



AN ECONOMIC ANALYSIS OF HOSPITAL WASTE MANAGEMENT IN DINDIGUL CITY

Dr.V.Suriagandhi¹, G.K.Rubini², T.Karthicpriya³

¹Assistant Professor Department of Economics,

Sri Meenakshi Govt. Arts College for Women (A), Madurai, India.

²Ph.D.Research Scholar, Department of Economics,

Sri Meenakshi Govt. Arts College For Women (A), Madurai, India.

³Ph.D.Research Scholar, Department of Economics,

Sri Meenakshi Govt. Arts College For Women (A), Madurai, India.

ABSTRACT

Health care play an important role for human resource development in modern days. For that Health care unit is an important part for any health system. Anyhow hospital Waste Management in India had received very little attention from the policy makers and academicians than that of the attention is paid to start medical units. So the study needs to assess the knowledge and practice of effective management system of hospital waste management among the health care providers in Dindigul district. The study used descriptive and analytical research methods. Appropriate statistical methods are used to analyse the objectives and test their hypothesis through SPSS package in order to study the relationship between the environment and the efficiency of medical waste management. Though Health care waste management is a community problem no one take care of that. The consequences leads to increasing rate of waste generation, its unscrupulous segregation and improper disposal call for halting and reversal of upward trends of overall mismanagement. Hospital waste management rules-2005 are framed by the government, but the hospital waste management practices are not being given due importance in Dindigul. Merely having a squad of sweepers, who keep the hospital clean, but scavenge recyclable and reusable hospital items like syringes are dumped aside the road.

Keywords: *Biomedical waste, Health care unit, Health Care Clinics, Nursing Homes, Waste disposal, Waste management.*

L. INTRODUCTION

Health care occupies a vital place in the social services sector and is essential for achieving sustainable human development. Hospitals are a very important part of any health system. The largest share of national health expenditures ranging between 60 to 80 percent, is for hospitals, regardless of the health status and income level of a country. Within the public hospital sector, the large and teaching hospitals are granted a higher proportion of the available financial and other health sector essentials in terms of human, physical and technological resources.



1.1.STATUS OF HEALTHCARE WASTE MANAGEMENT IN TAMILNADU

Tamil Nadu has performed well in health sector when compared with other states in India. Tamil Nadu is the leading state in implementing various government health programmes as per the observations made by UNICEF and WHO. But it is widely observed that today the public healthcare system does not deliver services adequately to those who need them. A number of studies on healthcare wastes management reported that health and environmental risk posed by healthcare waste can be reduced by having careful planning, proper guideline and full participation of Health Care Wastes. Collection of waste using recommended color coding container and storage of waste in isolated areas were not satisfactory. In Tamil Nadu now a day healthcare facilities are becoming greater than ever to address the health needs of the society and to achieve the Millennium Development Goal (MDG).

1.2.SIGNIFICANCE OF THE STUDY

Hospital Waste Management in India had received very little attention from the policy makers and academicians than that of the attention is paid to the environmental problems, such as air pollution and waste water treatment. Nevertheless, the improper handling and disposal of Hospital Waste constitutes a serious problem.

These kind of problem assumed that immediate action had become an absolute necessity. So this study has focused its attention on the improvement of medical waste management with healthcare services. Moreover, there was the need for awareness among the healthcare workers as well as sanitary workers. The information collected through this study could be used to improve the quality of medical waste management.

So, this study is to assess health care waste type, generation rate, and management system in health centers and to described healthcare waste management practices among healthcare workers in Dindigul district. More over the present study will also focus intensively to find out the knowledge and practice of bio-medical waste management among the health care providers in Dindigul district.

1.3.STATEMENT OF THE PROBLEM

Many times even health care worker do not receive proper medical care, which makes it more difficult to detect hospital waste management problems and to provide adequate healthcare to victims. Generally health care waste is generated from medical sources such as waste include hospitals, health clinics, nursing homes, medical research laboratories, offices of physicians, dentists and veterinarians, home health care and funeral homes. In Dindigul Medical waste constitute 19.95 % of hospital waste in Dindigul. Biomedical waste in the form of excised body organs, blood and body fluids contaminated cotton, bandage, and plaster casts forms (15%). Sharps as used needles, syringes and scalpel constitute (1%). Chemical and pharmaceutical waste present (3%) while genotoxic, radioactive and heavy metals wastes present(1%). Garbage and rubbish of the hospitals which are similar in nature to household trash and formed of food remnants, packaging materials, bottles and plastic containers constitute (80%) of hospital waste in India. Although they pose no risk of injury or infection,



unfortunately, they are usually mixed with the hospital waste and increase the volume of hospital waste to entail all the hospital waste. Many physicians especially at the beginning of their career are not aware of the proper management of the medical wastes. Therefore, they may not only harm themselves but also share in dissemination of these hospital wastes. Therefore the research studies are needed to examine the health care facilities and hospital waste management in Dindigul district.

1.4.OBJECTIVES

In order to solve the problem of the study the following specified objectives are to be analysed for the study purpose:

- To assess the knowledge and practice of effective management system of bio-medical waste management among the health care providers in Dindigul district.
- To assess healthcare waste type, generation rate, and management system in health centers in Dindigul District.
- To assess healthcare waste management practices among healthcare workers in healthcare facilities in Dindigul district.

The main objectives is to focused on the need for medical waste management for reducing different effects, protecting both patients and staff working in entities generating such type of waste and protecting health of environment. Following safe manner in all stages of waste management leads to push the level of efficiency and effectiveness which contribute in achieving the objectives.

II.METHODOLOGY

2.1. METHODOLOGY OF THE STUDY

The study has followed the descriptive and analytical research methods. As to descriptive research method, it has depended on measures description that has been taken by hospitals in general to get safe management of medical waste. As a result, a desk survey is done in order to identify principles of theoretical framework and understanding the most important former studies, which are the vital source for study along with its knowledge levels.

A comprehensive field survey is done all data and requirements which were collected through questionnaire to analyse the objectives. Appropriate statistical methods for addressing all of these data are used.

2.2. CONCEPTUAL FRAMEWORK

Medical wastes have been defined as health care wastes which comprise of all wastes generated by health care establishments, research facilities and laboratories. According to Rush brook comprises of the wastes originating from minor or scattered sources such as produced in the process of health care undertaken in the home (dialysis, insulin injection etc.). Further offered a definition of hospital wastes as materials procured from packaging such as wrappers from bandages and cutters, disposal items such as blood, tissues, sharps, cultures and various stocks of infectious agents.



The Federal Ministry of Health (1994) has disaggregated medical wastes to include body parts (discarded), pads, blood infusion bags, plasters, stationeries, papers, used pencils and pins in bottles, nylon bags, food wastes and remnants, gloves, needles, bed, pans etc. The Federal Environmental Protection Agency (FEPA), of Nigeria (2006) has further disaggregated medical wastes as cultures and stock of infection agents and associated biological wastes, pathological wastes as tissues, organs and body parts, stocks of infection agents from research and industrial laboratories, wastes of after births (placement and production of human blood), sharp instruments used on patients e.g. needles, syringes, pipette, broken glasses and scalpels, contaminated animal carcass and body parts, wastes from surgery and autopsy. In a more precise format the WHO (1983) classified medical wastes to include, among other things.

2.2.1.Isolation Wastes: This include biological wastes and discarded materials contaminated with blood, excretion, exudates or secretions from human and animals.

2.2.2.Cultures and stocks of infections agents: These include cultures from medical and pathological laboratories, cultures and stocks of infectious agents from research and industrial laboratories.

2.2.3.Sharps: These are sharps that have been used in patients' care, treatments of medical research or industrial laboratories. It includes hypodermic needles, syringes, pipette, scalpel blades, blood vials, used slides etc.

2.2.4.Human Blood and Blood Products: These include liquid wastes from human blood, products of blood, item situated and/or dipping with human blood.

2.2.5.Animal Wastes: These include contaminated animal carcass, body parts and bodies of dead animals.

2.2.6.Unused Sharps: These consist of unused discarded sharps, hypodermic needles syringes and scalpel blades.

2.2.7.Cytotoxic Waste: This toxic and mutagenic and/or tetragonal when discarded or spilled.

2.2.8.Radioactive Wastes: These are wastes arising from the use of radioactive substance in the treatment of chronic and communicable diseases.

2.3.USED STATISTICAL METHODS

- Means are used to study the knowledge and practice of effective waste management.
- Appropriate statistical methods have been used to analyse the study data and test their hypothesis (SPSS).
- T-test has been used to study the relationship between the environment and the efficiency of medical waste management.

III.ANALYSIS AND INTERPRETATION OF RESULTS

3.Hypotheses Testing

3.1.Hypothesis - 1

There is no relationship between the environment and the effective and efficient utilisation of medical waste management H_0 .

One sample T test has been used for sorting waste. We found through computer results by table (3.1) the value highlighted that calculated value ($T_{\text{calculated}} = 12.558$) is greater than the tabulated value (0.001), since the decision rule is to accept the null hypothesis (H_0) if $T_{\text{calculated}}$ is less than $T_{\text{tabulated}}$ and null hypothesis H_0 be rejected if the $T_{\text{calculated}}$ value is greater than $T_{\text{tabulated}}$. Therefore, we reject the null hypothesis (H_0) and



accept the alternative one (H_a) which means that from the computer result the study found out that there is a relationship between the environment and the effective and efficient utilisation of different types of medical waste management.

TABLE - 3.1

	Environment and the efficiency and effectiveness of waste sorting					
	T	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
X1	12.558	149	.000	1.520	1.28	1.76

3.2.First Sub-Hypothesis

H_0 : There is no relationship between the environment and the efficiency and effectiveness of sorting medical waste H_0 .

One sample T test has been used. We found through computer results by table (3.1.1) that the value of (T calculated =20.796) is greater than the tabulated value. Since the decision rule is to accept the null hypothesis (H_0) if T calculated is less than T tabulated and null hypothesis H_0 be rejected if the T calculated value is greater than T tabulated. Therefore, we reject the null hypothesis (H_0) and accept the alternative one (H_a) which means that there is a relationship between the environment and the effectiveness and efficiency of medical waste management.

TABLE – 3.1.1

	Classification of medical waste					
	T	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
X2	20.820	149	.000	2.520	2.28	2.76

3.3.Second Sub-Hypothesis

H_0 : there is no relationship between the environment and the efficiency effectiveness of sorting medical waste H_0 .

One sample T test has been used. We found through computer results by table (3.1.2) that the value of (T calculated= 20.796) is greater than the tabulated value. Since the decision rule is to accept the null hypothesis (H_0) if T calculated is less than T tabulated and null greater than T tabulated. Therefore, we reject the null which means that there is a relationship between the environment and the effectiveness and efficiency of medical waste management.



TABLE - 3.1.2

Collection of medical waste						
	t	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
X3	20.796	149	.000	2.547	2.30	2.79

3.4.Third sub-Hypothesis

H_0 : There is no relationship between the environment and the efficiency and effectiveness of sorting medical waste H_0 .

One sample T test has been used. We found through computer results by table (3.1.3) that the value of (T calculated = 20.806) is greater than the tabulated value, since the decision rule is to accept the null hypothesis (H_0) if T calculated is less than t Tabulated and null hypothesis H_0 be rejected if the T calculated value is greater than T tabulated. Therefore, we reject than null hypothesis (H_0) and accept the alternative one (H_a) which means that there is a relationship between the environment and the effectiveness and efficiency of medical waste management.

TABLE - 3.1.3

Storage of medical waste						
	T	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
X4	20.806	149	.000	2.533	2.29	2.77

3.5.Fourth Sub-Hypothesis

H_0 : There is no relationship between the environment and the efficiency and effectiveness of sorting medical waste H_0 .

One sample T test has been used. We found through computer results by table (3.1.4) that the value of (T calculated = 21.590) is greater than the tabulated value., since that decision rule is to accept the null hypothesis (H_0) if t calculated is less that T tabulated and null hypotheses H_0 be rejected if the T calculated value is greater than T tabulated. Therefore, we reject the null hypothesis (H_0) and accept the alternative one (H_a) which



means that there is a relationship between the environment and the effectiveness and efficiency of medical waste management.

TABLE - 3.1.4

	Circulation of medical waste					
	T	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
X5	21.590	149	.000	2.607	2.37	2.85

3.6.Fifth Sub-Hypothesis

H₀: There is no relationship between the environment and the efficiency and effectiveness of sorting medical waste.

One sample t test has been used. We found through computer result by table (3.1.5) that the value of (T calculated =21.707) is greater than the tabulated value, since the decision rule is to accept the null hypothesis (H₀) if T calculated is less than T tabulated and null Hypothesis H₀ be rejected if the T calculated value is greater than T tabulated. Therefore, we reject the null hypothesis (H₀) and accept then alternative one (H_a) which means that there is a relationship between the environment and the effectiveness and efficiency of medical waste management.

TABLE – 3.1.5

	Classification of medical waste					
	T	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
X2	21.707	149	.000	2.673	2.43	2.92

3.7.Sixth Sub- Hypothesis

H₀: There is no relationship between the environment and the efficiency and effectiveness of sorting medical waste.

One sample T test has been used. We found through computer results by table (3.1.6) that the value of (T calculated =20.345) is greater than the tabulated value, since the decision rule is to accept the null hypothesis



(H_0) if T calculated is less than T tabulated and null hypothesis H_0 be reject if the T calculated value is greater than T tabulated . Therefore, we reject the null hypothesis (H_0) and accept the alternative one (H_a) which means that there is a relationship between the environment and the effectiveness and efficiency of medical waste management.

TABLE – 3.1.6

	Disinfection of medical waste					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
X6	20.345	149	.000	2.340	2.11	2.57

3.8. Seventh Sub - hypothesis

H_0 : There is no relationship between the environment and the efficiency and effectiveness of sorting medical waste.

One sample T test has been used. We found through computer results by table (3.1.7) that the value of (T calculated = 20.645) Is greater than the tabulated value, since the decision rule is to accept the null hypothesis (H_0) if T calculated is less than Y tabulated and null hypothesis be rejected if the T calculated value is greater than T tabulated. Therefore we reject the null hypothesis (H_0) and accept the alternative one (H_a) which means that there is a relationship between the environment and the effectiveness and efficiency of medical waste management.

TABLE – 3.1.7

	Processing of medical waste					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
X7	20.645	149	.000	2.507	2.27	2.75

The reason for that is because the high cost of processing in general and also the study questionnaire is not applied in most hospitals as the process of medical waste needs materials, expensive equipment and well qualified technical workers.



3.9.Eighth Sub - Hypothesis

H_0 : There is no relationship between the environment and the efficiency and effectiveness of sorting medical waste.

One sample T test has been used. We found through computer results by table(3.1.8) that the value of (T calculated = 20.477) is greater than the tabulated value. Since the decision rule is to accept the null hypothesis (H_0) If T calculated is less than T tabulated and null hypothesis H_0 be rejected if the T calculated value is greater than T tabulated. Therefore, we reject the null hypothesis (H_0) and accept the alternative one (H_a) which means that there is a relationship between the environment and the effectiveness and efficiency of medical waste disposal.

TABLE – 3.1.8

	Final disposal of medical waste					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
X8	20.477	149	.000	2.447	2.21	2.68

The reason for that is because that high cost of processing of waste management in Dindigul District. The questionnaire is prepared on the basis of theoretical background of the chapter-4 and the influencing factors (variables) of hospital waste establishment in general. But the study questionnaire is not applied in most of the hospitals in the study area. Because the process of medical waste management needs more material, high expensive equipment and highly qualified workers. So the study found out that from the above said analysis. The management and disposal of waste are very adequate and unhygienic. Most of the wastes collected from them are openly dumped on sites and there by endangering the environment.

IV. SUGGESTION

In developing countries, medical waste has not received much attention and it is disposed of together with domestic waste. Medical waste can be infectious. It acts as an agent in the transmission of infections. This is because it contains micro-organisms which can be communicated by invasion followed by multiplication in body tissues. These so transmitted pathogens can cause disease or diverse health impacts to humans.

Improper healthcare waste management puts the patients, healthcare workers, waste handlers and community at risk both in terms of risks from inadequate storage, transportation and disposal of infectious waste and from the environmental risks arising from burning hospital wastes in open pits or badly maintained incineration equipment.



One of the problems in Dindigul faces today is the improper handling and disposal of solid wastes. During the evaluation of injection safety and Health Care Waste Management (HCWM) in Uganda, it was found that 92% of waste handlers have poor waste disposal methods, 3.4% have acceptable waste disposal methods and 4.6% have good waste disposal methods. Hospital waste management is one of the biggest challenges facing in addressing the growing quantity of waste generated.

Globally, it is estimated that accidents caused by sharps accounts for 66,000 cases of infection with the hepatitis B virus, 16,000 cases of infection with hepatitis C virus and 200 to 5,000 cases of HIV infection amongst the personnel of healthcare facilities. In France in 1992, eight cases of HIV infection were recognized as occupational infections; two of these cases, involving transmission through wounds occurred in waste handlers. Due to infections which can arise from improper HCW management, it was pertinent to undertake this study.

The part of the medical waste are classified into Infectious waste, Anatomical waste, Sharp waste, Chemical waste and Pharmaceutical waste. The medical waste management is a procedure taken by the concerned authority in sorting, collecting, storing and processing of medical waste generated in hospital. But if it is not mentioned properly, it may lead to environmental problems such as air pollution and waste water treatment. So these kind of problem assumed that the policy maker as well as academicians are to be more attention to the study. So the present study had focused its attention which are related to biomedical waste management with healthcare service in Dindigul. The present study focus intensively to assess the knowledge and practice of management system of bio-medical waste management among the healthcare providers in Dindigul, to assess healthcare waste type, generation rate, and management system in healthcare centres in Dindigul and to assess healthcare waste management practices among healthcare workers in healthcare facilities in Dindigul.

Dindigul has number of medical and healthcare centres. As mentioned in the first chapter the problems which are involved in handling, transportation and disposal of healthcare waste is a predominant problem in Dindigul.

The safe management of hospital waste has received much attention over recent years in Dindigul. Emphasis is placed mainly on the proper handling, segregation and disposal of the hospital wastes. Wastes minimization and recycling are still not well promoted. The main issues considered were the adverse environmental and health impacts that arise from poor handling and disposal practices, the responsible institutions and initiatives taken and the policy framework.

In order to analyse the various problems which are existing in Dindigul, the study followed the descriptive and analysis. The segregated collection of various types of healthcare waste has been conducted in all the hospitals in order to selected objectives. The hospital have temporary storage areas.

The study highlighted that at many places, authorities are failing to install appropriate systems due to a variety of reasons, such as non-availability of appropriate technologies, inadequate financial resources and absence of professional training on waste management.



The proper hospital waste management system can help the control diseases can reduce community exposure to resistant bacteria, and could reduce HIV/AIDS and Hepatitis transmission from dirty needles and other improperly cleaned or disposed medical items. Regarding the environmental issues, a correct and sustainable management system of hospital waste will avoid the negative long term health effects, from the environmental release of toxic substances such as dioxin, mercury and others. From both volume and toxicity perspectives, the use of plastics in society is a focus of waste management concerns. In the past, medical waste was often mixed with household waste and disposed of in municipal solid waste landfills. In recent years, increased public concerns over the improper disposal of hospital waste have led to a movement to regulate the waste more systematically and stringently by the Indian Government.

Proper collection and segregation of biomedical waste are important. There is not enough information on medical waste management technologies and its impact on public health and environment. Practice of proper medical waste disposal and management is also inadequate. However, there is need for raising awareness about medical waste and its related issues. Comprehensive analysis of current waste management practices in both government and private hospitals. Arrangement of proper training programs of hospital staff and health professionals. Monitoring and evaluation of hospital waste management interventions. The need for health care waste management planning to facilitate the implementation of necessary measures to improve the present health care waste management situation.

The role for pharmacists in this area is significant. As one pharmacist stated, “if we sell it, we are responsible for collecting and disposing it as well”. Elements of the role for pharmacists include. Establishing a disposal process, possibly in conjunction with associations, manufacturers and hospital administration . Establishing a program for the return and disposal of unused drugs which includes: Encouraging patients to return their drugs to the pharmacy, of waste and rationale/causes/sources for waste and Using this information to support the need for waste reduction programs and attract or maintain sponsorship.

The study highlighted that the status of collection, temporary storage, and transportation were better than segregation and disposal process the status of disposal process. Additionally, among the mentioned process the status of disposal is the most problematic. So, appropriate technologies should be used and the comprehensive program should be initiated to prevent adverse impacts of inappropriate disposal on the environment. As it was found that having environmental health experts besides holding training course in a matter of appropriate healthcare waste management influence healthcare waste management, these should be accepted in all hospitals. Considering the findings of this study, there are hospitals not obeying the ratified regulations. More comprehensive program should be conducted and practiced in hospitals to implement the mentioned regulations completely.

Sensitization, motivation campaigns and technical courses among professionals, technicians and sanitary workers should be carried out; So that they identify themselves with their responsibilities suggested strategy to develop training courses should be “Training of trainees”. Course content and planning procedures are included.



In relation to wastewater management, an adequate wastewater treatment system is required at all facilities. Discharging of hospital wastewater to municipal sewers without pretreatment is not recommended. Minimal requirements for small facilities would be installation of proper septic tanks and soak-away systems. It is fundamental to ensure a good design, construction, functioning and monitoring of septic tank and soak-away system, otherwise odor nuisance, flooding and pollution problems could be generated. A proper and on-time maintenance to the system, including a periodic monitoring are also obligatory activities. At the end it is recommended to implement the suggested measures on hospital waste management, drinking water supply and facilities; which are going to improve human health and environment.

The study revealed that majority of the health care providers did not have any in service training. It is to be noted that all healthcare providers should have adequate knowledge to treat the medical waste in a proper way to protect self, the community and particularly the environment. But knowledge retention has its limit in the study area. So in order to improve the healthcare worker periodical in service training is the solution to practice medical waste management in a better way.

This study investigated the current waste management practices in Dindigul Hospital. The study proved that the problem waste management exists and possible solutions have been suggested to alleviate the problems. Based on the findings of this study, the following recommendations have been proposed which once implemented will improve the current situation of medical waste management in the hospital. Some of the proposals can be easily implemented at the institutional level in a short term with very limited costs involved while others at the national level and requires significant funding and time.

- The management structure proposed by World Health Organization needs to be adopted and implemented.
- Strict segregation of wastes and labeling of waste bins should be encouraged.
- A well trained permanent employee incinerator operator should be deployed for effective and efficient incineration.
- Proper use of color codes needs to be observed. The linings need to match the color of the containers to avoid confusion when waste is finally delivered at the incinerator.
- Design and construction of a new incinerator whose design should be based on the established data from the hospital should be considered urgently.
- Improvement of storage area at the incinerator site by concerning the floor for easy cleaning and partitioned for safe and proper storage of different types of waste.
- Proper waste management policies and guidelines that conform to the internationally recommended standards and practices should be developed by the central government to guide health care waste handlers.
- Appropriate short term trainings for staff to improve their skills in medical waste management practices and safety measures in waste handling.



4.Storage of waste pending final disposal

The following points need to be considered:

1. Do not store waste beyond a period of 48 hours.
2. Bins can be of metal or plastic.
3. If bins are re-usable, ensure their cleaning and disinfection.
4. Containers should not be too large as they may be difficult to lift and there can be spillage.
5. Each receptacle should be properly marked to show the ward or section where it is kept.
6. Bins preferably should be inner lined with polythene bags and provided with lids.
7. Move bins at least once a day from all areas, twice or more from OTs, ICUs.
8. Bags for wastes needing incineration should not be made of chlorinated plastic.
9. Categories 8 and 10 (liquid waste) need not be put in containers.
10. Category 3 if disinfected locally need not be put into containers.
11. Polythene bags carrying waste should be sealed/tied at the top. Whenever waste is being transported within or outside the hospital.
12. Disposal items should be shredded or mutilated to prevent reuse. Subsequently, they should be disinfected/disposal off as per guidelines.
13. Bins or polythene bags placed in the containers to be changed with each shift or when they $\frac{3}{4}$ full. At this point, they should be treated with suitable chemical disinfectant to the final site as stipulated.

4.1.Maintenance of Records

All hospital should maintain records regarding quantity and category of all biomedical waste, which are subject to inspection and verification by the Government prescribed authority at any time.

4.2.Annual Report

Every hospital is required to submit an annual report as per prescribed proforma by 31st January every year regarding the quantity and category of waste handled during the preceding year to the prescribed authority who in turn will forward a consolidated report to Central Pollution Control Board of the state by 31st March every year.

4.3.Accident Reporting

When any accident occurs while handling or transportation of waste, the authorized person shall report the accident in prescribed form to the authority forthwith.

4.4.Training of Personnel

The objectives of a waste management scheme should be to change a mind set through training. Standard training modules/manuals for doctors, nursing staff, lab technicians, ward attendants, safaiwalas, patients and



their attendants should be developed to create awareness and ensure efficient handling and management of biomedical waste.

4.5.Evaluation

Ongoing evaluation of the biomedical waste management programme in the hospital is very important to identify bottlenecks and to take remedial action. It is suggested that Hospital Infection Control Committee (HICCOM) should specifically look into this aspect.

Very few data are available on the health impacts of exposure to healthcare waste, particularly in the case of developing countries. Better assessment of both risks and effects of exposure would permit improvements in the management of health-care waste management and in the planning of adequate protective measures. Unfortunately, the classical application of epidemiology to the problem is difficult because of methodological complications and uncertainties regarding evaluation of both exposure and health outcome. The great diversity of hospital wastes that can be involved and of circumstances of exposures is a particularly problematic feature of all such evaluations. It prevents not only the development of a unified analytical approach to the assessment of exposure and health outcome but also the generalization of any statistical inferences drawn about a specific waste-exposed population. Nevertheless, suspected cases of adverse health effects of health-care waste should be adequately documented, with precise descriptions of exposure, exposed individuals or populations, and outcome.

V.CONCLUSION

Within health-care establishments, the surveillance of infection and record-keeping are important tools that can provide indications of inadequate hygiene practices or of contamination of the immediate environment (including that caused by health-care waste). Surveillance allows an outbreak of infection to be recognized and investigated. It can provide basis for introducing various remedial measures for assessing the efficacy of those measures and of the routine preventive measures taken by the establishment, and for reducing the level of avoidable infection. It will also ensure that the control measures can provide adequate result for controlling Hospital Waste in dindigul.

VI.ACKNOWLEDGEMENT

The authors would like to thank all the people who supported in carrying out the whole study especially Research Guide and Project supervisor Dr.V.Suriagandhi, Assistant Professor Department of Economics, Sri Meenakshi Govt. Arts College for Women (A), Madurai.

International Conference on Multidisciplinary approaches in Social Sciences, Humanities and Sciences

Sri S.Ramasamy Naidu Memorial College, Sattur, Tamil Nadu, India

(MASHS-18)



14th December 2018

www.conferenceworld.in

ISBN:978-93-87793-61-3

REFERENCES

- [1] Badesha JS. Hospital Waste Management -1. Bristol: Environmental Toxicology Centre, University of Bristol.1995; p 1
- [2] Hagen DL, Al-Humaidi F, Marthin A(2001). Infectious waste survey in a Saudi Arabian hospital. An important quality improvement tool. Am.J. Infect. Control, 29:198-202.
- [3] Johnson B.Impact of Hospital waste on human health. Washington DC, Lewis Publishers, 1999.
- [4] Mahmood M, Shahab S. Malik R, Azim W a study of waste generation, collection and disposal in a tertiary hospital Pak J Med Res. 2001;40;13-17.
- [5] S.Sridhar, M.Anandan and S.Ramaswamy – An Economic analysis of Health Status., Languages in India www.languageinindia.com ISSN 1930-2940 Vol.13:4 April 2013.
- [6] WHO (1995) Survey of hospital waste Management in South-East Asia Region New Delhi. World Health Organisation Regional Office for South-East Asia.
- [7] WHO, (1994) Management of Medical Waste. Jordan; WHO Regional Centre for Environmental Health Activities (CEHA)