

A Critical Analysis on Hospital Waste Management at Bandipur Hospital, Bandipur, Tanahu District, Nepal

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ABSTRACT

Background: Hospitals generate large volumes of wastes as a by-product of a variety of health services and procedures carried out such as surgery, dressing of the wounds, dialysis, deliveries, laboratory and dental procedures, postmortem procedures etc. Such a waste may be infectious or non-infectious. If such a waste is not collected, transported and disposed off, it not only results in causation of ‘Hospital Acquired Infections’ but also poses a major public health hazard by causing pollution of air, water and soil.

Objective: This study objective was to critically analyze current waste management system in Bandipur Hospital, Tanahu District, Nepal and critically review the findings.

Methods: For the critical analysis on waste management, literature review on hospital waste management was done. The techniques used for critical analysis were observation using observation checklist and interview with hospital manager, doctors, staff nurses, and local people living nearby the hospital. Tool of this critical analysis was SWOT analysis.

Results: It can be seen from SWOT analysis that, most of the waste of the hospital is not managed in an appropriate way. Appropriate segregation and disposal of biodegradable and non biodegradable, infectious and non-infectious wastes is important to avoid health hazards caused by poor waste management such as vector borne diseases, pollution of air, water and soil contamination. In Bandipur Hospital, waste disposal is not according to WHO standard. Physical infrastructures do not meet the requirements. Available dustbins are not according to WHO color coding, no basin at Emergency room, no trolley to carry waste and open dumping practice. The reason behind most of these problems is the management of the hospital, staffs of the hospital and the stakeholders who are not giving any attention to proper waste management process. The other reason beyond this is inadequate budget allocation for waste management in the hospital.

Conclusion: If the waste management of the hospital is done properly, environment of the hospital will become clean and hospital can provide quality health services to the patient. For this there is necessity of strong committment from the hospital management, the hospital staffs, hospital development committee and the Government.

Keywords

*Bandipur Hospital,
Hospital waste,
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INTRODUCTION

Hospital waste is a special type of waste produced in small quantities carrying a high potential of infection and injury. Inadequate and improper handling may have serious public health consequences and a significant impact on the environment¹. Hospital waste management means the management of waste produced by hospitals using techniques that will check the spread of diseases². In developing countries, awareness regarding hospital waste management in terms of its segregation, collection, storage, transportation and disposal is lacking³⁻⁶. Hospital waste refers to all waste generated, discarded and not intended for further use in hospital. Biomedical waste is any solid fluid and liquid or liquid waste including its container and any intermediate products which is generated during the diagnosis, treatment or immunization of human beings or animals, in research pertaining there to or in the production or testing of biological or animal waste from slaughter houses or any other similar establishment. In hospital, it comprises of 15% of total hospital waste⁷⁻¹².

Classification of hospital waste

1. **General waste:** It is non-hazardous to human beings. Largely composed of domestic or household type of waste. E.g. kitchen waste, papers, wrappers, plastics etc.
2. **Pathological waste:** It is hazardous waste consisting of tissues, organs, body parts, human fetus, blood and body fluids etc.
3. **Infectious waste:** It is hazardous waste containing pathogens in sufficient quantity that could cause disease. E.g. culture and stocks of infectious agents from laboratories, waste from surgery and infectious patients.
4. **Sharps:** Material causing the person a cut or puncture of the skin. Eg. Broken glass, needle, nail, blade, and scalpel etc.
5. **Pharmaceutical waste:** Includes pharmaceutical products, drugs and chemicals that have spilled, returned from ward, outdated or contaminated.
6. **Chemical waste:** Comprises of discarded solid, liquid and gases chemicals. E.g. Cleaning, housekeeping and disinfecting product.
7. **Radioactive waste:** Includes solid liquid and gases waste that is contaminated with radio nucleoids and generated from *in vitro* of body tissues and fluids, *in vivo* body organ imaging and tumor localization.
8. **Genotoxic waste:** Waste containing substances with genotoxic properties E.g. waste containing cytostatic drugs (often used in cancer therapy), genotoxic chemicals.
9. **Pressurized containers:** Gas cylinders, gas cartridges, aerosol cans.

Rationale of hospital waste management

Hospital waste management is a part of hospital hygiene and maintenance activities. In fact only biomedical waste is hazardous and when hazardous waste is not segregated at the source of generation and mixed with non-hazardous waste then 100% waste becomes hazardous. It is essential that health care waste is collected, stored and disposed of in a proper and scientific manner. General hygiene is a prerequisite for good medical waste management in health care institutions. It is also vital that the whole health care institutions be kept clean and on a satisfactory state of hygiene. Bandipur hospital is nearby Bandipur bazaar and the hospital waste is disposed openly and burned down. The hospital is not having separate placental pit and they are burying the placenta under the sand bank. The hospital is not following the system of dumping the waste in dust bins as per the color coding given by WHO. There is lack of segregation practices. Though hospital has sufficient space within its premises for management of wastes, the waste management is poor. For this reason, I felt that the hospital has much room for improvements in terms of management of hospital waste. Hence, I decided to explore the strengths, weaknesses, opportunities and threats regarding the waste management of Bandipur Hospital.

OBJECTIVES

General objective

To critically analyze current waste management system in Bandipur Hospital and critically review the findings

Specific objectives

- To identify the infrastructure for waste management in Bandipur Hospital
- To evaluate the quality in terms of its strength and

weaknesses of waste management by comparing it with a standard

METHODS

For the critical analysis on waste management literature review on hospital waste management was done. The techniques used for critical analysis were observation using observation checklist and interview with doctors, staff nurses, and local people living nearby the hospital. Method of this critical analysis was SWOT analysis.

RESULTS

Findings and comparisons

Physical facilities

There is no incinerator in the hospital. There are no placental pits. There is a dumping site nearby the hospital approximately 50 meter away from the hospital.

Human resources

There are five sweepers in the hospital which are inadequate for cleaning of the hospital.

Logistics

Table 1: Waste management logistics in Bandipur hospital

Infrastructures	Bandipur hospital
Placental pits	Absent
Dumping sites	Present
Dustbins for separation of waste	Absent
Incinerator	Absent
Basins	Present but not maintained
Drainage for liquid waste	Present
Tractor for carrying waste to dumping site	Absent
Color coding containers	Absent

As it can be seen from the table that most of the necessary logistics required for the waste management is not available. Tractor for carrying the solid waste from the hospital to the dumping site is absent. Incinerator is absent in the hospital. Liquid waste is managed by disinfecting them first in sodium hypochlorite and then flowed into the

wash basin. The dumping site is nearby the market place approximately 50 meter away from the Hospital. Safety box for syringe disposal is not present at all; however, the syringes are cut in the needle cutter and burnt down after use. In the emergency room there are dustbins for the collection of wastes but not color coded and there are no wash basins.

SWOT Analysis Matrix

Table 2: SWOT matrix for hospital waste management in Bandipur hospital

Infrastructure	STRENGTH	WEAKNESS	OPPORTUNITY	THREATS
Dumping site	Present	- Quite near to the hospital - Not walled from any side	- Management of safe and secure area by the help of community for management of healthcare waste	- Community denial for help
Space	Present	- Inadequate space - Lack of adequate fund for land purchase	- Land can be managed in collaboration with community people	- Local residents may not support
Trolley		- No trolley	- Trolley can be purchased - Tractor can be taken on lease	
Tractor		- No tractor	- Tractor can be purchased or can be taken on lease	
Dustbins and puncture	- Adequate dustbins present	- Dustbins are not according to WHO color coding - Degradable and non degradable waste are not separated - Infectious and non-infectious waste are not separated; Not covered - Available dustbins are not in use - Puncture proof containers are not present	- WHO color coded dustbins implementation can be done - Staff can be trained to separate infectious and non infectious and degradable and non degradable waste	- Dustbins not used properly by patient and visitor due to lack of awareness
Plastic bags		- Are not available	- It can be purchased	
Special autoclavable bags		- Not present	- Can be purchased	
Recording and reporting		- Not present	- Maintenance of record registers - Advanced software for management of records	- Skilled manpower may not be present to operate the software

Equipments				
Autoclave/ steam sterilizer	- Present	- Not used for sterilizing waste	- Collaboration with community & NGOs and INGOs to buy more autoclaves	- Helping organization may not be able to help consistently
Chemical disinfectants	- Liquid wastes are disinfected with sodium-hypochlorite solution			
Needle destroyer	- Present	- Insufficient number	- More needle destroyers can be purchased	- Availability of needle destroyers maybe limited
Manpower				
Sweepers	- Present	- Not sufficient in number Not trained	- Training of concerned staff can be done	- Inadequate trainers and training materials
Waste handlers		- Not present	- Hiring waste handlers on contract basis	
Waste management committee		- Not present	- Establishment of waste management committee	- Lack of coordination among committee members
Plan & policies				
Waste management policy	- Solid waste management policy present (National level)	- No special legislation, guidelines related to waste management	- Establishment of comprehensive system of healthcare waste management	- Political instability
Financial issues				
Budget resources		- Hospital income insufficient Lack of sufficient fund	- Collaboration with waste recyclers	- Chances of misutilization of budget

It can be seen from above tool used as SWOT analysis that, most of the waste of the hospital is not managed in an appropriate way. Appropriate segregation and disposal of biodegradable and non biodegradable, infectious and non-infectious wastes is important to avoid health hazards, and this hospital did not do so. In Bandipur hospital waste disposal is not according to WHO standard. Physical infrastructures do not meet the requirements. Available dustbins are not according to WHO color coding, no basin at Emergency room, no trolley to carry waste and open dumping practice. There is also under utilization of logistics such as dustbins.

DISCUSSION & CONCLUSION

Bandipur Hospital has a large catchment area. Due to high patient flow waste produced in the hospital is also

in greater amount. Due to poor waste management in the hospital it will create bad effects not only to patients but also to doctors, hospital staffs and the residents nearby the hospital. This can ultimately increase the disease burden in the Tanahu District. The reason behind most of this problem is the management of the hospital, staffs of the hospital and the stakeholders who are not giving any attention. The other reason beyond this is inadequate budget allocation for waste management in the hospital. Similar type of study done in a Teaching hospital in Karachi Shahida Rashid¹³ *et al* shows that waste management is not done in a proper way where segregation of biodegradable and non-biodegradable waste was not done. A study done by Choudhary¹⁴ *et al* and Paudel¹⁵ *et al* showed that health care waste management practice in the hospitals of Nepal were unsatisfactory because of the lack of waste management plan and carelessness of patients, visitors and staffs.

If the waste management of the hospital is done properly, environment of the hospital will become clean and hospital can provide quality health services to the patient. For this there is necessity of strong commitment from the hospital management, the hospital staffs, hospital development committee and the government.

Recommendations

A separate placental pit should be constructed. Waste management should be done far away from the town of Bandipur. Dustbins should be maintained according to the WHO coding standards. All dry refuse from hospital should be burnt in an incinerator.

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