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Research Article

**EVALUATION AND ASSESSMENT OF PRACTICES ON
MEDICAL WASTE MANAGEMENT AMONG DOCTORS,
NURSES AND PARAMEDICAL STAFF OF DISTRICT
HEADQUARTER RAJANPUR****Dr Abid Hussain**
DHQ Hospital Rajanpur**Article Received:** February 2020**Accepted:** March 2020**Published:** April 2020**Abstract:**

Hospital waste management has become potentially harmful and considered as critical concerns in Pakistan. A study was carried out through cross sectional descriptive design at District Headquarter Rajanpur with aim to investigate the practices on medical waste management among secondary hospital health care professionals. A study comprised evaluation and assessment about medical waste management; the knowledge assessment, attitude assessment, practice assessment, segregation practice and hospital waste management disposal method. As a sample the 110 health care professionals were included; doctors, nurses and paramedical staff. Data was collected by administering a questionnaire as a tool of measurement to determine the waste management practices. The results uncover that the struggle for medical waste management practices and health care facilities are still unsuitable in government hospitals. Training courses should be implemented about healthcare waste management. Hence, the Institutions of Health care and the Ministry of Health should take radical steps and give more consideration about disposal of medical waste management. It was concluded that an adequate and proper system of medical waste management for handing and treatment should be practices in health institutions and hospitals as a recommendation to improve segregation practices.

Keywords: Knowledge assessment, Attitude assessment, Practice assessment, Segregation practice, Waste management disposal method.

Corresponding author:**Dr. Abid Hussain,**
DHQ Hospital Rajanpur

QR code



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INTRODUCTION:

Hospital waste management has become a critical issue as it poses potential health risks and damage to the environment. It is an issue that is taking central place in the national health policies of many countries. In developing countries, hospital wastes have not received sufficient attention. This is because, very often, health issues compete with other sectors of the economy for the very limited resources available. Thus, management of hospital waste end up not getting the priority it deserves. In many countries, hazardous and medical wastes are still handled and disposed together with domestic wastes, posing a great health risk to municipal workers, the public and the environment. Hospital waste must be separated from municipal waste, but in many parts of Africa it tends to be collected along with the rest of the waste stream. Most hazardous and toxic wastes are placed on landfills with few safeguards to protect nearby inhabitants and water sources from contamination. This is usually the case in developing nations [1]. Healthcare facilities provide multiple health services thereby producing huge amount of harmful biomedical waste. It is considered that one fourth wastes are hazardous among biomedical waste. Hospital administrators, specialists, doctors, nurses and other staff handling the waste should have knowledge specific to biomedical waste management. Similarly, the staff transporting the hospital waste should be properly skilled, equipped and know the possible dangers related to it. A study in the city of Karachi showed that approximately 100 tons of hospital waste is generated per day, out of which approximately 39% is infectious and 61% is general waste. No separate waste collection containers are being used and all the collected waste is dumped in commercial bins posing serious threats to the community [2]. Major sources of biomedical waste are laboratories, blood banks, hospitals, humans and animal research institutions, mortuaries, morgues centers, while the insignificant sources include dental clinics, beautifying clinics, medics and memorial services [3]. A study in Nepal revealed that mixing of hospital toxic waste with non-toxic municipal waste becomes potentially toxic, producing harmful environment and health impacts [4].

Globally the HCW is second hazardous waste after radiation waste [5]. Management of HCW is more significant due to its infectious nature and potential threats to cause the diseases. Health workers are only responsible for their proper dispose of therefore; their intensive knowledge in management of HCW is more important and proved significant results in different settings [6]. Statistics shows that the hospitals in Pakistan produce 250,000 tons of waste annually, of which 15 tons of waste is generated daily in the Punjab

province. The health care waste comprises only 15 to 20 percent, but when the health care waste is not properly managed and thrown or dumped with the municipal waste, it contaminates the entire lot. Studies from Pakistan show that approximately 1.35 kg/bed/day of waste/bed/day is produced on average in the hospitals [7]. The deadly waste produced by hospitals comprises the used syringes, bandages, glucose bottles, blood bags, contaminated swabs, human organs and other medical instruments. More infections are posed by the sharp objects that cause injury [8]. This improper disposal of waste is the main source for recycle of the waste by scavengers who collect and reuse that posed higher risk in disease transmission [9].

Similarly, World Health Organization (WHO) also highlighted the improper methodologies adopted by many developing nations for the poor disposal of hospital waste thereby creating unfavorable impacts on the environmental wellbeing [10]. Medical workers, particularly nurses and less likely housekeepers were marked as the staff at highest risk. Sharps, blades and recapping after using needles are considered the most common cause of the spread of blood-borne infections like HIV, Hepatitis B or C [11]. Waste segregation into different color-coded containers and then transferring to respective destinations could be a better management, causing least chance of contamination [12]. Doctors have a better theoretical knowledge whereas nurses have a much better practical knowledge in the field of hospital waste management. Regular on-job trainings on standard working procedures and practices for the enhancement of the compliance help to prevent the transmission of various infectious diseases [13]. Waste segregation and reduction at the source resulted in improvement of its management by getting less contact with the health workers [14].

Health workers are the vulnerable group that are more exposed to develop and spared of the diseases due to the improper waste handling. Their health is directly associated with proper handling and management of HCW, while the visitors and patients are also exposed and may develop the consequences [15]. The improper disposal of biomedical waste, open dumping and uncontrolled burning predispose to gets mixed with other waste, and contaminate whole waste Proper incineration is better option for the final disposal of waste. A common treatment facility looks to be the most promising option along with other technological options. Private sector involvement may benefit the system. Incineration of certain parts of the biomedical waste is necessary because this is the only accepted option to treat waste such as organs, tissues or amputated human body parts [16].

Moreover, a technically planned landfill can have added support the entire healthcare waste management system but an improper designed and managed landfill can be the lethal cause for ground water contamination. Proper landfills should be constructed and all incinerators working without filters and scrubbers should be immediately shut down. Bio-medical waste is produced during the laboratory procedures used for diagnosis, treatment and immunization of living being should also be treated [17].

MATERIAL AND METHODS:

A cross sectional study was conducted at District Headquarter Rajanpur, Pakistan. The convenient sampling technique was used to select the sample that was comprised; 47 doctors, 43 nurses and 12 paramedical staff. Those health professionals were included who were present at the time of data

collected and excluded who were medically not well and on leave. Self-structured questionnaire was employed comprising 36 items with six subscales; level of awareness, knowledge assessment, attitude assessment, practice assessment, segregation practice and hospital waste disposal method. The pilot study was conducted the measure the reliability of the research instrument. The Cronbach's alpha reliability .618 was assessed that was significant to use for the respondents. Initially, the permission was granted from Medical Superintendent and informed consent was taken from the health care professionals. After accomplishing this process, then a booklet of questionnaire was provided to them by ensuring that their information will be kept confidential. The collected data was entered into Statistical Package of Social Sciences (SPSS) and analyzed through descriptive statistics.

RESULTS:

Table 1: Distribution of Respondents According to Their Socio-Demographic Characteristics n=110

| Variables | Frequency | % |
|-----------------|-----------|------|
| Sex | | |
| Male | 46 | 41.8 |
| Female | 64 | 58.2 |
| Total | 110 | 100 |
| Position | | |
| Doctor | 47 | 42.7 |
| Nurse | 43 | 39.1 |
| Paramedical | 20 | 18.2 |
| Total | 110 | 100 |

Table 2: Distribution of Responses On Knowledge Assessment n= 110

| Variables Knowledge Assessment | Secondary Care Hospital Rajanpur N= 110 | Frequency | % |
|---|---|-----------|------|
| Knowledge about the hazardousness of hospital waste-whether hazardous | Yes | 93 | 84.5 |
| | No | 17 | 15.5 |
| Know segregation, collection, storage and handling | Yes | 103 | 93.6 |
| | No | 7 | 6.4 |
| Know the color coding of hospital waste | Yes | 107 | 97.3 |
| | No | 3 | 2.7 |
| Knowledge about the container bag colors | Yes | 106 | 96.4 |
| | No | 4 | 3.3 |
| Knowledge about the symbols of medical waste | Yes | 101 | 91.8 |
| | No | 9 | 8.2 |

Table 3: Distribution of Responses on Attitude Assessment n= 110

| Variables Attitude Assessment | Secondary Care Hospital Rajanpur N= 110 | Frequency | % |
|--|--|------------------|----------|
| Attitude about the collection of waste | Positive | 109 | 99.1 |
| | Negative | 1 | .9 |
| Disposal should be priority | Yes | 109 | 99.1 |
| | No | 1 | .9 |
| Waste disposal responsibility | Everyone | 86 | 78.2 |
| | Admin | 24 | 21.8 |
| Attitude about safe disposal of waste | Yes | 101 | 92.8 |
| | No | 9 | 7.3 |
| Knowledge of OT waste management | Yes | 92 | 83.6 |
| | No | 18 | 16.4 |

Table 4: Distribution of Responses on Practice Assessment n= 110

| Variables Practice Assessment | Secondary Care Hospital Rajanpur N= 110 | Frequency | % |
|---|--|------------------|----------|
| Practices of separate collection | Yes | 100 | 91.0 |
| | No | 10 | 19.0 |
| Practices of labeling infectious and non-infectious on waste bins | Yes | 103 | 93.6 |
| | No | 107 | 7.4 |
| Practices of disposed of items contaminated by blood | Red bag | 21 | 19.1 |
| | Yellow bag | 86 | 78.2 |
| | White bag | 1 | .9 |
| | Black bag | 1 | .9 |
| Practices to cut needles and head of syringes before disposal | Yes | 109 | 99.1 |
| | No | 1 | .9 |
| Provision of personal protective items by the hospital | Yes | 82 | 74.5 |
| | No | 28 | 25.5 |
| Hand washing practices | Yes | 98 | 89.1 |
| | No | 12 | 10.9 |
| Washing of waste collection containers | Daily | 67 | 60.9 |
| | Weekly | 12 | 10.9 |
| | When required | 31 | 28.2 |
| Method used to wash waste collection containers | Water | 41 | 37.3 |
| | Soda | 15 | 13.6 |
| | Detergents | 54 | 49.1 |

Table 5: Distribution of Responses on Segregation Practice n= 110

| Variables Segregation Practices | Secondary Care Hospital Rajanpur N= 110 | Frequency | % |
|---|--|-----------|------|
| Who segregate medical waste | Medical staff | 26 | 23.6 |
| | Cleaning worker | 17 | 15.5 |
| | Cleaning worker and medical staff | 57 | 51.8 |
| | Don't know | 10 | 9.1 |
| | Not applicable | | |
| Place of segregation | At the beginning near the source | 37 | 33.6 |
| | After waste is collected | 15 | 13.6 |
| | Waste storage place in hospital | 47 | 42.7 |
| | Don't know | 11 | 10.0 |
| Are containers identified and distinguished | Yes | 100 | 90.9 |
| | No | 3 | 2.9 |
| | Don't know | 7 | 6.4 |
| Are waste sacks subjected to tear | Yes, always | 41 | 37.3 |
| | Sometimes | 22 | 20.0 |
| | Rarely | 22 | 20.0 |
| | No | 13 | 11.8 |
| | Don't know | 12 | 10.9 |
| Are waste sacks fastened properly | Yes, always | 79 | 71.8 |
| | Sometimes | 21 | 19.1 |
| | Rarely | 2 | 1.8 |
| | No | 8 | 7.3 |
| | Don't know | | |
| Are their provisional measures to prohibit liquids running out from waste | Yes, always | 66 | 60.0 |
| | Sometimes | 27 | 24.5 |
| | Rarely | 6 | 5.5 |
| | No | 6 | 5.5 |
| | Don't know | 5 | 4.5 |
| Does your hospital segregate waste | Yes | 106 | 96.4 |
| | No | 4 | 3.6 |
| If yes into which categories | Infectious waste | 79 | 71.8 |
| | Pathological waste | 11 | 10.0 |
| | Chemical / pharmaceutical waste | 15 | 13.6 |
| | None of the above | 2 | 1.8 |
| | | 3 | 2.7 |
| How does your hospital segregate sharps | Use of safety box | 82 | 74.5 |
| | Puncture proof containers | 19 | 17.3 |
| | Plastic bags | 9 | 8.2 |
| | Empty fluids containers | | |
| Does your hospital color code | Yes | 102 | 92.7 |
| | No | 8 | 18.3 |
| How does infectious waste segregated | Use of plastic bags | 49 | 44.5 |
| | Steel containers | 9 | 8.2 |
| | Disinfectant containers | 20 | 18.2 |
| | | 32 | 29.1 |
| | | | |

Table 6: Distribution of Responses on Waste Disposal Method n= 110

| Variables Waste Disposal Method | Secondary Care Hospital Rajanpur N= 110 | Frequency | % |
|--|---|-----------|------|
| Which method of waste disposal is practiced in your hospital | Incineration method | 64 | 58.2 |
| | Land disposal / burning method | 41 | 37.3 |
| | Recycle method burying | 3 | 2.7 |
| | Water way disposal method | 2 | 1.8 |
| Where does your disposed medical waste | Dumping in incorporate bin | 32 | 29.1 |
| | House to house waste collection | 5 | 4.5 |
| | Authorized hospital waste collection cites | 58 | 52.7 |
| | Municipal waste disposal site | 15 | 13.6 |

DISCUSSION:

In Pakistan, Biomedical waste management is still considered as one of the public health challenges to control hazardous infections. A cross-sectional study was conducted. Data was collected through self-structured questionnaires from DHQ Hospital Rajanpur. 46 males and 64 females were interviewed. 47 doctors, 43 nurses and 20 paramedical staff responded to the questions. Knowledge about the hazardousness of hospital hazardous waste was 84%. Knowledge about segregation, collection, storage and handling was 94% [18]. Knowledge about color coding of hospital waste was 97%. Knowledge about the container bag colors was 96%. General knowledge was almost up to the mark. Attitude about waste disposal responsibility was 78%. Attitude about safe disposal of waste was 92%. Attitude toward OT waste management was 84%. Overall attitude looked on average line. Practices of labeling infectious and non-infectious on waste bins were 94%. Practices of disposed of contaminated items regarding red, yellow, white and black bag were 19%,78%,1% and 1% respectively which is suboptimal and shows orientation gaps [19]. Waste can be mishandled. Adaptations of PPE were 74%. Infections can be transmitted in humans. Hand washing practices were 89% which supposed to be 100%. Practices about washing of waste collection containers were suboptimal. Standard methods were not optimally used to wash waste collection containers.

Waste material segregation practices were 24% and 16% among medical and cleaning staff respectively. Waste sacks subjected to tear probability responded by 37%. The provisional measures to prohibit liquids running out from waste usually followed 60% [20]. Safety boxes were used 74% to segregate hospital sharps that potentiate risk to transmit blood-borne diseases. Disinfectant containers were used 18% to segregate infectious waste. Incineration method was used in 58% cases which is reliable and safe method. Dumping

methods were followed in 29% cases. To cut long story short, some of the respondents were not confident about the knowledge of hospital waste. Some of respondents reflected their attitude problems in study. Practices were not up to the mark in the study. It was also found through the study that there were training issues. The standard of knowledge, attitude and practices in this study are below the considerable level acceptable to assure infection safety in patients and healthcare workers.

CONCLUSION:

This study disclosed the aspects of medical waste management in hospital in different domains among doctors, nurses and paramedical staffs. Insufficient consideration was examined in these particulars; knowledge about medical waste management, attitude toward hospital waste, practice assessment, segregations practice and method of disposal for waste management. Through proper evaluation and assessment about hospital waste management, the several flaws and deficiencies were identified among health care professionals. The Ministry of Health must ensure to improve the proper management of medical waste through paying attention on formation of policies for waste management practices. Moreover, it is needed to provide training on regular basis, consistency in providing education to staffs and evaluation and assessment should be performed on periodic basis to examine waste management practice.

REFERENCES:

1. Alice, T. E., Akhere, A. D., Ikponwonsa, O., & Grace, E. (2013). Knowledge and practice of infection control among health workers in a tertiary hospital in Edo state, Nigeria. *Direct Res J Health Pharm*, 1(2), 20-27.
2. Arab, M., Baghbani, R. A., Tajvar, M., Pourreza, A., Tajvar, M., Omrani, G., & Mahmoudi, M. (2008). Report: The assessment of hospital waste management: a case study in

- Tehran. *Waste management & research*, 26(3), 304-308.
3. Chaerul, M., Tanaka, M., & Shekdar, A. V. (2008). A system dynamics approach for hospital waste management. *Waste management*, 28(2), 442-449.
 4. Fayaz, S. H., Higuchi, M., Hirosawa, T., Sarker, M. A. B., Djabbarova, Z., & Hamajima, N. (2014). Knowledge and practice of universal precautions among health care workers in four national hospitals in Kabul, Afghanistan. *The Journal of Infection in Developing Countries*, 8(04), 535-542.
 5. Ferreira, V., & Teixeira, M. R. (2010). Healthcare waste management practices and risk perceptions: findings from hospitals in the Algarve region, Portugal. *Waste management*, 30(12), 2657-2663.
 6. Janjua, N. Z. (2003). Injection practices and sharp waste disposal by general practitioners of Murree, Pakistan. *Journal of Pakistan Medical Association*, 53(3), 107.
 7. Joshi, H. D. (2013). Health care waste management practice in Nepal. *Journal of Nepal Health Research Council*.
 8. Khan, M. R., Fareedi, F., & Rashid, B. (2006). Techno-economic disposal of hospital wastes in Pakistan. *Pak J Med Res*, 45(2), 41-5.
 9. Kumar, R., Gorar, Z. A., Ahmed, J., Ali, Z., Chandio, A. K., Magan, M., ... & Somrongthong, R. (2013). Assessment of health care waste management practices and knowledge among health care workers working at tertiary care setting of Pakistan. *Journal of Health Research*, 27(4), 233-236.
 10. Kumar, R., Khan, E. A., Ahmed, J., Khan, Z., Magan, M., Nousheen, N., & Mughal, M. I. (2010). Healthcare waste management (HCWM) in Pakistan: current situation and training options. *Journal of Ayub Medical College Abbottabad*, 22(4), 101-106.
 11. Mattoo, A. M., Hameed, S., & Butt, A. M. (2019). Healthcare Waste Management: Current Knowledge, Attitude and Practices "A Study at Secondary and Tertiary Care Hospitals". *Pakistan Journal of Medical Research*, 58(4), 187-192.
 12. Njagi, A. N., Oloo, A. M., Kithinji, J., & Kithinji, J. M. (2012). Knowledge, attitude and practice of health-care waste management and associated health risks in the two teaching and referral hospitals in Kenya. *Journal of community health*, 37(6), 1172-1177.
 13. Qadir, S., Akhtar, M. N., Hassan, M. U., Ahmad, I., Naeem, H., & Rehman, O. U. (2014). Study of hospital waste disposal practice in a tertiary care hospital. *Gomal Journal of Medical Sciences*, 12(2).
 14. Rau, E. H., Alaimo, R. J., Ashbrook, P. C., Austin, S. M., Borenstein, N., Evans, M. R., ... & Jacobsohn, A. P. (2000). Minimization and management of wastes from biomedical research. *Environmental Health Perspectives*, 108(suppl 6), 953-977.
 15. Rehman, M. U., Shahab, S., Malik, R., & Azim, W. (2001). A study of waste generation, collection and disposal in a tertiary hospital. *Pak J Med Res*, 40, 13-7.
 16. Rn, A. U., & Yahaya, M. N. (2014). Hospital Waste Management Practices: A Case Study of Primary Health Care Centers, In Fagge Local Government Area, Kano State. *Journal of Nursing and Health Science (IOSR-JNHS)*, 3(6), 26-33.
 17. Saini, S., Das, B. K., Kapil, A., Nagarajan, S. S., & Sarma, R. K. (2004). The study of bacterial flora of different types in hospital waste: evaluation of waste treatment at AIIMS Hospital, New Delhi. *Southeast Asian Journal of Tropical Medicine & Public Health*, 35(4), 986.
 18. Sutha Irin, A. An analytical study on medical waste management in selected hospitals located in Chennai city. *Environ Waste Management and Recycling*. 2018; 1 (1): 5, 8.
 19. Tenglikar, P. V., Kumar, G. A., Kapate, R., Reddy, S., & Vijayanath, V. (2012). Knowledge attitude and practices of health care waste management amongst staff of nursing homes of Gulbarga city. *J Pharm Biomed Sci*, 19(12), 1-3.
 20. Wassermann, D. (1999). A decade of change in clinical waste treatment and disposal in Scotland. *Health estate*, 53(10), 6-8.