, to infection risks, hazardous consequences, injuries, and pollution threats³. Due to their high risk of spreading illness and causing harm, the wastes produced by medical activities can also be dangerous, poisonous, and even fatal⁴. According to studies, improper handling and disposal of HCW puts health professionals at risk of infection from infectious wastes and increases their chance of contracting diseases like hepatitis and HIV/AIDS⁵.

In metropolitan locations, one topic of discussion is the handling of medical waste is of significant concern. It is nevertheless disposed of randomly and frequently in developing nations, intermingled with urban garbage, posing major risks to human health and the environment⁶. If non-hazardous trash is combined with hazardous waste, hazardous waste disposal guidelines should be followed⁷ which many low-income countries, like Pakistan, do not experience. In developing nations, infectious waste management has consistently gone unaddressed, placing a heavy weight on environmental contamination that affects the general populace⁸. In order to grasp the health risks associated with handling healthcare waste, use suitable handling techniques and methodologies, and put safety precautions into practice, potential handlers of HWM must have adequate knowledge⁹. However, there are numerous reports from emerging nations

indicating that the amount of competence and application of healthcare waste management among health professionals is often low¹⁰.

HWM in Pakistan receives less attention than other healthcare-related topics. Health workers' understanding and application of healthcare waste management did not receive enough attention as a result. The planning for better healthcare waste management is hampered by the lack of appropriate recorded information on healthcare waste management and technologies.

The knowledge and behaviour of healthcare professionals are crucial to the success of any programme for managing medical waste, however in Pakistani public healthcare institutions, no sufficient research has been done on these topics. With this in mind, a study was created to investigate the views of medical staff on the disposal of medical waste in Pakistan's public health institutions (hospitals and clinics).

METHODOLOGY

This research was descriptive and cross-sectional conducted in Children Hospital Lahore. This location was chosen because no previous research had been done on the knowledge, attitudes, and HCW administration practices of healthcare personnel in a highly efficient hospital in the province. The study sample included both professional and non-professional healthcare personnel's, including doctors, nurses, dental professional, medical technicians, physiologists, occupational therapists, speech therapists, and clinical psychologists (Ward attendants, porters, cleaners).

By using simple random sampling, 400 healthcare personnel were chosen. Participants having direct contact with patients were included in this study while people who were not in direct contact with patients were excluded (admin staff, grounds staff and maintenance staff) or because their normal operation does not generate or handle HCW. Structured, pre-tested, and self-administered questionnaires were used to collect data. The questionnaires were revised, cleaned, and their completeness verified.

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Statistical analysis: SPSS 23 was used for the data analysis. Data presented as percentage and frequency.

RESULTS

Social and demographic traits: There were 400 health professionals in the study. There were 175(43.8%) females and 225(56.3%) males. Most of the respondents, 162(40.5%) was under 25 years old, 31.3% were aged 25-35, 18% were aged 35-45, and 10.3% were over 45. Out of 400, 116(29%) of the respondents were doctors, 190(47.5%) were nurses and 94(23.5%) were allied health professionals. 126(31.5%) of the respondents had 1-5 years of working experience, 161(40.3%) had 6-10 years, 74(18.5%) had 10-15 years, and 39(9.8%) had over 15 years (Table 1).

Table 1: Social and demographic traits

Variables	Category	Frequency	%age
Gender	Male	225	56.3%
	Female	175	43.8%
Age	<25	162	40.5%
	25 – 35	125	31.3%
	35 – 45	72	18.0%
	>45	41	10.3%
Designation	Doctor	116	29.0%
	Nurses	190	47.5%
	Allied Health Professional	94	23.5%
Working experience	1 – 5 years	126	31.5%
	6 – 10 years	161	40.3%
	10 – 15 years	74	18.5%
	> 15 years	39	9.8%

Health Workers' Awareness of Healthcare Waste Management:

Table 2 presents the knowledge of health workers regarding healthcare waste management. The table includes different statements related to categories of clinical waste, forms of infectious waste storage, amount of waste put in the container, rules and regulations about healthcare waste management, ways of disposal for communicable left-over, importance of color-coding segregation for healthcare wastes, reporting injuries, connecting correct methods of handling wastes with their color container, the requirement of typical chambers for storing medical waste, and the need for an annual plan for waste management.

The results show that 57% of health workers know less than five categories of clinical waste, while 43% know five categories. The majority of health workers, 71.5%, know that safety boxes or yellow plastic bags are used for storing infectious waste, while 28.5% know that strong black disposable plastic bags are used for the same purpose. Regarding the amount of waste put in the container, 88.3% of health workers know that the container should be ¾ full or less than ¾ full, while 11.8% think that more than ¾ full is acceptable. Moreover, 68.5% of health workers do not understand the existence of laws and regulations about healthcare waste management, while 31.5% know about them. Concerning the methods of discarding infectious left over, 95.5% of health workers know that incineration or burning is the correct method, while only 4.5% think that burying is the correct method. Furthermore, 91.3% of health workers know that color-coding segregation is important for healthcare wastes, while 8.8% do not consider it essential.

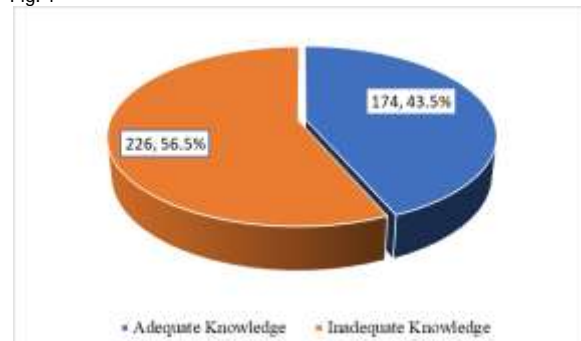
When it comes to reporting injuries related to healthcare waste management, 88.3% of health workers know that injuries need to be reported, while 11.8% do not know about it. Additionally, 94.5% of health workers can match the appropriate ways of handling wastes with their container color, while only 5.5% cannot do it. In terms of standard storage rooms required for healthcare wastes, 63.8% of health workers know that it is necessary, while 36.3% do not consider it necessary. Finally, 51.5% of health workers know that waste management needs an annual plan, while 48.5% do not know about it.

Table 2: Health workers' awareness of healthcare waste management

Statement	categories	Frequency	%age
How many different types of medical waste are there?	Less than five	228	57.0%
	Five	172	43.0%
What kinds of containers are utilised for infectious waste storage?	solid reusable plastic bags in black	114	28.5%
	the yellow poly bag or hazard container	286	71.5%
The volume of garbage inserted in the container	over 3/4 full	47	11.8%
	less than or equal to 3/4 full	353	88.3%
Do you know if there are any law or norms governing disposal of medical waste?	No	274	68.5%
	Yes	126	31.5%
Disposal method for infectious trash.	Burying	18	4.5%
	Incinerator/burning	382	95.5%
Is it crucial to separate healthcare wastes using colour?	No	35	8.8%
	Yes	365	91.3%
Injuries need to be reported.	No	47	11.8%
	Yes	353	88.3%
matching the waste disposal procedure to the colour of the container	No	22	5.5%
	Yes	378	94.5%
Do regular storage rooms need to be used for medical waste?	No	145	36.3%
	Yes	255	63.8%
Do we need an annual strategy for trash management?	No	194	48.5%
	Yes	206	51.5%

Ten knowledge-related questions were used to calculate the level of knowledge, and a score was generated for each respondent. After computing the scores for each respondent from the questions, the 50% score of ten investigations regarding knowledge was utilized as a cut-off point to indicate either adequate or inadequate knowledge. Of the 400 participants, 174 (43.5%) had sufficient understanding of health care waste management, whereas the remaining 226 (56.5%) had insufficient knowledge (Figure 1).

Fig. 1



Health Professionals' Waste Management Practices:

Table 3 presents the behaviour of healthcare professionals with reference to healthcare waste management. The table includes different statements related to the practice of recapping needles, discarding sharps inside safety boxes, frequency of use of gloves, use of other PPE, following color-coding, segregating wastes, and disposing of general and clinical wastes separately.

The results show that 86.3% of health workers practice recapping needles, while 13.8% do not. When it comes to discarding sharps inside safety boxes, 42.5% always discard sharps inside safety boxes, while 57.5% never do. Regarding the frequency of use of gloves, 78.8% of health workers always use

gloves, while 21.3% use them sometimes. Moreover, only 3.8% of health workers use other PPE, while 96.3% do not use them.

Concerning the practice of following color-coding, 89.5% of health workers practice following color-coding, while 3% sometimes practice it, and 7.5% do not practice it.

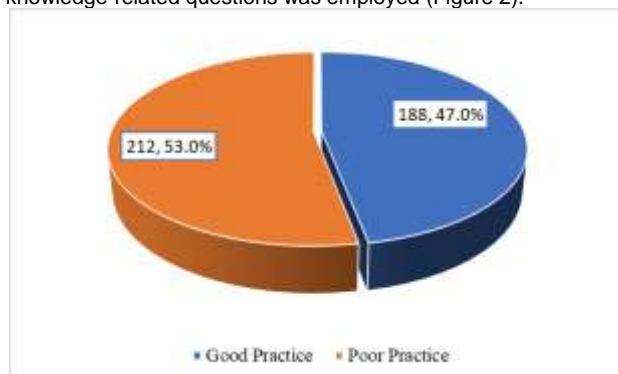
When it comes to segregating wastes, only 16.5% of health workers practice segregating wastes, while 83.5% do not practice it. Additionally, only 10.5% of health workers dispose of general and clinical wastes separately, while 89.5% do not do it.

Overall, the results indicate that there is a need for improving the practice of healthcare waste management among health workers. Some health workers do not follow proper practices, such as discarding sharps inside safety boxes, segregating wastes, and disposing of general and clinical wastes separately. Therefore, training and education programs should be implemented to enhance health professionals' familiarity with and use of healthcare waste management.

Table 3: Health Professionals' Waste Management Practices

Statement	Categories	Frequency	%age
Is recapping of needles practice?	Yes	345	86.3%
	No	55	13.8%
Do you discard sharps inside safety boxes?	Never	230	57.5%
	Always	170	42.5%
	Some times	85	21.3%
Do you use gloves frequently?	Always	315	78.8%
	Yes	15	3.8%
Follow other PPE	No	385	96.3%
	Yes	358	89.5%
Practice following color-coding	Some times	12	3.0%
	No	30	7.5%
	Yes	66	16.5%
Practice of segregating wastes	No	334	83.5%
	Yes	42	10.5%
Is general and clinical garbage disposed of separately??	No	358	89.5%

188(47%) of the 400 individuals had good practice, whereas 212(53%) had poor practice. Seven practice-related questions were used to calculate the respondents' level of practice, and each one resulted in a score. For the purpose of determining whether a practice was good or bad, a cut-off score of 50% on ten knowledge-related questions was employed (Figure 2).



DISCUSSION

43.5% of responders to this study had solid knowledge of handling medical waste. This result was greater than those of investigations carried out in Tanzania¹² and North West Ethiopia¹¹. These knowledge gaps may be the result of variations in basic professional and on-the-job training among health practitioners in these disciplines.

The practice of managing healthcare waste was shown to be more prevalent in this study (47%), compared to a study conducted in northern Ethiopia's Gondar town health facilities, where the practice was found to be 31.5%¹¹. The minimal level of practice demonstrated in this project may be a result of the previously

noted lack of understanding regarding healthcare waste management. Because past research has shown that one of the factors influencing practice is one's level of knowledge.

Age was shown to be substantially correlated with knowledge of healthcare waste management in this study. Yet, research conducted in Kabul, Afghanistan, revealed that HCWs between the ages of 31 and 39 had less expertise than those 30 years of age and younger¹³. Health professionals typically gain more experience and improve their expertise as they get older in their line of work.

The other variable that demonstrated a statistically significant difference was the professional category. As a result, compared to medical doctors, nurses, medical laboratory technicians, and doctors were more likely to have solid understanding of healthcare waste management. The results of various researches on the level of HWM knowledge among the various categories of professionals varied. According to a study done in Egypt, doctors were substantially more likely than nurses to have knowledge levels that were satisfactory¹⁴.

Another South African study revealed that nurses possess a higher level of knowledge than other medical specialists¹⁵. This discrepancy in health workers' knowledge may be caused by the different fundamental professional training programmes followed by the various categories, but more importantly, by the appropriate and ongoing on-the-job training provided for professionals. Health professionals have access of literature, resources and health literacy¹⁶⁻²¹.

Poor training facilities may be primarily to blame for the low level of knowledge and practice of healthcare workers about healthcare waste management. To address the low knowledge and bad practice on healthcare waste management, regular on-the-job refresher training and monitoring of health personnel are required.

Limitations of study: Short study period along with limited financial and human resources followed by lack of research culture added to limitations.

CONCLUSION

It was determined that most workers had inadequate knowledge of waste management and had poor practice on health care waste management. All employees must receive the appropriate training and supervision in HCW management, as well as pertinent and continuous in-service training, to ensure that they have the necessary information, attitudes, and safe practices.

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Conflict of interest: None

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