Journal of Advances and Scholarly Researches in Allied Education
Vol. 18, Issue No. 7, December-2021, ISSN 2230-7540

Study on Delhi Hospital Practices in Biomedical Waste Management: Identification and Segregation

Lilambar Jha[1]*, Dr. Hazi Mohammad Azamathulla[2]

[1] Research Scholar, CMJ University, Shillong, Meghalaya

[2] Assistance Professor, CMJ University, Shillong, Meghalaya

Abstract – Health care facilities are an essential aspect of our society, with the goal of reducing health issues and eliminating urgent threats to people's health. As a result, it is the responsibility of hospitals and healthcare facilities to protect public health. This might be done directly via patient treatment or indirectly by creating a clean, healthy environment for their staff and the community. Patil and colleagues Waste is created throughout the healthcare delivery process, which includes sharps, human tissues or body parts, and other infectious items. The basic idea for a sustainable approach to Biomedical Waste (BMW) Management is guided by examining the amount and pattern of bio-medical waste formation, its segregation, classification, and treatment of corresponding category waste. The current state of effluent treatment and waste management need triangulation strategies, including waste reduction, hazardous impact prevention, and economically feasible pollution control technology

Keywords – Biomedical, Waste, Management, Identification, Segregation

----------X----------

INTRODUCTION

Delhi Hospital Practices in Biomedical Waste Management

Although the Bio-medical waste management standards have been in place since 1998, hospital wastewater has remained in the grey area. There are no defined discharge criteria for potential pollutants emitted by health care institutions such as drug residues, formaldehyde, gluteraldehyde, adsorbable organic halogens, hypochlorites, and so on. However, the new Bio-medical Waste Management Rules for 2016 have focused on the pre-treatment of liquid chemical waste produced in hospitals (Manasi et al. 2014).

However, there are still obstacles in implementing the BMW Rules, 2016, which have been explored in this article. In addition, the conformity with the BMW Rules, 2016, has been evaluated. Given the existing scenario, a scientific plan for the processing, treatment, and disposal of solid bio-medical waste is required. Simultaneous attention should be placed on wastewater treatment and reuse. The basic idea for a sustainable approach to Biomedical Waste (BMW) Management is guided by examining the amount and pattern of bio-medical waste formation, its segregation, classification, and treatment of corresponding category waste. The current state of effluent treatment and waste management need triangulation strategies, including waste reduction, hazardous impact prevention, and economically feasible pollution control technology (Kishore et al., 2014). Best management techniques and relevant technology are critical tools for effective biomedical waste management. The type, creation pattern, and amount of medical waste are all key factors in determining the best way to handle health care waste (Acharya et al., 2014; Verma et al., 2008).

Composition of solid bio-medical waste:

The majority of garbage created by medical activities is similar to waste generated by other industries and dwellings. 75-90 percent of medical waste is non-regulated solid waste; nevertheless, 10-25 percent of medical waste needs extra measures due to the potential of disease transmission or risks from chemical or radiation exposure. Infectious and pathological waste, as well as sharps such as spent needles or scalpel blades, are examples of the latter. Small amounts of dangerous substances, such as abandoned medications, cleaning chemicals, and chemicasolvents, may also be present. Furthermore, diagnostic methods in nuclear medicine departments

www.ignited.in

may create modest quantities of low-level radioactive waste (Col et al., 2003).

Composition of hospital effluent:

The hospital effluent contains a variety of chemicals, medication residues, hormones, personal care products, disinfectants, germs, infectious fluids, pathogens, radioactives, nuclear medicine residues, and other contaminants that are harmful to the environment. There is a substantial body of data supporting the presence of medication residues such as antibiotics, antidepressants, and even cytotoxics, chemicals, disinfectants, and hormones altering fish reproductive behavior (Mesdaghinia et al., 2015). The harmful impacts of emerging pollutants contained in untreated hospital wastewater on aquatic environments are well documented in the literature. Depending on the makeup of medical waste, medical institutions might use a variety of ways to treat and manage the waste. However, the suitability and success of these measures will be determined by local legislation and priorities. Another critical problem is the competence and desire of the relevant parties to prioritise waste avoidance. Even in the absence of plentiful funding, creative and adaptable administrators, including organizations, may use innovative waste avoidance and management approaches in accordance with the regulations.

Status of bio-medical waste generation:

The creation of biological waste per capita varies by nation based on hospital infrastructure, number of beds, average occupancy and footfall, number of personnel, and so on. In industrialised nations, per capita bio-medical waste output is greater. BMW generation international scenario: The amount of hospital trash created in underdeveloped nations (per patient) is substantially lower than that generated in rich ones. In underdeveloped nations, the volume of trash created by a medical institution varies from 1-3 kg/day/bed, but in rich countries, the volume ranges from 3-8 kg/day/bed. The amount of infectious waste is 250-750 g/day/bed. For example, in the United States, solid bio-medical waste creation may reach 4.5 kilogramme per bed, but in Spain, 3kg biomedical waste is created per bed. The United Kingdom and France both produce a large amount of garbage, i.e. 2.5 kg/bed. In Western Europe, each bed generates 3-6 kg of BMW every day. In Asia, high-income nations create more garbage (2.5-4 Kg) than low-income countries (1.8-2.2 kg/bed/day) (Babu et al., 2009). The reason for the massive quantity of trash created in industrialised nations is that they follow the "dispose after use" policy for all durable items used in hospitals. Certain consumables must be used just once for infection control purposes, although not all items (Deblonde et al., 2015).

Indian scenario of BMW generation:

In India, 484 TPD of bio-medical waste is generated. In India, however, 447 TPD of biomedical waste is processed every day. In India, about 1, 68,869 HCFs create this garbage. In India, there are 198 operators or common bio-medical care institutions. There are 32 future CBWTFs in India. The amount of biological waste created in hospitals in India has been estimated to be 1.5 kg/bed/day (Pollution and Board 2015).

OBJECTIVES OF THE STUDY

1. To study on Waste Identification and Segregation;

2. To study on Delhi Hospital Practices in Biomedical Waste Management

Impact of improper hospital waste management:

Only 10- 15% of overall medical waste is hazardous, but it has the ability to turn even non-hazardous waste toxic. As a result of incorrect segregation, the amount of hazardous waste multiplies exponentially. Certain dangers are related with hospital waste mismanagement (Acharya et al., 2014; Verma et al., 2008; Gupta et al., 2009; Manasi et al., 2014; Zhou et al., 2009; Verlicchi et al., 2010; Deblonde et al., 2015; Fent et al., 2006; Emmanuel et al., 2002; Pinto and Garcy, 2014)

Waste from biomedical research Hospitals, clinics, research facilities, and health care facilities utilise a broad range of medications, including antibiotics, radioactive compounds, and caustic chemicals, all of which contribute to biomedical waste. In a nation like India, the entire quantity of municipal garbage generated by a city is just 1 to 1.5 percent biomedical waste, of which 10-15 percent is infectious. In contrast, the waste created in industrialised nations owing to increasing usage of disposables has reached up to 5.24 Kgs per bed per day. In hospitals in the United Kingdom, France, Norway, Spain, and the Netherlands, where *Corresponding author Anurag V. Tiwari works as a Lecturer and Prashant A. Kadu works as an Associate Professor, waste produced per bed per day is 3.3 Kgs, 2.5 Kgs, 3.9 Kgs, 4.4 Kgs, 4.2 Kgs, 4.5 Kgs, and 3.8 Kgs, respectively, which is significantly higher than in developing countries like India. Except for tertiary care institutions (such as AIIMS and SKIMS), most hospitals in India create 1-2 kgs of garbage per bed every day.

According to the World Health Organization (WHO), 85 percent of biomedical waste is non-hazardous, 10 percent is infectious, and the remaining 5 percent is non-infected but contains toxic substances such as methyl chloride and formaldehyde (Glenn and Garwal, 1999). A city like New Delhi, with around 40,000 beds, is projected to create over 60 metric tonnes of biomedical waste every day. Until recently, biomedical waste was not controlled and was simply "disposed of." Biomedical waste disposal may be very dangerous, especially when it is combined with municipal solid trash and placed in unregulated or illegal landfills such as empty lots in surrounding

www.ignited.in

residential areas and slums. This may result in increased environmental degradation, as well as major public health threats such as AIDS, Hepatitis, plague, cholera, and so on.

Action plan implementation;

The success of any plan is dependent on the consistency of activities and the absence of uncertainty on the procedures to be taken for its execution. The measures to be taken for its implementation are outlined below.;-

1. Waste identification and segregation Waste minimization.
2. Waste collection and transportation Waste treatment and disposal Record keeping
3. Training
4. Health and Safety
5. Security of biomedical waste Emergency planning.

Waste Identification and Segregation;

It must be guaranteed that generic trash, which accounts for 75-85% of hospital garbage, is not combined with potentially hazardous waste. In such situation, the whole load of garbage will have to be handled in a unique manner. As a consequence, the personnel who manage biomedical waste face the biggest hazards. According to the Hospital Waste Management and Handling Rules 1998, waste should be separated in bags/containers at the place of creation before being stored, transported, treated, and disposed of. This is to protect the occupational health of BMW employees. Currently, hospitals are incinerating trash or depositing waste in municipal dumpsters. The trash includes carcinogens such as mercury and other heavy metals, chemical solvents, and preservatives (formaldehyde, for example). When plastics are burned, they emit dioxins and other pollutants that pose substantial human health risks not only to waste handlers in hospitals, but also to the general population that comes into contact with them directly or indirectly. Thus, good segregation methods should be emphasised in order to assist reduce the amount of overall biomedical waste. Thus, tight waste segregation of biological and chemical hazardous waste (less than 10% of the waste stream) results in a clean solid waste stream (90% of the waste stream) that can be quickly, safely, and cost effectively handled by recycling, composting, and land filling the leftovers. It is critical to separate infectious and hazardous garbage from hospital waste. At the source, clear standards for the separation of infectious and hazardous waste from nonhazardous waste should be established.

► **Segregation, Packing, Storage and Transport:**

1. Classification of bio-medical waste into four groups depending on treatment methods.
2. There should be no mixing of untreated bio-medical waste with other wastes.
3. Untreated human anatomical waste, animal anatomical waste, dirty garbage, and biotechnological waste must not be held for more than 48 hours.
4. If needed to store for more than 48 hours, the occupier must ensure that it does not endanger human health and must notify the SPCC of the cause.

► **Authorization:**

1. Authorization for non-bedded HCFs just once.
2. The validity of the authorization for a bedded health care facility and the operator of a shared 13 facility must coincide with the validity of the consents.

► **Annual Report:**

1. Every occupier or operator of CBMWTF is required to submit an annual report to the designated authorities by June 30th of each year.
2. Every year, on or before July 31st, the designated authority must compile, evaluate, analyse, and report to the CPCB.
3. The CPCB should submit an annual report to the Ministry of Environment, Forests, and Climate Change by the 31st of August.
4. Annual reports must be made accessible on the occupier's, SPCB's, and CPCB's websites.

► **Maintenance of Records:**

According to the guidelines, records pertaining to generation, collection, receipt, storage, transit, treatment, and disposal must be kept for a period of five years..

► **Accident Reporting:**

In the event of a serious accident, the authorized person must notify the authorities promptly and provide a report detailing the corrective actions performed within 24 hours..

www.ignited.in

► **Waste Minimizations:**

Hospitals in third-world nations create substantially less garbage than hospitals in the United States. The following considerations should be kept in mind while attempting to limit the amount of medical waste.

- Attempt to maintain a system that is based on the three R's—recycle, reduce, and reuse.
- When choosing a product, keep the necessity of waste reduction in mind.
- Reduce the amount of hazardous waste by limiting the use of mercury-based items and technologies in healthcare facilities.
- Try to use digital and electronic technology to replace mercury-based diagnostic instruments.
- The use of plastic and disposables should be kept to a minimum.
- Purchase reusable objects made of glass, rubber, and meal.
- Choose non-PVC items.
- Attempting to enhance sterilisation methods, quality assurance, adequate monitoring, and validation of cleaning, disinfection, and sterilisation of reusable goods for patient care can boost trust in reusable and minimise dependency on resterlised single use products.
- Implementation of an effective and sound recycling strategy. Contact the authorised manufacturers for plastic recycling.

Secure Collection and Transportation;

Segregation is the key to reducing hospital waste to be processed at the place of creation, but for this to happen, hospital managers must maintain a safe internal and exterior waste collection and transportation infrastructure. The ultimate advantage of segregation is lost if garbage that was adequately separated at the time of creation is mixed together by labourers or municipal personnel as they collect it. Thus, collection and transportation may be accomplished in four phases.

► Collection of various types of garbage inside the hospital;

► transportation of waste within the hospital;

► immediate storage of segregated waste within the premises;

► Transportation of waste beyond the premises for treatment/disposal.

Importance of self-awareness:

Self-awareness is a neurological and cognitive feature as well as a "interpersonal process of self-discovery" (Morin, 2011a, 2011b) (Eckroth-Bucher, 2010, p. 301). It strives to foster contextual and relational awareness of one's emotional states and outlooks, important life patterns, behaviours, beliefs, and preconceived notions that influence everyday personal and professional encounters (Rasheed et al., 2019). Self-awareness is essential for personal and professional development because it enables nurses to understand their potentials, temperaments, and stress management capacities in order to participate in self-care and analyse and improve their professional performance (Rasheed, 2015; Turan, 2018).

Self-aware nurses are also more equipped to deliver culturally competent nursing care to a wide range of patient populations (Younas, 2020). Self-awareness is an essential nursing competency (American Psychiatric Nurses Association, 2014; Nursing and Midwifery Council, 2015) because it improves nurses' decision-making and critical thinking skills, as well as their ability to develop therapeutic relationships with patients and families in a variety of clinical settings (Han & Kim, 2016; Jack & Miller, 2008; Ramvi, 2015; Rasheed et al., 2019). Despite the significance of self-awareness for nurses and the advantages it provides for patient care, there is little research on whether nurses are self-aware and how much this ability exists in nurses. The scarcity of literature might be attributable to the absence of measures to assess nurses' self-awareness. The tools offered are from phycology (Govern & Marsch, 2001; Killian, 2012; Sutton, 2016) and do not assess nurses' self-awareness in the clinical nurse–patient relationship. As a result, this mixed-methods study was carried out to fill this need.

In general, self-awareness is vital for personal development since it allows a person to regulate themselves and enhance their performance. It also helps in the development of acceptable and achievable objectives, as well as the management of job and personal life challenges. However, knowing and embracing its significance in life is the first step. Palmiere (2012) analyses and defends these arguments extremely well: Self-awareness is a fundamental personality trait that may help us manage our enterprises, jobs, and lives. When we lack self-awareness, we tend to repeat the same errors and face the same challenges again and over. However, when we understand our own talents and limitations, we are better prepared to meet challenges, solve issues, choose our fights, make judgments, and forecast the repercussions of those decisions. Furthermore, this technique aids in the analysis of individual differences and similarities. This will aid in the development of interpersonal relationships and guide our speech toward the needs of others.

www.ignited.in

The Importance of Self-Awareness in Nursing: Self-awareness is constantly mentioned and regarded as the most significant and necessary element of a professional nurse in the nursing literature. Furthermore, with the understanding that, this will lead to proficiency in providing high-quality nursing care and, ultimately, higher client satisfaction. A review of the literature reveals that self-awareness is a dynamic and transforming process of self-reflection and development. Finally, self-awareness is the use of self-assessment to examine and steer behaviour in a true manner, allowing nurses to create an atmosphere that promotes interpersonal relationships with patients. As a result, it aids in the rehabilitation process by creating a therapeutic atmosphere (Eckroth-Bucher, 2010).

CONCLUSION

The study's findings revealed that there was a substantial increase in staff nurses' knowledge in post-test, and that none of the demographic characteristics were significantly connected with post-test knowledge scores in biomedical waste management. Staff nurses' post-test knowledge had no significant relationship with any of the socio-demographic characteristics such as age, sex, religion, and so on. So, based on these results, we may conclude that the null hypothesis is statistically accepted and the research hypothesis is rejected. It means that there is no link between the identified socio-demographic characteristics and the post-test knowledge of staff nurses on biomedical waste management. The Pearson test/Yates corrected chi-square test yielded these results, which were statistically insignificant. When it comes to BMW management, the health sector has a duty to protect the environment and the public's well-being. A lack of adequate garbage disposal might be hazardous to one's health. Waste management is incomplete without proper processing, treatment, and final disposal. Nurses should also be able to reduce waste creation during treatment and diagnostic processes by using waste reduction techniques. The findings of the inquiry may be used to nursing practise, nursing education, nursing administration, and nursing research.

REFERENCES

[1]. Revised draft Guidelines for Best Available Works and Conservative Nature Conservation Guidelines for the Stockholm Convention on Continuing Organics Geneva: Conventional Secretary of Stockholm; 2006 Secretary of the Stockholm Convention

[2]. Rituing, Jugal K, Mathur RG, Mandal K, Suchil P Role of data manual on the administration of nursing waste The Indian restorative diary 2004 December; 93 (12): 271-272

[3]. Rumisa nazir, G A Bhat Environmental Waste Management System at Great Hospitals in Spargar JCRR Vol 04 issue 08, 19/03/12 Available From

[4]. Ruby Rani , Studies on the activity of the PTP on biomedical waste administration among the medical caretakers of the specific experts in the Mangalore [Master dissertation] Published RGUHS; 2006

[5]. Rudraswamy S (1), Sampath N, Doggalli N, Staff state of mind aboutmedication manhandle at a British doctor's facility centers in India, Indian J Occup Environ Med 2012 May; 16 (2): 75-8 I: 104103/0019-5278107077

[6]. NIOSH Alert: Preventing needle stick injuries in health care settings: Nov19:DHHS2000.Pub No.108.

[7]. Nkonge Njagi A (1), Mayor Oloo A, Kithinji J, Magambo Kithinji J,Information, mentality and conduct of wellbeing waste administration and wellbeing dangers related with two educating and move doctor's facilities in Kenya, J Community Health 2012 Dec; 37 (6): 1172-7: 101007/s10900-012-9580-x

[8]. Ozder A (1), Teker B, Eker HH, Altındis S, Kocaakman M, Karabay OWaste Management Waste Management of Health Managers - require?, J Environ Health Sci Eng 2013 Jul 16;: 101186/2052-336X-11-20

[9]. Olufunsho Awodele, Aishat Abiodun Adewoye and Azuka Cyril OparahMedical Waste Management Test at 7 Hospitals in Lagos, Nigeria Public Health, 2016 16: 269 Available at:

[10]. Pandit NB, Mehta HK, Kartha GP, Choudhary SK, Medical WasteManagement: mindfulness and practices in the Gujarati Indian J people group Community people group 2005 Oct-Dec; 49 (4): 245-7

[11]. Preeti Razdan, Amarjeet singh Cheema and System for Biomedical Management System, CDAC Noida India, 2010: 26-31

[12]. Pullishery F F, Panchmal GS, Siddique S, Abraham's Awareness, Information and Bio-Medical Services Management Activities Among the Karnataka Health Careers - Study Section Sectional IAIM, 2016; 3 (1): 29-35Availableat:http:/iaimjournalcom/wp-content/transfer/2016/01/iaim_2016_0301_06pdf

www.ignited.in

Corresponding Author

Lilambar Jha*

Research Scholar, CMJ University, Shillong, Meghalaya