Introduction

- Hospital waste is defined as “any waste which is generated in the diagnosis, treatment or immunization of human beings and animals in research pertaining thereto or in the production or testing of biologics.”
- There are many categories of medical waste.
- There are many categories of medical waste, which are: infectious, non-infectious, pharmaceutical, medical, and radioactive. Between 75-90% of the waste produced by healthcare providers is non-risk waste. The remaining 10-25% of healthcare waste is regarded as “hazardous waste” and may create a variety of health risks (WHO-2004).
- In Pakistan, despite the existence of theremedies of Pakistan, the biomedical waste management system has been well established in various health institutions; they are concerned health professionals about the situation resulting there. So the disposal of hospital waste is a serious problem in Pakistan (MEH Khan 1998).
- This study also aims to look into the problem of waste management by considering the existing cost and to assess the management of such type of studies are not available in Pakistan in which comparing the cost of waste management practices between public and private sector hospitals.

Objectives

1. To review the current waste management practices in terms of types of waste and quantities of waste generated as well as waste handling and disposal practices in Pakistan Institute of Medical Sciences and Shifa International Hospital.
2. To analyze the current waste management practices at Shifa International Hospital in comparison to Pakistan Institute of Medical Sciences for last one year.
3. To recommend policy measures based on results of this study.

Literature Review

According to World Health Organization (2004), contaminated needles and syringes present a particular threat as these are scavenged from waste areas during the day. The study conducted in Pakistan in 1995, it was estimated that in year 2000, injections with contaminated syringes caused 21 million Hepatitis B virus infections in developing countries. (35-65%) as compared to private hospital (0-50%).

According to Dr. Fazali Hakim Khattak in his article on Hospital Waste Management in Pakistan, the disposal of hospital wastes is an extremely serious problem. It was specially realized during this study that there was no storage facility for infectious waste at all in both hospitals which is an alarming situation. It was also noted that there was a big difference of waste generation rate between Shifa and Pakistan Institute of Medical Sciences.

Comparison of Manpower

Although Pakistan Institute of Medical Sciences is bigger hospital than Shifa International but there is no much difference in staff strength involved in waste management between two hospitals. If we relate the staff to the total bed capacity of both hospitals then it becomes 43.81% for Shifa International Hospital and 26.34% for Pakistan Institute of Medical Sciences (PIMS). This shows that more personnel are involved in waste management practices in Shifa as compared to PIMS. It may be a factor contributing to better waste management practices in Shifa International Hospital.

Comparison of Waste Management Practices

The practices of segregation, collection, transportation and disposal of medical waste are better in Shifa International Hospital than Pakistan Institute of Medical Sciences.

Comparison of total recurrent cost

Comparison of expenditures incurred on waste management system in PIMS and Shifa International Hospital shows that much of the expenditure is incurred on manpower in form of salaries (33.99% in ShIFA and 57.07% in PIMS). In Pakistan Institute of Medical Sciences (PIMS) 3.58% of expenditures are incurred on outside incinerator by disposal method. It is a considerable amount, to the contrary, comparatively much less amount of expenditure is spent on incinerator in Shifa International Hospital (0.13% of total). It may also contribute in enhanced cost-effectiveness of waste disposal.

Discussion

The results of this study showed that the practices of segregation, collection, transportation and disposal of medical waste were better in private sector hospital than public sector hospital. The reasons may be lack of awareness about medical waste management, lack of appropriate policy and laws and implementation and lack of willingness among the employees of public sector. There is also lack of monitoring of personnel involved in handling of hospital waste. It was personally observed during practices of hospital waste handling by the involved personnel that during inside transportation of medical waste, the trolleys were overloaded with waste by the medical waste handlers. In Pakistan Institute of Medical Sciences Infectious waste is disposed of outside the hospital by incineration method which is transported to the hospital by Rawalpindi by a firm named National Cleaner Protection Centre. It was personally observed during the transportation of medical waste from charge of hospital to the hospital which is transported by a small vehicle (Suzuki pick up) was being used for transportation of medical waste having very limited capacity and the infectious waste was being loaded by force inside the plastic bags. It indicates the carelessness and lack of interest of waste handlers in their work. More generation of infectious waste by Shifa International hospital may be due to the non-availability of incinerator in the hospital premises.

Methodology

Data Sources

Data was collected from hospitals by field visits on different occasions. Field work was carried out with the objectives to have an idea about the different waste management practices between public and private sector hospitals, the amount of health care waste generation is the increasing use of disposable items, nature, volumes, and the field work was carried out in both hospitals.

Data collection tools

Standardized check list and an extensive questionnaire were used to get information about practices of segregation, collection, transportation, disposal and total cost involved for last one year.

Data Analysis/Results

Data was entered into excel sheet and percent values were calculated and then these percent values were converted into figures. Results of the study shows that more personnel are involved in waste management practices and expenditures involved are presented under different headings as follows:

<table>
<thead>
<tr>
<th>Source</th>
<th>Non-Infectious waste</th>
<th>Infectious waste</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>PIMS</td>
<td>54.5%</td>
<td>45.5%</td>
<td>100%</td>
</tr>
<tr>
<td>Shifa</td>
<td>66.5%</td>
<td>33.5%</td>
<td>100%</td>
</tr>
</tbody>
</table>

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In this study, an attempt has been made to assess the current waste management practices in a public sector tertiary care hospital and a private sector tertiary care hospital. It was specially realized during this study that there was no storage facility for infectious waste at all in both hospitals which is an alarming situation. It was also noted that there was a big difference of waste generation rate between Shifa and Pakistan Institute of Medical Sciences.

Conclusions

Following steps are necessary for proper functioning of a Waste Management System.

1. Before an action plan is implemented responsibility must be delegated to an appropriate government authority. The Ministry of Environment will usually serve as the principal authority, and should work closely with other relevant ministries. The designated authority should cooperate with other ministries, the private sector, non-governmental organizations (NGOs), and professional organizations, as necessary, to ensure implementation of the action plan.
2. A comprehensive survey is essential for planning an effective waste management system. In addition to the number of hospitals and bed occupancy rate for each health-care establishment, types and quantities of waste generated, personnel involved in the management of health-care waste, and current hospital waste disposal practices, including segregation, collection, transportation, storage, and disposal methods. The survey should also include on-site observations and interviews with health or support workers at different levels. The information collected will provide a basis for formulating a strategy.
3. The appointed government agency should identify resources that will ensure a national network of disposal facilities for hospital waste, accessible by hospital and other health care facilities.
4. Current development guidelines for medical waste, which should be supported by legislation that regulates their application. This law is usually based on international agreements and underpinning principles of sound waste management practices.
5. In order to achieve acceptable practices in health-care waste management and compliance with regulations, it is essential for all managers and other personnel involved to receive appropriate training. To this end, the central government should assist in preparation of “train the trainer” activities, and competent institutions or centers for the trainers’ program should be identified.
6. Periodic monitoring and assessment by the responsible national government agency. In addition, the recommendations on treatment methods should be regularly updated to keep pace with new developments.
7. The time limit for implementation of remedial measures should be specified and the head of the establishment should be informed the follow-up dates. In the case of off-site waste treatment facilities, incinerator operator and landfill operators should also be audited. Periodic review of waste management practices by the national government agency and the health care establishment should result both in improved protection of public health and in enhanced cost-effectiveness of waste disposal.

Recommendations

In this study, an attempt has been made to assess the current waste management practices in a public sector tertiary care hospital and a private sector tertiary care hospital. It was specially realized during this study that there was no storage facility for infectious waste at all in both hospitals which is an alarming situation. It was also noted that there was a big difference of waste generation rate between Shifa and Pakistan Institute of Medical Sciences.

- **Introduction**
- **Methodology**
- **Data Sources**
- **Data Analysis/Results**
- **Comparison of Manpower**
- **Comparison of Waste Management Practices**
- **Comparison of total recurrent cost**
- **Discussions**
- **Recommendations**

**References**


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