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The Study on Hospital Waste Management Practices Among the Different Hospitals of Bheemdatta Municipality of Kanchanpur District, Far-Western Region, Nepal

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Abstract

Background: Hospital waste refers to the wastes generated by healthcare facilities, from their departments like laboratories, pathology, nursing, surgical, mortuary & autopsy & various other units in either solid or liquid form which can be either general non-hazardous waste, hazardous waste, infectious waste toxic or radioactive waste. The proper management of healthcare waste is essential to prevent from the adverse outcomes that the improper waste can cause to deteriorate the health of human beings, animals, hospital patients etc. It also forbids the possibility of infectious disease spreading, & greatly reduces the risk to public health. Hospital wastes are dangerous for each & every life in the earth thus, they need to be managed safely with proper plan, policy that helps to make environment hygienic, infection free & clean.

Objectives: The overall objective of this study is to identify the hospital waste management practices among the different hospitals.

Methodology: A cross sectional study was conducted in the hospitals of Bheem dutta municipality of Kanchanpur district where the convenience hospital staffs were selected & used to collect the data. The total sample size of 81 is taken which by using non-probability convenience sampling by considering limited time, resources & accessibility. Structured questionnaire was used as a major tool for this study.

Result: According to the data analyzed, it is found that all the hospitals have proper HCW management plan & each of them follows it too but, only 66.7 percentages are following 3R technique, 71.6 percentages of staffs are satisfied with the waste management in the hospitals, 70 percentages have awareness regarding the nature & risk of the waste they handle daily, and only 56.8 percentages of the hospitals are following the WHO recommendation in waste management.

Conclusion: Although having a proper HCW management plan by a hospital is not being sufficient for waste management in a hospital because of lack of strict adherence to the rules, no strict policies from the municipality & government, lack of ample fund with the hospitals & lack of proper knowledge on safe

handling of wastes along with lack of awareness on staff about the consequences of improper waste handling it is becoming a crucial for the hospitals to manage the wastes properly.

Keywords: Hospital Waste, Biomedical, Autoclave, Nosocomial infection

Introduction

Hospital waste are generated by healthcare facilities, from their departments like laboratories, pathology, nursing, surgical operation, mortuary & autopsy, blood bank & various other units in either solid or liquid form. The waste generated is either a general, non-hazardous waste or an infectious, toxic, or radioactive waste. Healthcare activities are performed to save-guard, cover & restore the life of people but the wastes generated from such activities are becoming the leading cause for ensuring the adverse health and environmental impacts on our mother Earth & human lives along with animals, microorganism, & hospital patients. But, what about the waste generated by hospitals & their by-products? It's management is becoming a hurdle in all around the globe but has caused more challenge in developing countries like ours Nepal too.

Globally, proper waste management practices are still lacking in implementation all over the areas although the regulations and plans have been made. (3) As latest data, 1 in 3 healthcare facilities in a world is still not safely managing the hospital waste. (1) There are still deficiencies in practices and solutions to reduce the healthcare waste and its impact on health of human and environment. Especially, after the COVID-19 pandemic the hospital waste generation load has increased tremendously which generated 143 tons of additional waste only in a form of syringes, needles & safety boxes. (4) In context of Asia, issue regarding the proper management of healthcare waste exists due to large population of Asian developing countries, high rates of urbanization and high financial need to manage it in a proper way & their failing to implement the proper waste management practice. (1)

Although the rules and regulations are formulated by government of Nepal but still they are not being implemented in accordance to the guidelines by all the hospitals for management of their wastes which is again creating the pathetic environment for us to live due to our own deeds.(2) So, there should be proper and strict implementation, evaluation of the policies and plans formulated & the monitoring should be done by authorized body regularly and identify the areas for improvement that are creating the hindrances on proper implementation of the plan. (6)

Objectives

The objectives can be discussed as:-

General objectives

The general objective of this study was to identify the hospital waste management practices among the different hospitals in Kanchanpur district.

Specific objectives

1. To identify the practices pattern adopted by the hospital regarding the hospital waste management.
2. To inspect whether the management is being done as recommended by WHO and concerned guidelines or not
3. To find out the awareness on hospital staff about the hazard of improper waste management

4. To find out the best way that can be adopted by hospital for proper waste management in accordance to their need & feasibility

Research questions

a) Are the hospitals following the healthcare waste management practices as recommended by WHO or national authority not?
b) What is level of knowledge and awareness regarding the proper waste segregation, storage and disposal to the hospitals?

Methodology

Study type: It was a Quantitative research methodology was used for this study.

Research design: Cross-sectional study design was used for this study.

Study area: The study area was kanchanpur district of farwest Nepal.

Study population: Hospital staff in concerning departments of hospitals

Sample size: A sample size of 81 health personnel from Mahakali Provincial Hospital, Mantra Hospital and Shital Hospital of Kanchanpur district in Farwest region of Nepal was taken for this study. As this place was semi Urban area there were only three hospitals. So only 81 respondents were taken for the study.

Sampling technique: Non-probability convenience sampling was used considering the limited time, resources and accessibility

Study duration: The study duration was approximately 2 months (May-July 2023)

Data collection tools: Interview based structured questionnaire were duly used as a major tool for this study.

Data analysis: Thus collected data were entered in to MS-Excel 2016 and those data were transferred in to SPSS version 25 and were analyzed.

Ethical considerations: Following ethical considerations was duly considered in this study: -

- Confidentiality of the respondents
- Voluntary participation of the respondents
- Informed consent of the respondents.

Findings

In this chapter different data was calculated and finding or the results was calculated out. The finding should have the direct linkage with the specific objectives of the study.

Disposal of the plastic and saline bottles in the hospital:

Table 1: disposal of plastic and saline bottles

Indicators	Frequency	Percentage
by burning	7	8.6
disposing them to proper area	16	19.8
in plastic container	20	24.7
municipal vehicle	10	12.3
municipality vehicle	10	12.3
Recycling	3	3.7
sold to vendors for recycle	15	18.5
Total	81	100.0

The table above shows the different results of the plastic and saline bottles disposal. According to the table, it can be seen that most hospital uses plastic containers to dispose the plastic and saline bottles i.e (24.69%) followed by disposing them to proper area (19.75%) and selling it to vendors for recycling (18.52%) & lowest numbers of the hospitals practice recycling (3.70%).

Waste management practice as recommendation of WHO:

Indicators	Frequency	Percentage
yes	46	56.8
no	35	43.2
Total	81	100.0

Table 2: Waste management as per WHO

The table above shows the different results of the waste management practices of the hospitals as in accordance to the recommendation of WHO or not, in which it is found to be as according to the recommendation of WHO is (56.8%) & not in accordance is of (43.2%).

Awareness on hospital staff about the hazard of improper waste management

Indicators	Frequency	Percentage
yes	70	86.4
no	11	13.6
Total	81	100.0

Table 3: Awareness of hospital staff

The above table shows about the awareness on the part of hospital staff about the hazards of improper waste management. The data here shows that greater number of the hospital staff have proper awareness about the hazards that arises from mishandling of waste i.e. (86.4%) whereas the fewer staff are still unaware about the consequences of improper waste management i.e. (13.6%).

Time for waste scheduled to pickup from the hospitals

Indicator	Frequency	Percentage
daily	76	93.8
Any other	5	6.2
Total	81	100.0

Table 4: schedule for waste pick up

The above table shows data about the time scheduled for waste to pickup from the hospital whether it's on regular basis or not where, it is found that (93.8%) of hospitals have daily waste pickup facilities whereas only (6.2%) has other schedule to pick up the hospital waste which is either in a week or a month.

Waste carrying vehicle the hospital is using to carry a waste

Indicator	Frequency	Percentage
Separate	0	0
Same	81	100.0
Total	81	100.0

Table 5: waste carrying vehicle

The above data shows about the vehicle that a municipality uses to carry the wastes where it is shown that all the hospitals uses the municipality vehicle to carry the hospital waste i.e.(100.0%) whereas none of the hospitals have their own personally owned waste carrying vehicle.

Vaccination to the hospital staff against Tetanus, Hepatitis B

Indicator	Frequency	Percentage
Yes	49	60.5
No	32	39.5
Total	81	100.0

Table 6: vaccination to staff12

The above data shows about the vaccination in the hospital to the hospital staff where it is found that, (60.5%) of the hospital staff are vaccinated against the tetanus, Hepatitis B & (39.5%) of the hospital staff are still not vaccinated against these diseases.

Hospitals following 3R (Reuse, Reduce, Recycle) technique

Indicators	Frequency	Percentage
yes	54	66.7
no	27	33.3
Total	81	100.0

Table 7: use of 3R technique

The above data is about the use of recycling, reusing & reducing techniques used in the hospitals where it is found that (66.7%) uses 3R technique in the hospitals & rest (33.3%) have no such techniques used in their hospitals.

Use of color coded containers in the hospitals to segregate waste

Indicators	Frequency	Percentage
yes	81	100.0

Table 8: use of color coded containers

The above data is about the use of different color coded containers in the hospitals to segregate the various hospital wastes, where it is found that all (100%) hospitals uses it to segregate their waste.

Hospitals having proper Healthcare Waste Management Plan

Indicators	Frequency	Percentage
Yes	81	100.0

Table 9: HCW management plan

The above data shows that, all the hospitals have proper healthcare waste management plan of theirs for wastes proper collection, segregation, and disposal of a waste to reduce the unnecessary wastage.

Hospitals following the proper Healthcare Waste Management plan

Indicators	Frequency	Percentage
yes	81	100.0

Table 10: Following HCW management plan

The above data shows about the hospitals having the proper healthcare waste management plan where it can be seen that all the hospitals in the Bheem dutta municipality have proper HCW management plan.

Satisfaction of staff with the hygiene & waste management in the hospitals

Indicators	Frequency	Percentage
very satisfied	58	71.6
Somewhat satisfied	23	28.4
Total	81	100.0

Table 11: satisfaction with hygiene & waste management

The above data shows about the satisfaction of hospital staff with the hygiene maintained and the waste management of the hospitals they are working in, where it is found that higher number of the staff are very satisfied i.e.(71.6%) & (28.4%) are somewhat satisfied.

Hospitals having autoclaves with them

Indicators	Frequency	Percentage
Yes	63	77.8
No	18	22.2
Total	81	100.0

Table 12: hospitals with autoclaves

The above data shows that (77.8%) of hospitals have autoclaves with them whereas the (22.2%) doesn't have autoclaves.

Barriers in implementing proper Healthcare waste management plan

Barriers in implementing proper HCW management plan		
Indicators	**Frequency**	**Percentage**
disposing them to proper area	7	8.64
lack of government support	4	4.94

lack of infection control	7	8.64
lack of knowledge and awareness	36	44.44
lack of proper policy and guideline	15	18.52
lack of proper policy for sharp waste management	6	7.41
lack of strict municipality policy	3	3.70
low fund	3	3.70
Total	**81**	**100.00**

Table 13: barriers in proper HCW management

The above data shows that lack of knowledge and awareness is the main barrier creator in managing the healthcare waste properly i.e.(44.44%), followed by lack of proper policy and guidelines & others like lack of government support, lack of strict municipality policy.

Discussion

Despite being a severe problem and having very hazardous nature, causing a lot of negative consequences there is still lacking the proper measures for healthcare waste management in Bheemdatta municipality hospitals which needs to be major concern for all related sectors but, sadly it has not been anything like that. The data analyzed above clearly shows that, still there is lack of proper awareness among the staffs, management for proper handling of waste and managing the wastes in an appropriate manner. Only having a proper healthcare waste management plan isn't being okay for the hospitals where they are being unable to strictly implement the plan in the practicality and that is leading to the problem.

All the hospitals have proper HCW management plan & they follow it up to certain extend but still they have inability in owning the autoclaves within their hospitals as only 77.8 percentages of have it and rest lacks. On practice of hospitals for encouraging hospital waste minimization, mostly the hospitals are seen to use separation of waste properly in color coded containers as according to data i.e.(45.7%), followed by segregating waste as according to the government set guidelines i.e. (18.5%) creating awareness about waste handling (13.6%), reducing the use of plastic bags, practical teaching to the staff about proper handling & others. Although majority of hospital staff i.e. (93.8%) have proper knowledge regarding the safe handling of waste materials still they aren't following it in practicality. Only (40.7%) of hospitals are using the separate route for waste transportation from hospital to avoid passage of waste through patient area which can cause the infection to patients & visitors. (8)

All the hospitals in the Bheemdatta municipality uses municipality vehicle to carry the wastes from hospital to disposal area i.e.(100%). The rate of vaccination to staff working in the hospitals along with waste handling is also seen low as only (60.5%) of staff are vaccinated against tetanus, Hepatitis B & other infectious disease from which we can conclude that the staff working on handling the wastes aren't fully secured & safe. For the disposal of sharp wastes majority of the hospitals are using needle destroyer i.e. (45.7%), followed by disinfecting technique i.e. (18.5%) & other like dumping in proper places.

Only about half percentages i.e.(56.8%) of hospitals are following the recommendation and guidelines of WHO in healthcare waste management process & rest of (43.2%) are managing wastes in their own way

without any standard guidelines. From the data above, the main barriers enlisted for not creating proper healthcare waste management is lack of proper knowledge to the staff and lack of proper policies & guidelines i.e. (19.8%) followed by lack of awareness of hazards being created by the improper handling of the wastes i.e. (14.8%) along with other measures like lack of government strict policies, lack of government support, low finances with hospitals etc. Moreover, the municipality has also no proper standard guidelines, policies created that needs to be maintained by the hospitals for waste management, waste segregation process.

On analyzing the data of minimizing the problem of improper HCW management and creating the well organized and systemized process for waste handling and managing the waste properly to decline or minimize the consequences of improper management, mostly there is need of creating awareness on the hospital staff for proper waste handling & providing them knowledge about the hazardous consequences of wastes i.e. (19.8%), followed by legislating strict municipality policies and guidelines for hospitals in which they can adhere & follow to minimize mismanagement of wastes i.e. (17.3%) from municipality, & others like providing training to all the staff about handling wastes, applying 3R technique to reduce the quantity of waste generated, government aids etc.

Major factors contributing for the improper healthcare waste management is lack of proper implementation of policies, lack of formulation of the policies specific to hospitals that are suitable for the implementing them practicality & no strict guidelines regarding the waste management by government & municipalities.

Conclusion and recommendations

Conclusion

Hospital waste management is a significant environment and social obligation, & hence requires a proper plan along with practical implementation in reality to reduce the negative consequences of the improper waste management. The plans should be made in a standard protocol in order to do effective waste disposal.

From above study and data analysis, we can conclude that, even though all the healthcare facilities are having a healthcare waste management plan but still they are unable to implement it properly which results as a critical problem. The proper healthcare waste management is still not being able to be practiced and the positive results are not achieved. There is scarcity of enough finance with the hospitals to own the incinerators, & other machines for proper waste management. The staffs are still not able to differentiate the wastes properly and are handling the wastes without any safety guidelines and measures. There is still no separate route for transmission of hospital waste from avoiding the patient and visitors area which creates a high risk of infection. All the hospitals are using the municipal vehicle to carry the hospital waste and don’t have their own personal vehicle to transport the waste. Municipality also lacks the concern for proper waste management in the Bheemdatta municipality as it hasn’t formulated any specific guidelines for waste segregation, collection and disposal, and lacks the proper management. The hospital staffs are also not fully vaccinated against the tetanus, Hep.B and other diseases that may be transmitted from the mishandling of infectious waste.

There seems to have bottlenecks in proper handling and management of hospital wastes like lack of standard guidelines that are strictly adhered to follow, lack of awareness among the waste handling staff, lack of adequate finances and no use of recycling, reusing, and reducing techniques to minimize the wastes which needs to be addressed by the government and municipality by formulating the strict policies and

providing awareness & education among all the waste handling staff for making them know an efficient way of handling the hospital wastes.

Recommendation

Hospital waste management is a significant environmental and social obligation, that needs to be achieved for making the hospitals clean, hygienic, and infection free along with meeting the criteria and standard set by WHO to be recognized as a having the hospitals providing qualitiable services and meeting the international standard by competing in global service market. The findings of the present study addresses the need for the effective policies, awareness and education along with training the staffs on proper waste handling to solve the problem arising from improper healthcare waste management.

As per the findings following recommendations are given:

• Proper policies should be made by government regarding healthcare waste management
• Municipality should undertake strict actions for implementing the guidelines set by it
• Awareness should be provided to hospital staffs, visitors, and the community people regarding the consequences of improper waste management
• Hospital waste handling staffs should be given training for proper handling of the wastes
• Emphasis should be given on reuse, reduce and recycling of wastes
• Government should provide aid to the hospitals for installing the incinerators
• Passage route of waste and patient & visitors should be separated
• All the hospitals should strictly follow their plan in practicality too
• All the hospital staff should be vaccinated compulsorily

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