ORIGINAL ARTICLE

ASSESSMENT OF HOSPITAL WASTE MANAGEMENT IN AYUB TEACHING HOSPITAL, ABBOTTABAD

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Background: Hospital waste is the type of waste which has great potential of creating variety of health problems including infections and injuries. Health care waste management is a vital part of hygiene and infection control within a hospital and an appropriate management of waste proves effective in controlling nosocomial hospital acquired infections. This study was carried out to assess the hospital waste management practices at Ayub Teaching Hospital (ATH). **Methods:** This descriptive cross sectional study was carried out from April to October 2013 at different units of Ayub Teaching Hospital, being selected by convenient sampling technique. Data was collected by means of a questionnaire which was then computed into statistical information (tables), using SPSS software and results were interpreted. **Results:** Majority of the respondents were nurses with no training on health care waste management. There was no segregation at point of source or at transportation. 68% of waste handlers were not using any kind of protective clothing. Even being provided with safety boxes, 50% of the units were not using it. As regards to healthcare waste management practices, there was absolute gap between theory and practice. **Conclusion:** Healthcare waste management is a community problem. Lack of knowledge, training and strict supervision by administration is significantly associated with ill management of waste. Our findings pointed to upgrading nurses' knowledge and practice in relation to management of health care waste after implementation of the program.

Keywords: Waste management, waste segregation, hospital waste

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INTRODUCTION

Waste produced in various human activities has become unsettling in recent years, particularly those produced in health care institutes. Waste management is the generation, prevention, characterization, segregation, monitoring, treatment, handling, reuse and residual disposal of wastes. Health care waste is the waste produced from all human or animal health care actions, together with home care and field work. It has been classified into five groups: a) infectious, b) chemical, c) radioactive, d) common and E-piercing and cutting.[1–3]

Hospital waste is the type of waste with high potential of creating variety of health problems including infections and injuries.[4,5] Hospital wastes include risk waste and non-risk waste.[6] Health care waste management is a vital part of hygiene and infection control within a hospital and an appropriate management of waste proves effective in controlling nosocomial hospital acquired infections. All individuals exposed to improperly manage health care waste are at risk of being injured or infected. The most vulnerable groups include doctors, nurses, sanitary staff and hospital upholding workforce. Patients under treatment in the health care facilities, their visitors and the general public are also at risk of being injured or infected through health care waste.[7]

Despite the high level of waste generation from the hospital sources and their health implication, emphasis on waste generation and its management has not gained importance which it deserves.[8] Hospital waste management is the use of techniques for the appropriate disposal of hospital waste.[9] In developing countries, awareness regarding hospital waste management in terms of segregation, collection, storage, transportation is lacking.[6,10] Many hospitals plainly dump all their wastes collectively from reception area trash to operating room waste without any segregation whereas in most cases, some hospitals use incinerators but these medical waste treatment technologies have not been cost-effective enough to deliver the wastes safer, cleaner and harmless in the environment.[11] Mishandling of waste is expected to have serious public health consequences and lethal effects on the environment.[5,10] One fourth of the waste produced by health care services is considered dangerous, with potential risks for the health care providers and the community.[12] Meeting the standards to generate, use, store, treat and disposal of waste can be difficult and expensive. Even if the guidelines are far-reaching and are intricate to apply, the complete and documented accord with the applicable regulations is obligatory to assure personnel and environmental safety. Individual health care institutes should make their own policies and procedures for waste handling in accordance to their requirements.[10] This study was carried out to assess the management of waste produced at Ayub Teaching Hospital Abbottabad.

MATERIAL AND METHODS

This cross sectional descriptive study carried out from April to October 2013. The Ethical Review Board of Ayub medical college Abbottabad, Pakistan approved the study. The respondents in wards and sanitary staff were selected by convenient sampling from all the wards of Ayub Teaching Hospital. The study was conducted at Ayub Teaching Hospital, which is a 1000 bed tertiary care hospital with wide spectrum of health care services. Questionnaire was developed on scientific literature and having both closed and open ended questions. It was used to collect information from administration and from the responsible staff of the units; i.e., nurses and senior registrars.

For observation of practice, the observation checklist was developed for wards and incineration department. This was designed to evaluate the availability of equipment, its use and the practice of doctors and nurses towards safety precautions.

Statistical analysis was performed using the Statistical Package for Social Science (SPSS) version 16. Continuous data were displayed as the mean±standard deviation (SD), while the categorical and nominal data will be presented as frequencies and percentages.

RESULTS

Out of the total 35 wards, in 20 wards persons responsible for disposal of ward waste were staff nurses (57.1%), in 6 wards, the responsible person were registrars (17.1%) and in 9 wards, other persons (25.74%) were responsible. Twenty (57.1%) of the respondents said that they keep a record of waste generated in their ward while 15 respondents (42.9%) kept no record of the waste generated. Only one person (2.9%) in 35 had received training on management of hospital waste in last one year. 54.3% respondents said that there is a monitoring system on sanitary staff regarding waste disposal while 45.7% said that there is no monitoring system. A total of 51.4% received feedback from the administration and 48.6% received no feedback.

In 24 (68.6%) wards no identification points were used for the segregation of harmful waste from non-harmful waste. 11 (31.4%) were separating harmful and non-harmful waste by using identification points. In 30 (85.7%) wards there were no color coded containers for risk and non-risk waste and only in 5 (14.3%) wards there was use of different colored bags for hazardous and non-hazardous waste. 60% wards showed there were no separate trolleys for transport of risk and non-risk waste. Only 14 (40%) wards were transporting risk and non-risk waste separately in trolleys. In 30 (85.7%) wards these trolleys were not properly covered and only 5 (14.3%) wards were covering the trolleys. In 65.7% wards, there was no protective clothing available for the sanitary staff and only 34.3% wards were providing the protective clothes to the sanitary staff while handling the hospital waste. A total of 17 out of 35 (48.6%) wards were using safety boxes for disposal of needles and syringes while in 18 (51.4%) wards there was no use of these safety boxes. (Table-1)

A significant number of participants 15 (42.9%) suggested that rules and regulations should be applied, 7 (20%) participants each suggested that seminars should be arranged to teach the staff and that administration should be strict upon workers to improve the waste management. Six (17.1%) participants gave suggestions other than mentioned above.

Table-1: Questionnaire of hospital survey (n=35)

	Yes (f/%)	No (f/%)
Record keeping of waste generation	20 (57.196)	15 (42.9%)
Received training regarding hospital waste in last one year	1 (2.9%)	34 (97.1%)
Monitoring system on sanitary staff	19 (54.3%)	16 (45.7%)
Received feedback from administration regarding hospital waste	18 (51.4%)	17 (45.7%)
Identification points for segregation of waste	11 (31.4%)	24 (68.6%)
Presence of different color coded containers	5 (14.3%)	30 (85.7%)
Risk and Non-Risk waste dumped in separate containers	14 (40%)	21 (60%)
Usage of Protective Clothing by staff	11 (31.4%)	24 (68.6%)
Trolleys properly covered	5 (14.3%)	30 (85.7%)
Protective clothing available for sanitary staff	12 (34.3%)	23 (65.7%)
Transportation of Risk and non-risk wastes in separate trolleys	11 (31.4%)	24 (68.6%)
Availability of safety boxes for needles and syringes	25 (71.4%)	10 (28.6%)
Safety boxes for needle and syringes being used	17 (48.6%)	18 (51.4%)

Figure-1: Incharge ward waste disposal

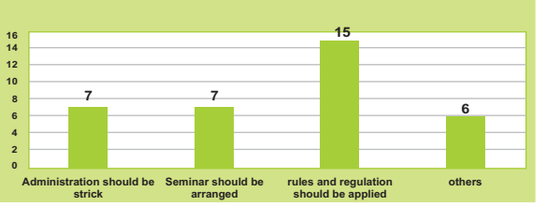

Figure-2: Response of participants

DISCUSSION

The study described the results of the key informants interviews and observations of the staff, availability of equipment, their use and practical implementation of standards at different units made during the visits to hospital with regard to the hospital waste management practices at ATH. It also highlighted the requisite and achievability of the training of the staff and strict application of rules and regulations defined by the hospital administration. Among the health workers in hospitals, nurses play a key role in the management of health care waste, as they are responsible to segregate the waste and store it in the proper bins at the point of generation. In order to professionally fulfill their responsibilities, it is important that they have ample knowledge about the importance of segregation and how to distinguish the different containers for the various types of health care waste, the hazards of hospital waste, proper techniques and methods of handling the waste, and practice of safety measures. Proper disposal practices can go a long way towards the safe disposal of hazardous hospital waste and protect them, their patients, the community and the environment.[13]

Practices depend upon compatible education and training, which in turn are complimentary. Education without training is irrational, whereas training without education is superfluous. All employees in hospital handling and managing clinical waste need to be trained in safe procedures to lower the risks to human health and to be able to deal with spillages, accidents and other emergencies.[14] The study showed that 97% of staff did not receive training in the last one year. This indicates the need to scaling up of HCWM formal training programme. The importance of detailing[15] specific information on HCWM by way of training is reiterated with this finding. Most of the surveys regarding HCWM in South East Asian Countries also have identified the lack of training as the main reason for poor HCWM.[16,17] Studies from similar resource limited situations also reveal that trainings of hospital staff with proper follow up can lead to improved HCWM practices within the health facilities.[18] Our results are consistent with other supporting studies which have also highlighted importance of knowledge and awareness of HCWM among hospital staff. Surveys from hospitals from major tertiary care hospitals in Karachi suggested that hospital staff was not aware about the HCWM practices especially with respect collection storage and disposal.[10]

Segregation of healthcare waste into risk and non-risk entities at the point of generation and its identification is the key to its minimization and effective management. The waste sorted into color coded plastic bags or containers: yellow bag for risk waste, yellow container for sharps and white bag for non-risk waste.[21,22] But a significant percentage in this study showed that there was neither segregation of waste nor use of any color coded containers for dumping risk and non-risk waste separately.

Since medical waste is designated as hazardous waste, a system is required for its management including transport.[23] Our study revealed that there were no dedicated trolleys or containers for the off-site transport of waste from different units. Sanitary staff in wards was found transporting waste in trolleys, which were not covered, to the central dump area and incinerator. Some staff was observed carrying containers and bag in their hands with no concept of taking precautionary measures to protect themselves. This finding is in compatibility to studies conducted in Faisalabad and other developing countries.[7,24]

CONCLUSION

The overall findings of this study indicated that the majority of wards did not apply the recommended healthcare waste management protocols put by WHO. Moreover, the current healthcare waste management practice in units was improperly managed and can pose a risk for human health workers and the environment.

REFERENCES

1. Pereira MS, Alves SB, Souza ACS, tipple AFV, Rezende FR, Rodrigues EG. Waste management in non-hospital emergency units. Rev. Latino-Am. Enfermagem 2013;21:259–66
2. Ministry of Health (U.S.). National Agency Health Surveillance. Resolution RDC No. 306 of 07, 2004. Provides for technical regulation for the management of health services. Brasilia (BR): Ministry of Health; 2004
3. Ministry of Environment (BR). National Environmental Council. Resolution 358 of April 29, 2005. Provides for the treatment and disposal of waste from health services and other matters. Brasilia (BR): Ministry of Environment; 2005
4. Run-dong Ll, Yong-feng NIE, Raninger B, Lie WANG. Options for Healthcare Waste Management and Treatment in China. Chinese J Pocess Engn 2006;6(2):261–6
5. Safe management of waste from health care activities. Geneva: WHO; 1999. [Internet] 1999 [cited 2014 June 13]. Available from: http:www.who.int/injection_safety/toolbox/docs/en/waste_management.pdf
6. Ather S. Hospital waste management. J Coll Physicians Surg Pak 2004;14:645–6
7. Samarakoon MASC, Guwanawardena NS. An evaluation of heath care waste management in base hospitals of Colombo district. J Coll Comm Phys Srilanka

2011;16(2):15–20
8. Anwar O, Malik N, Asim M. Evaluation of hospital waste management in public and private sector hospitals of Faisalabad city, Pakistan. J Indisip Stud 2013;2(2):161–6
9. Mahmood M, Shahab S, Malik R, Azim W. A study of waste generation, collection and disposal in a tertiary hospital. Pak J Med Res 2009;40:13–7
10. Rasheed S, Iqbal S, Baig LA, Mufti K. Hospital Waste Management in the Teaching Hospitals of Karachi. Pak J Med 2005;55(5):192–5.
11. Jiang C, ren Z, Tian Y, Wang K. A case study of application of best available technologies on medical wastes disposal/treatment in China. Procedia Environ Sci 2012;16:257–65
12. Basu M, Das P, Pal R. Assessment of future physicians on biomedical waste management in a tertiary care hospital of West Bengal. J Nat Sci Biol Med 2012;3(1):38–42
13. Pandit, N.A., S.A. Tabish and G.J. Qadri, 2007. Biomedical Waste Management in a Large Teaching Hospital. JK-Practitioner, 14(1): 57-59.
14. Badesha JS. Hospital Waste Management -1. Bristol: Environmental Toxicology Centre, University of Bristol. 1995; p 1.
15. Haniffa R. Health care waste managemt - A Sri Lankan perspective. Ceylon Med J 2004;49(3):91-93.
16. Hassan MM, Ahmed SA, Rahman KA, Biswas TK. Pattern of medical waste management: existing scenario in Dhaka City, Bangladesh. BMC Public Health 2008;8–36.
17. Saini S, Nagarajan SS, Sarma RK, Knowledge, Attitude and Practices of Bio Medical Waste Management amongst Staff of a Tertiary Level Hospital in India. J Acad Hosp Admin 2005;17(2):1–12.
18. Al-Khatib IA, Al-Qaroot YS, Ali-Shtayeh MS. Management of healthcare waste in circumstances of limited resources: a case study in the hospitals of Nablus city, Palestine. Waste Manag Res 2009;27:305–12.
19. Ilyas M. Public Health and Community Medicine. 7th ed: Karachi: Time Publishers, 2006; 275–81
20. Rao SKM, Ranyol RK, Bhattia SS, Sharma VR: Biomedical Waste Management: An Infrastructural Survey of Hospitals: Delhi: MJAFI: 2004; 60 (4):379–82.
21. Asghar S, Parveen S, Haq MU, Masood K: Quality System Procedure for Waste Management Plan. INMOL, 2005;11–4.
22. Jang YC, Lee C, Yoon OS, Kim H. Medical waste management in Korea. J Environ Manag 2008;107–15.
23. Sayed SHE, Zakaria AM, Gheith NAR. Intervention Program for Nurses about Health Care Waste Management. IJMMS 2012:7(1): 25–37.
24. Yasmeen T, Islam F, Amin S, Ali S, Abbas F, Virk R *et al.* Assessment of hospital waste management constraints and related environment issues in Faisalabad. IJAR 2013;1(10):482–94.

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