International Journal of Management, IT & Engineering
Vol. 9 Issue 4, April 2019,
ISSN: 2249-0558 Impact Factor: 7.119
Journal Homepage: http://www.ijmra.us, Email: editorijmie@gmail.com
Double-Blind Peer Reviewed Refereed Open Access International Journal - Included in the International Serial Directories Indexed & Listed at: Ulrich's Periodicals Directory ©, U.S.A., Open J-Gate as well as in Cabell's Directories of Publishing Opportunities, U.S.A

QUALITY ASSURANCE IN BIO-MEDICAL WASTE MENAGEMENT PRACTICES WITH REFERENCE TO FORTIS MALAR HOSPITAL-CHENNAI

1. **DR. M SENTHIL, ASSISTANT PROFESSOR, PG & RESEARCH DEPARTMENT OF COMMERCE, SRI VIJAY VIDYALAYA COLLEGE OF ARTS AND SCIENCE, NALLAMPALLI, DHARMAPURI, TAMIL NADU- 636807**
2. **DR. VEERAMANI.G ASTT. PROFESSOR, ARINGAR ANNA INSTITUTE OF MANAGEMENT STUDIES AND COMPUTER APPLICATION, PENNALUR, SRIPERUMPUDUR, CHENNAI**

Abstract

Bio Medical Waste is the waste which is generated in a hospital or laboratory having the potential of spreading infection. How such waste can be handled and disposed of by a hospital in compliance to 'BMW Rule' is called its management. Hospitals have the potentials of generating a large quantity of such waste on daily basis which needs to be scientifically segregated, collected and disposed of daily to prevent infection. Therefore, to ensure safety of staff, patient and the environment the Govt. has notified 'Bio medical waste ('Management & Handling rule' 1998), under Environmental protection act 1986.

Keywords: Management, Environment and Bio Medical Waste

INTRODUCTION

Hospital is one of the complex institutions which are frequented by people from every walk of life in the society without any distinction between age, sex, race and religion. This is over and above the normal inhabitants of hospital i.e. patients and staff. All of them produce waste which is increasing in its amount and type due to advances in scientific knowledge and is creating its impact. The hospital waste, in addition to the risk for patients and personnel who handle these wastes poses a threat to public health and environment. Keeping in view inappropriate biomedical waste management, the Ministry of Environment and Forests notified the "Biomedical Waste (management and handling) Rules 1998", in July 1998.

Biomedical waste is any solid, fluid or liquid waste, including container and any intermediate product, generated during diagnosis and treatment in the hospitals. Hospital waste is generated and

discarded and is not intended for further use in a hospital. It is of paramount importance that there are significant voids that need to be addressed including efficient segregation, use of coded and colored bags, better handling and transfer means which need adequate training and awareness programmes for the medical and paramedical personnel. Improper handling of solid waste in the hospital may increase the airborne pathogenic micro-organisms, which could adversely affect the hospital environment and the community as well. The current status of employee's awareness about biomedical waste management will help the authorities to create strategy for improving the status in future. For proper biomedical waste (BMW) management, lot of seminars, workshops and symposia are needed for the awareness of the medical and paramedical staff.

Over the years there have been tremendous advancements in the health care system. However it is ironic that the health care settings, which restore and maintain community health, are also threatening their well-being. Poor waste management practices pose a huge risk to the health of the public, patients, professionals and contribute to environmental degradation. The present study was conducted to study the awareness amongst the hospital staff, about biomedical waste management, so that policies for improved status are formulated in future. Handling, segregation, mutilation, disinfection, storage, transportation and final disposal are vital steps for safe and scientific management of biomedical waste in any establishment. The key to minimization and effective management of biomedical waste is segregation (separation) and identification of the waste.

Biomedical waste management has recently emerged as an issue of major concern not only to hospitals, nursing home authorities but also to the environment. the bio-medical wastes generated from health care units depend upon a number of factors such as waste management methods, type of health care units, occupancy of healthcare units, specialization of healthcare units, ratio of reusable items in use, availability of infrastructure and resources etc.

The proper management of biomedical waste has become a worldwide humanitarian topic today. Although hazards of poor management of biomedical waste have aroused the concern world over, especially in the light of its far-reaching effects on human, health and the environment.

Now it is a well-established fact that there are many adverse and harmful effects to the environment including human beings which are caused by the "Hospital waste" generated during the patient care. Hospital waste is a potential health hazard to the health care workers, public and flora and fauna of the area. The problems of the waste disposal in the hospitals and other health-care institutions have become issues of increasing concern.

Classification of Bio-Medical Waste

The World Health Organization (WHO) has classified medical waste into eight categories:

- General Waste
- Pathological
- Radioactive
- Chemical
- Infectious to potentially infectious waste
- Sharps
- Pharmaceuticals
- Pressurized containers

Sources of Biomedical Waste

Hospitals produce waste, which is increasing over the years in its amount and type. The hospital waste, in addition to the risk for patients and personnel who handle them also poses a threat to public health and environment.

Major Sources

- Govt. hospitals/private hospitals/nursing homes/ dispensaries.
- Primary health centres.
- Medical colleges and research centres/ paramedic services.
- Veterinary colleges and animal research centres.
- Blood banks/mortuaries/autopsy centres.

- Biotechnology institutions.
- Production units.

Minor Sources

- Physicians/ dentists clinics
- Animal houses/slaughter houses.
- Blood donation camps.
- Vaccination centres.
- Acupuncturists/psychiatric clinics/cosmetic piercing.
- Funeral services.
- Institutions for disabled persons

Problems relating to biomedical waste

A major issue related to current Bio-Medical waste management in many hospitals is that the implementation of Bio-Waste regulation is unsatisfactory as some hospitals are disposing of waste in a haphazard, improper and indiscriminate manner. Inappropriate segregation ultimately results in an incorrect method of waste disposal. Inadequate Bio-Medical waste management thus will cause environmental pollution, unpleasant smell, growth and multiplication of vectors like insects, rodents and worms and may lead to the transmission of diseases like typhoid, cholera, hepatitis and AIDS through injuries from syringes and needles contaminated with human.

Various communicable diseases, which spread through water, sweat, blood, body fluids and contaminated organs, are important to be prevented. The Bio Medical Waste scattered in and around the hospitals invites flies, insects, rodents, cats and dogs that are responsible for the spread of communication disease like plague and rabies. Rag pickers in the hospital, sorting out the garbage are at a risk of getting tetanus and HIV infections. The recycling of disposable syringes, needles, IV sets and other article like glass bottles without proper sterilization are responsible for Hepatitis,

HIV, and other viral diseases. It becomes primary responsibility of Health administrators to manage hospital waste in most safe and eco-friendly manner.

Health impacts of Bio-medical Waste (BMW)

The problem of bio-medical waste disposal in the hospitals and other healthcare establishments has become an issue of increasing concern, prompting hospital administration to seek new ways of scientific, safe and cost effective management of the waste, and keeping their personnel informed about the advances in this area. The need of proper hospital waste management system is of prime importance and is an essential component of quality assurance in hospitals.

Exposure to infectious BMW can result in disease or injury. It may contain infectious agents, toxic or hazardous chemicals or pharmaceuticals, radioactive wastes and waste sharps. The infectious wastes may contain any of the great variety of pathogenic microorganisms. Pathogens in infectious wastes may enter the human body through a number of routes like a puncture or cut in the skin, mucous membranes, by inhalation or ingestion. Sharps may not only cause cuts and punctures but also infect the wounds if they are contaminated with Pathogens. Because of this dual risk – of injury and disease transmission – sharps are considered as a very hazardous waste class. Poor hospital waste management may cause the following:

- Hepatitis B & C
- HIV infection
- Gastro-enteric infection
- Respiratory infection
- Blood stream infection
- Skin infection
- Radioactive toxicity
- Health problems associated with air and water pollution. Apart from the above, there are other environmental problems associated with the disposal of untreated BMW generated from the healthcare units (HCUs).

OBJECTIVES OF STUDY

a) To understand the routine activities in hospital waste management.
b) Knowledge on biomedical waste management among nurses, paramedical staff and housekeeping staff at Fortis malar Chennai
c) Training required (if any) to any particular group of paramedical staffs and project trainees of the hospital
d) Recommendation for improvement on biomedical waste management at the hospital.

NEED FOR STUDY

Bio medical waste management is one of the most statutory aspects of a hospitals day by day work procedures. This process cannot be neglected or taken lightly as it may bring about adverse effects to the hospitals surroundings and fame. Through this research it has been tried to establish the following aspects

- To bring about caution and proper attention to all bio medical practices in the hospital
- To implement all the laws put forward by the state and national board
- To prevent unnecessary problems and situations caused due to negligence and human error

SCOPE OF THE STUDY

As all the major departments in the hospital utilises the service of Bio Medical Waste management. The scope extends to the whole hospital. But for this study only certain key areas such as dialysis unit; Operation theatre; Dentists consultation room; Cath labs etc where the generation of bio medical wastes are high are given special attention.

Research Methodology

Research Methodology may be understood as a science of studying how the research has been done scientifically. It is a way to systematically solve the research problem. Here, we study and analyze the various steps that are generally adopted by a researcher in studying his research problems.

Research Design:

Research design is connection between what has been established and what is to be done in the conduct of the survey for the realization of the objective. This is a copy for collection and measurement of data. The research design used in this study is DESCRIPTIVE research design.

Research Instruments

The research instrument used for the study was a structured Interview Schedule. It consisted of 20 questions and all are objective type of question. This is so done as not to disturb them in their busy schedule. For each question there were options out of which one of the most appropriate answers or their views have to be tick marked.

Statement of the Problem

Now a days handling and disposal of biomedical waste has emerged as a major problem in India. The inadequate handling and disposal of healthcare waste may lead to transmission of infectious diseases. The groups most at risk are nurses, paramedical staff, waste management operators, and scavengers. The management of hospital waste requires diligence and care from a chain of people, starting with the healthcare staff, continuing through collection workers, and finishing with disposal operators. If any of these lack knowledge or careless in their work, or allow scavengers or children access to the waste, the chain would be broken and dangers of infection would follow. The present survey is conducted to study the awareness of paramedical and housekeeping staff, about biomedical waste management.

Area of Study

The area of study is on nursing, Paramedical and Housekeeping staff of Fortis Malar Hospital, Chennai.

Sample Size

There is 700 staff in the hospital. As the research period was only 90 days, it was not practical to collect the responses from all the members in the population. Therefore, a sample size of 100 staff involved in handling, recording and analyzing of bio medical wastes on regular basis was selected for the study.

DATA ANALYSIS AND INTERPRETATION

TABLE NO:1 KNOWLEGE ABOUT BIO MEDICAL WASTE GENERATION AND LEGISLATION

S.NO	PARTICULARS	No. of RESPODENTS	%
1	YES	70	70%
2	NO	10	10%
3	NOT SURE	20	20%
	TOTAL	**100**	**100%**

Inference

From the above table it can be inferred that 70% of the respondents have basic knowledge about the bio medical waste generation and legislation,10% of the respondents don't know about the bio medical waste generation and legislation.20% concurred that they are not sure about the laws and rules involved.

TABLE NO: 2 KNOWLEDGE ABOUT AGENCIES THAT REGULATES WASTE GENERATED AT HEALTH CARE FACILITIES

S.NO	PARTICULARS	No. of RESPODENTS	%
1	STATE	87	87%
2	PRIVATE	5	5%
3	DO NOT KNOW	8	8%
	TOTAL	**100**	**100%**

International Journal of Management, IT & Engineering
Vol. 9 Issue 4, April 2019,
ISSN: 2249-0558 Impact Factor: 7.119
Journal Homepage: http://www.ijmra.us, Email: editorijmie@gmail.com
Double-Blind Peer Reviewed Refereed Open Access International Journal - Included in the International Serial Directories Indexed & Listed at: Ulrich's Periodicals Directory ©, U.S.A., Open J-Gate as well as in Cabell's Directories of Publishing Opportunities, U.S.A

Inference

From the above table it can be inferred that 87% of the respondents said that state government agencies regulates the waste generated at health care units,5% of the respondents said that private agencies regulates the waste generated at health care units and 8% of the respondents were not sure about the process.

TABLE NO : 3 ACCORDING TO THE BIO MEDICAL WASTE (MANAGEMENT & HANDLING) RULES, WASTE SHOULD NOT BE STORED BEYOND

S.NO	PARTICULARS	RESPODENTS	%
1	12 hours	7	7%
2	48hours	88	88%
3	72hours	5	5%
4	96hours	0	0%
	TOTAL	**100**	**100%**

Inference

From the above table it can be inferred that 88% of the respondents said that according to the biomedical waste (management & handling)rules, waste should cleared within 48 hours, which is the correct choice and 12% of the respondents choices were wrong according to the biomedical waste (management & handling) rules.

TABLE NO: 4 ONE GRAM OF MERCURY (SOURCE FROM DENTAL AMALGAM) CAN CONTAMINATE SURFACE AREA OF A LAKE:

S.NO	PARTICULARS	RESPODENTS	%
1	Acres	83	83%
2	30 acres	11	11%
3	25 acres	6	6%
4	15 acres	0	0
	TOTAL	**100**	**100%**

International Journal of Management, IT & Engineering
Vol. 9 Issue 4, April 2019,
ISSN: 2249-0558 Impact Factor: 7.119
Journal Homepage: http://www.ijmra.us, Email: editorijmie@gmail.com
Double-Blind Peer Reviewed Refereed Open Access International Journal - Included in the International Serial Directories Indexed & Listed at: Ulrich's Periodicals Directory ©, U.S.A., Open J-Gate as well as in Cabell's Directories of Publishing Opportunities, U.S.A

Inference

From the above table it can be inferred that 83% of the respondents said that one gram of mercury (source from dental amalgam) contaminate 20 acre surface area of a lake,6% of the respondents said that one gram of mercury (source from dental amalgam) contaminate 25 acres surface area of a lake and 11% chose 30 acres of lake.

TABLE NO: 5 KNOWLEDGE OF REGULATION OF SAFE TRANSPORT OF MEDICAL WASTE

S.NO	PARTICULARS	RESPODENTS	%
1	Pollution control board of India	53	53%
2	Transport Corporation of India	33	33%
3	Hospital Administration	14	14%
	TOTAL	**100**	**100%**

Inference

From the above table it can be inferred that 53% of the respondents said that Pollution control board of India regulates the safe transport of medical waste,14% of the respondents said that hospital Administration regulates the safe transport of medical waste .

TABLE NO:10 NEED OF SEPARATE PERMIT TO TRANSPORT BIOMEDICAL WASTE :

S.NO	PARTICULARS	RESPODENTS	%
1	YES	73	73%
2	NO	18	18%
3	CANNOT SAY	9	9%
	TOTAL	**100**	**100%**

Inference

From the above table it can be inferred that 73% of the respondents said that there should be a separate permit to transport biomedical waste, 18% concurred that there is no need of any permit and 9% of the respondents said that not have an opinion about separate permit to transport biomedical waste.

FINDINGS

- Most of the respondents know about the bio medical waste generation and legislation
- 87% of the respondents said that state government agencies regulates the waste generated at health care units
- Most of the respondents said Waste that saturated to the point of dripping with blood or body fluids contaminated with blood is a statement that describe about BM
- 88% of the respondents said that according to the biomedical waste (management & handling)rules, waste should cleared within 48 hours
- 83% of the respondents said that one gram of mercury (source from dental amalgam) contaminate 20 acre surface area of a lake
- 53% of the respondents said that Pollution control board of India regulates the safe transport of medical waste
- 81% of the respondents are vaccinated against HEPATITIS B

SUGGESTION

Most of the respondent are unaware of the legislative aspects of bio-medical waste management. More basic training should be provided to housekeeping and biomedical staff on the collection, segregation and disposal of bio-medical waste. Regular staffs should be allotted for the collection, segregation and disposal of bio-medical waste. A supervisor who has sound knowledge in bio-medical waste management should accompany the allotted staff while collecting the bio-medical sate. Separate registers should be provided to all departments and nurses station in order to record the quantity of BM waste generated & collected from the respective stations. Continuous improvement education and evaluation of their performance should be monitored regularly to ensure that the staffs are up-to-date and are following the proper SOP.

CONCLUSION

Medical wastes pose significant impact on health and the environment. Especially in a developing country like India, may be because of its huge population and pollution level when taken into account as such. However, from this study it can be said that though the management of waste is done in very appreciable level still there is an urgent need for raising awareness and education on medical waste issue for the staff. Proper waste management strategy is needed to ensure health and environmental safety.

BIBLIOGRAPHY

1. CPHEEO (2000) Manual on Municipal Solid Waste management, pp.219-227. Central Public Health and Environmental Engineering, New Delhi, India
2. M. K. Virk, V. Singal & P. Sandhu., 2004. Awareness Among Urban Inhabitants About Waste Management and Its Impact on Environment. In:J. Hum. Ecol.,2004
3. G.D.Kunders, S. Gopinath, & A. Katakam, "Hospitals – Planning, Design And Management", 1st Edition, Tata McGraw – Hill Publishing Company Limited.