Asian Pac. J. Health Sci., 2014; 1(4): 465-470 e-ISSN: 2349-0659, p-ISSN: 2350-0964

A study to assess the knowledge on Biomedical Waste Disposal among the Group D health workers in Sri Ramakrishna Hospital, Coimbatore

MS. J. ManoRanjini*

Himalayan College of Nursing, Swami Ram Himalayan University, Swami Ram Nagar, Jolly Grant, Doiwala [P.O], Dehradun, Uttarakhand, India

ABSTRACT

Cleanliness is next to Godliness. An ideal health care centre is a one which is free from infection and acquired infection. Hospital and Healthcare team need to give equal importance in treating the ill and at the same time not making the haelthy fall ill. This happens due to the non-effective disposal of Hospital waste. Therefore there is a need to promote the healthy techniques to ensure effective disposal system. The study was conducted with the aim of assessing the knowledge of Group D health workers [Sanitary Housekeeping Staffs] in the Bio medical waste disposal. The sample size was 40 Group D health workers in morning and evening shifts in Sriramakrishna hospital. A self administered Biomedical wastedisposal techniques questionnaire was given. The obtained result concluded that the Group d Health workers has adequate knowledge in Biomedical waste disposal.

Keywords: Synthetic cannabinoid, voiding dysfunction.

Introduction

An ideal hospital requires infection free environment not only to treat the patient but also to keep the visitors safe and surrounding areas infection free. Hospital generates biomedical waste in both forms solid and liquid. Liquid waste generated from all the departments are infected in nature. Biomedical waste are generate during treatment, surgical intervention, immunization, dressing of wounds, Pathological investigation and Radiological investigations. The training for handling of hospital waste is generally restricted within the waste handlers (Sweeper) this is the main obstruction to established a good Integrated Hospital Waste Management Plan. It becomes the primary responsibility of Health administrators and Infection control team to manage hospital waste in most safe and eco-friendly manner [1, 6].

The biomedical waste is the waste that is generated during the diagnosis, treatment or immunization of human beings or animals or in research activities pertaining thereto, or in the production or testing of biological components. The different location or points of generation of waste in a health care establishment are operation theatres / wards / labour rooms, Dressing rooms, Injection rooms, Intensive Care Units, Dialysis room, Laboratory, Corridor, Compound of hospital or nursing home[2, 8].

Any waste contaminated by blood or body fluids can be termed as infected waste. Municipal wastes on the other hand do not require any special treatment. It should be handed over to municipal board disposal unit. There is a specific rule to handle, segregate, transport and disposal of biomedical waste. It was set up in 1998 and on 24th August 2011 it has been amended for better and more effective implementation[1, 2]. Biomedical wastes are discarded from teaching, clinical and research laboratories and operations that includes,

*Correspondence
Ms. J. ManoRanjini
Himalayan College of Nursing,
Swami Ram Himalayan University,
Swami Ram Nagar, Jolly Grant, Doiwala [P.O],
Dehradun, Uttarakhand – 248140.
Mobile: +91-9690990301
E-Mail: manopriyasri87@gmail.com

Animal Waste

Animals carcasses, tissues and body parts, blood and bodily fluids and infectious bedding. [3].

Biological Laboratory Waste

Cultures, stocks or specimens of microorganisms, live or attenuated vaccines, human or animal cell cultures and laboratory material that has come into contact with these (solid and liquid) [3].

Human Anatomical Waste

Any part of the human body, that includes tissues and organs but excluding their extracted teeth, hair, and nail clippings[3].

Human Blood and Body Fluid Waste

Human fluid blood and blood products, items saturated or dripping blood, body fluids contaminated with blood and body fluids removed for diagnosis during surgery, treatment or autopsy & not including urine or feces. Material with minimal amounts of non-infectious blood (i.e. does not release blood if compressed) are not considered biomedical waste[3].

Sharps - Needles, syringes with needles, lancets, scalpels, razor blades, and precision knives. Contaminated broken glass, pipettes, test tubes, microscope slides, blood vials or any other material capable of causing punctures or cuts [3].

Biohazardous waste: Waste that is known or suspected to contain infectious material or which because of its physical or biological nature may be harmful to humans, animals, plants or the environment [3].

Infectious waste: Waste which contains microorganisms in sufficient quantity which could result in the multiplication and growth of those microorganisms in a host [3].

Pathological waste: Any waste which contains microorganisms capable of causing disease[3].

Problems relating to biomedical waste

A major issue related to current Bio-Medical waste management is lack of knowledge in segregation practices that results in mixing of hospital wastes with general waste making the whole waste stream hazardous. Inappropriate segregation ultimately results in an incorrect method of waste disposal[6].

Inadequate Bio-Medical waste management thus will cause environmental pollution, unpleasant smell, growth and multiplication of vectors like insects, rodents and worms leads to the transmission of diseases like typhoid, cholera, hepatitis and AIDS through injuries from syringes and needle contaminated with human. Various communicable diseases, which spread through water, sweat, blood, body fluids and contaminated organs, are important to be prevented[6].

Group D Health workers 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 [6].

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 importance and is an essential component of quality assurance in hospitals as well as the knowledge of the workers in effective waste disposal also prime importance [2,6].

Need for the study

Segregation system is up to the mark than this has been observed that 85 to 90% of the total waste becomes non infected only 10 to 15% are infected waste which need special disposal system. Incineration/ Deep burial. Per day in-house patient generate 1.5Kg of waste only 10 to 15% of which is infected waste. Radiology department generate radioactive waste. Handling of radioactive waste requires special attention and skill.[7]

Creating a system for segregation of waste is the first step. Segregation at source of different types of biomedical wastes and their appropriate storage and/or disinfections sterilization, etc. would ensure that infectious wastes do not get mixed with non- infectious wastes as this would infect the entire waste. Only a small fraction of waste generated by health care institutions is actually infectious or hazardous. It is estimated that 80-85 per cent is non-infectious, 10 per cent is infectious and 5 per cent is hazardous[7].

Segregation of waste into infected or contaminated waste and non-infected waste is mandatory and is a prerequisite for safe and hygienic waste management. Segregation at source makes it easier to prevent spread of infection, help it easier to choose among the options of disposal, and can reduce the load on the waste treatment system and prevent injuries. The segregation of biomedical waste into various categories and storage in four different colored containers are taking into account the treatment and disposal[1,2, 4].

YELLOW BAGS	RED BAGS	BLUE BAGS	BLACK BAGS
Infectious wastes, Bandages, Guazes, Cotton with body fluids, Humanbody.	Plastic waste such as catheters, Tubings Injections, Syringes	Glass bottles, Broken glass articles, Outdated & discarded medicines	Needles without syringes, Blades, Sharps All metal articles

COLOR CODING AND TYPE OF CONTAINER

Color Coding	Type of container	Waste Category	Treatment option
Yellow	Plastic Bag	Category 1,2,3 and 6	Incineration / Deep Burial
Red	Disinfected container	Category 3,6 and 7	Autoclaving / Microwaving
Blue / White	Puncture proof container	Category 4 and 7	Autoclaving / Microwaving
Black	Plastic Bag	Category 5,9,10	Disposal safely in landfill

The main concern lies with the hospital waste generated from large hospitals/nursing homes as it may pose deleterious effects due to its hazardous nature. Bio-medical wastes, if not handled in a proper way, is a potent source of diseases, like AIDS, Tuberculosis, Hepatitis and other bacterial diseases causing serious threats to human health. [2, 4, 5].

The Government of India as contemplated under Section 6, 8 and 25 of the Environment (Protection) Act, 1986, has made the Biomedical Wastes (Management & Handling) Rules, 1998. The rules are applicable to every institution generating biomedical waste which includes hospitals, nursing homes, clinic, dispensary, veterinary institutions, animal houses, pathological lab, blood bank, the rules are applicable to even handlers[1]. They occupy important factors and the rules are as follow,
Rule 4 specify duty of occupier (generator) to take all steps to ensure that such waste is handled without any adverse effect to human health and the environment. Rule 5 and 6 specifies waste management procedures. Section 7 is about prescribed authority that shall implement these rules and also issued a notification in regard of necessary fee for issuance of authorization under rule 8(3) of these rules on dated 12/2/99[1].

Need of biomedical waste management in hospitals

The reasons due to which there is great need of management of hospitals waste such as: [6]

1. Injuries from sharps leading to infection to all categories of hospital personnel and waste handler.
2. nosocomial infections in patients from poor infection control practices and poor waste management.
3. Risk of infection outside hospital for waste handlers and scavengers and at time general public living in the vicinity of hospitals.
4. Risk associated with hazardous chemicals, drugs to

persons handling wastes at all levels.

5. "Disposable" being repacked and sold by unscrupulous elements without even being washed.
6. Drugs which have been disposed of, being repacked and sold off to unsuspecting buyers.
7. Risk of air, water and soil pollution directly due to waste, or due to defective incineration emissions and ash.

Methodology

The descriptive study was conducted to anlyse the knowledge level of the Group D Health workers in the Bio-medical waste disposal practice. The study participants were 23 Group D Health workers in Housekeeping department of Sri Ramakrishna Hospital, Coimbatore. Material used for the data collection are the Demographic Profile consists of personal information of the Group D health workers such as, Age, sex, Education, Occupation, Experience in years and the Biomedical waste management tool consists of four different types of questions such as Yes or No type, Multiple choice, Matching with two columns and a demonstration of disposing the waste according to the color coding and the waste disposing category. Scoring is based on the number of right answers and the knowledge level is categorized as Good, Average and Poor. The data was collected through the semi structured interview and self-administered questionnaire. Data was analyzed through descriptive statistics and the analyzed data was represented in the form of tables.

Results and discussions

The interpretation of the results and discussion of findings in the study. A sample of 23 patients was identified and demographic variables were recorded. Descriptive design was adopted in this study. The sample was selected using the purposive sampling technique. The level of knowledge of the participants was assessed using modified biomedical waste management scale. Appropriate statistical techniques were used to analyse the data.The findings of the present study arrived after an in depth analysis of the data gathered. Descriptive statistical methods were employed to analyze the data.

Table 1: Distribution of demographic variables of participants

[n=23]

Demographic Data	Number of Participants	Percentage[%]
Age in Years		
31-40	10	43
41-50	11	48
51-60	2	9
Gender		
Male	8	35
Female	15	65
Education		
Primary	3	13
HighSchool	6	26
No Primary Education	14	61
Work experience		
Nil	4	17
8-16 years	6	26
17-24 years	11	48
25-32 years	2	9

In the present study, 23 participants were recruited. In age distribution, the majority of 48% were between the age group of 41-50 years, 43% between 31-40 years and 9% between 51-60 years of age respectively. In distribution of sex, majority (65%) was females and males were 35%. According to distribution of educational status, majority (61%) was illiterate, 26% had high school education and 13% had primary education. According to the years of work experience, 48% had between 17 – 24 years of experience, 26% had between 8-16 years of experience, 9% had between 25- 32 years of work experience and 17% had no work experience.

Table 2: Analyses on the level of knowledge on biomedical waste management among group-d health workers

The level of knowledge on biomedical waste management among Group-D health workers assessed using modified biomedical waste management scale.

[n =23]

Level of knowledge	No. of Participants	Percentage (%)
POOR	-	-
AVERAGE	5	22
GOOD	18	78

The level of knowledge on biomedical waste management among Group-D health workers. Nearly 78% of participants had very good knowledge, 22% of participants had good knowledge regarding the biomedical waste management based on the modified biomedical waste management scale which tend to measure the knowledge of group-D health workers on waste disposal in hospitals. This proves that the Group-D health workers have good knowledge regarding biomedical waste management.

Table 3: Influence of demographic variableson level of knowledge on biomedical waste management among group d workers

Karl Pearson coefficient of correlation was used to find the influence of demographic variables on level of knowledge on biomedical waste management among Group D Workers.

[n=23]

Demographic Variables	'r'
Educational Status	0.22
Work Experience	0.09

The computed 'r' value infers that educational status and work experience has positive relation on the level of knowledge among Group D Workers.

Nursing implications

Nursing Education

Importance of imparting knowledge regarding the Biomedical waste ensure the 100% Nosocomial free hospital premises because nurse educate the Group D health workers regarding the waste segregation, waste disposal and waste categorization. Hence this can be made possible through various CNE programmes, in-service education programmes and various journal clubs and attending various conferences, workshops and the experts, resource persons lectures and through Research papers and Evidence based practice.

Nursing Practice

Practice helps to improve the skill, Waste segregation and disposal must be first practiced by the staff members and they can confidently perform and teach to the other non clinical and non technical, supportive service staff members. Many competitions can be conducted regarding the Infection control approaches and the prizes can be awarded. That helps the nursing personnel's to practice that carefully in the routine works.

Nursing Administration

Written policies must be brought and set standards and protocol must be made by the Nursing Administrator regarding the Infection control and the waste management techniques. Importance about Infection control nurse and the committee must be explained to the management and the Infection control committee must be made mandatory in the specialty hospitals to reduce the surveillance rate and to reduce the length of the hospital stay and bring 100% free premises for Nosocomial infection surrounding.

Nursing Research

The study assesses the knowledge level of the Group D health workers regarding the biomedical waste disposal. Similar study can be conducted on the long run as the longitudinal and the other exploratory studies to assess the other components such as practice and attitude of the Group D health workers along with various personnel.

Conclusion

The study was conducted to assess the knowledge level on biomedical waste disposal among the Housekeeping staff. The knowledge level of the Group D health workers was categorized as, Poor, Average and Good with the percentage of 0, 22, 78% respectively. Hence the study concluded that there is good knowledge regarding the Bio-medical waste disposal but still there is a need for the continuing education for the effective management to treat the sick and to protect the healthy.

References

1. Bio-medical waste (management and handling) rules 1998, http://www.mppcb.nic.in/bio-medical_waste.htm
2. C.P.R. Environmental Education Centre, a centre of Excellency of the Ministry of environment and forests, Government of India http://www.cpreec.org/pubbook-biomedical.htm
3. Guidelines for the Management of Biomedical Waste in the Northwest Territories retrieved from http://www.enr.gov.nt.ca/sites/default/files/guidelines/biomedical_waste.
4. Ministry of environment & forests Notification http://envfor.nic.in/legis/hsm/biomed.html
5. Patil SP, Tambe MP, Patil PJ, Bhagwat's, VR. Awareness of Healthcare Workers Regarding Biomedical Waste Management (BMW) At Tertiary Care Government Hospital In Dhule Maharashtra, NJIRM. 2013.
6. Praveen mathur, Sangeeta patan and anand s. Shobhawat's 'Need of Biomedical Waste Management Sysytem in Hospitals – an emerging issue – A Review" *International Research Journal of Environment Science*, 2012. ISSN: 0973-4929,
7. S. Saini, S.S Nagarajan, R.K.Sharma's Knowledge, attitude and practices of Bio-medical Waste Management amongst Staffs on Teritary Level Hospital in India, *Journal of the Academy of Hospital Administration*, 2005. Vol. 17, No.2 (2005-01-2005-12)
8. Seggregation of Waste Ammendment of biomedical waste management http://www.google.co.in/imgres_ammendment-ot-biomedical-waste-management

Source of Support: NIL
Conflict of Interest: None