

MANAGEMENT OF DENTAL WASTE IN A DENTAL HOSPITAL OF LAHORE

MUSHTAQ A, ALAM M, SHAHID IQBAL AND SOHAILA MUSHTAQ
de, Montmorency College of Dentistry and Institute of Public Health, Lahore – Pakistan

ABSTRACT

It is a descriptive study based on personal observations at Punjab Dental Hospital, Lahore carried out over a period of two weeks. A structured checklist was made to collect the data regarding the management of Dental hospital waste and filled in by observation. Final analysis was made with the help of Epi info 2002 statistical package. There was no categorization and segregation of infectious waste at the point of origin. Bags and containers for infectious waste were not marked with Biohazard symbol. White bags were not available for the general waste. There is no incinerator, storage site and landfill sights in the dental hospital. Transportation of waste within the hospital is through open baskets. Dental Hospital sends its infectious waste to the Children Hospital Lahore for incineration twice a week. Amalgam/mercury, X-ray developer and fixer waste were drained through main sewage system. Sanitary workers are not provided with the protective clothing, gloves, masks and shoes. Waste management at Punjab Dental Hospital is not satisfactory. Interest and motivation in hospital waste management is lacking. The administration is required to play its role.

INTRODUCTION

Hospital is a place of almighty, a place to serve the patient. Since beginning, the hospitals were known for the treatment of sick persons but there was no awareness about the adverse effects of the waste produced.¹ On one hand hospitals cure patients and on the other hand they emerged as a source of several other diseases. Surprisingly, until recent times, not enough attention has been paid to the disposal of hospital waste.² Hospital waste is often described as any residual matter, solid or liquid that is generated in the diagnosis, treatment or immunization of human beings or animals.³ Dental Waste is included in hospital waste.⁴ It is of two types, liquid waste and solid waste.⁵ They are further classified into two main groups, non-risk waste and risk waste. Risk waste is infectious waste and hazardous waste.⁶ Infectious waste contains a great variety of pathogenic microorganisms. Hazardous waste contains metals that are toxic and never degrade once they reach the environment. It consists of silver, lead, mercury, X-rays and cleaning solutions.⁷

Bio medical waste is not a simple issue but had an effect like biological weapon or a bomb. Biomedical waste management means the disposal of waste produced by hospitals using such techniques that will help to check the spread of disease through it.⁸ Appropriate measures should be taken to minimise hazardous waste where possible.⁹ Dental waste is regulated under medical waste control regulations in most countries.¹⁰ The waste material

should be suitably disposed off immediately, otherwise it can become a public health hazard.⁵ Even though the quantity of hazardous waste in solid wastes is small in proportion, there is still cross infection risk and potential danger for environment associated with mismanaged waste.¹⁰ In developing countries most of the public health problems are due to defective sewerage and waste disposal. Pakistan is also facing such problems. Hospital wastes are simply mixed with the municipal waste in collecting bins at road side. In fact only 15% of hospital waste is hazardous. When it is not segregated at the source of generation and mixed with non-hazardous waste, then 100% hospital waste becomes hazardous.^{8,11} Appropriate measure should be taken to minimise hazardous waste when possible or take action to ensure that all generated waste is disposed of in accordance with environment legislation.¹²

It has been observed that in most of the Dental Health facilities, the guidelines for proper management of dental waste are not adopted or they are not up to the prescribed standard. This situation leads to the injurious production of hazardous dental waste which is not only sometime fatal for concerned health personnel and more for patients but also evenly contributes to the pollution of the environment. It ultimately results in the production of a lot of biological as well as environmental hazards. In the light of above mentioned facts, this study will be conducted to have baseline information regarding the management of dental waste in

the Punjab Dental Hospital, Lahore and recommend to improve the strategies of managing the dental waste.

METHODOLOGY

Study Design: A cross sectional descriptive study was conducted to assess the management of dental waste at Punjab Dental Hospital Lahore.

Study Universe: Punjab Dental Hospital.

Study Population: All departments of Punjab Dental Hospital Lahore. It is a referral hospital providing advanced diagnostic and treatment facilities in all the dental specialties. There are two shifts in the hospital i.e. morning and evening. More than 200 employees are working in this hospital in different categories, but there are only 10 sweepers, who are responsible for waste collection and transportation in both the shifts.

Data Management: A structured checklist was made that was filled in by observation. Data obtained was processed and analyzed by Epi info statistical package.

RESULTS

Punjab dental hospital is a specialized, teaching hospital catering about 620 outdoor patients daily. Hospital policy for dental waste management was not available. There was no specific waste management plan in black and white. Hospital did not have any storage standardization policy. There were no clearly defined procedures for collection and handling of waste from specified units in the hospital. There was no biomedical waste storage room and there was no ash store either. Similarly landfill sights were not available.

Waste X-ray developer was not collected in separate bottles. Similarly waste X-ray fixer was not collected in separate bottles. Frequency of waste collection was once per day in the evening. There was no record register provided at place of generation. Segregation of waste at source was not carried out. General waste was not collected in white plastic bags. However infected waste was collected in yellow plastic bags and sharps were collected in puncture resistant red containers. There was no separate service for disposal of infectious waste.

Transportation of waste within the hospital was through open baskets and no waste route designation was mapped out. Mode of transportation of waste outside the hospital was through special vehicle. No pre-treatment procedure was carried out before disposal and no measures to reduce quantity of waste were available. Dental waste was accessible to scavengers and hospital staff and outsiders were involved in scavenging. Protective

gears and instructions about their use were not provided. Similarly protective clothing was not provided to the waste handlers and likewise strong footwears were not provided to them. Workers were not vaccinated against tetanus and hepatitis B.

Punjab Dental Hospital, Lahore is the member of hospital waste management and incineration programme at the Children Hospital, Lahore and sends its infectious waste to the Children Hospital, Lahore for incineration. A special truck collects waste bags from the Punjab Dental Hospital twice a week.

DISCUSSION

In Pakistan like many other developing countries, the disposal of infectious waste is a growing problem and if it is not managed in a sustained way it will make the situation worse. As hospital waste management policy is a pre-requisite to the initiating and ultimate disposal of hospital waste, it is very surprising to know that hospital policy for dental waste management is not available in the Punjab Dental Hospital. However manual / guideline document on waste management issued by the Health Department is available. There is no co-ordination with pollution control boards. Similarly hospital does not have any storage standardization policy. It is apparent that any such major operation like hospital waste management requires a lot of monetary basis but in Dental Hospital no funds are spent on hospital waste management and funds are not available for it. However waste bags are provided by the Children Hospital.

There is no waste management team notified in the Punjab Dental Hospital, Lahore. Only one Deputy Medical Superintendent has been given the responsibility for carrying out this task. He manages it with the help of sanitary workers. The waste management staff does not have job descriptions detailing their tasks. In waste management limited staffing is one of the most significant problems. Post of Assistant Engineer Biomedical does not exist. If a proper team is constituted and a full liaison exists among different level of team members, this can be of immense help in the implementation of a waste management policy.

One major environmental impact from the practice of dentistry results from the unwanted release of elemental mercury and mercury-containing amalgam from dental clinics to ultimate drainage into the sewerage. Mercury is a persistent, toxic contaminant and it accumulates in the tissue of fish. High concentrations of mercury in fish pose serious health risks to people and wildlife that consume them. In order to maintain a clean environment, it is necessary to reduce the amount of mercury entering the sewage system or the garbage.

Amalgam particles should be captured by screens and traps or filters and should not enter in the sewage system.

As far X-ray fixer is concerned, we know the fact that X-ray fixer is considered a hazardous waste because of its high silver content. Developer solutions should not be mixed with fixer solutions. The resulting solution is hazardous. The fixer can be recycled and the developer can be sewerred. At Punjab Dental Hospital, waste X-ray developer and waste X-ray fixer are not collected in separate bottles, rather they are wasted through main waste water sewage system, therefore posing health threats it needs revolutionary changes in the ultimate fate of X-ray fixer.

It was observed that during transportation the waste spill over on the way and was also seen scattered around creating a lot of nuisance in the surrounding atmosphere. It was also observed that the sweepers were not wearing protective clothing, thus they were at risk of contracting infection. The sweepers transport the waste collected in the departments once only at the end of their duty. There is no storage suite in the Punjab Dental Hospital, Lahore. Yellow bags are kept near the main gate for more than 72 hours as the special vehicle from Children Hospital picks these bags twice a week. We know that waste should not be kept in yellow bags for more than 48 hours.

Measures to reduce quantity of waste are not available. It is very surprising to observe that mixed infectious waste is kept in the open place behind the main building of the hospital near the boundary wall and general waste is taken to the main dustbin of Lahore Municipal Corporation situated outside the hospital so dental waste is accessible to scavengers, birds and rodents. Outsiders are involved in scavenging. There are a number of studies linking the use of reused syringes to spread hepatitis B, hepatitis C and AIDS.

After analysing the results of study it is **concluded** that Hospital (Dental) waste management at Punjab Dental Hospital is not satisfactory. Interest and motivation in hospital waste management is lacking from the administrative side. There is no proper hospital waste management policy and plan. There is acute shortage of sanitary workers as compared to workload. No posts of sanitary inspector and Bio medical engineer exist in the hospital. Equipment and basic supplies are not available in sufficient quantities to fulfill the requirements.

RECOMMENDATIONS

1. Punjab Dental Hospital should have an approved hospital waste management policy and plan.

2. There should be a hospital waste management team / committee for the implementation of hospital waste management policy/plan.
3. There should be post of sanitary inspector.
4. No. of posts of sanitary workers should be increased for effective hospital waste management.
5. A post of Bio medical engineer or hospital waste officer should be created.
6. There should be on going training of staff involved in the segregation, collection, transportation and disposal of waste.
7. There is dire need of segregation of waste at source besides following colour code system of waste management.
8. Reasonable amount of fund must be provided for waste management.
9. Universal precautions should be adapted while dealing with hazardous and infectious waste.

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