Journal of Research in Medical and Dental Science
2022, Volume 10, Issue 12, Page No: 243-246

Available Online at: www.jrmds.in
eISSN No. 2347-2367: pISSN No. 2347-2545

A Study to assess Perceptions and Practices Regarding Domestic Biomedical waste Management among Urban and Rural Inhabitants of Wardha District

Laksh Shubhangi Agrawal*, Abhishek Joshi, Himabindu Reddy, Aditya Dhonde, Ashok Mehendale

Department of Community Medicine, Jawaharlal Nehru Medical College, Datta Meghe Institute of Medical Sciences, Wardha, India

ABSTRACT

Background: Biomedical waste (BMW) is any waste generated during the diagnosis, treatment, or vaccination of human or animal research subjects, or in the manufacture or testing of biological or pharmaceutical products, or in health camps as stated by WHO. There are different types of waste produced in different sectors like Domestic sector, Healthcare sector, Industrialization sector, IT sector, Agricultural sector, Municipal sector, Open areas Commercial, Institutional .Rapid urbanization, urban growth, and economic development have not only transformed the physical scale of cities, but they have also put a tremendous strain on infrastructural services across India.

Domestic garbage accounts for at least 85% of all public waste. Because there are no guidelines for dealing with domestic biomedical waste, it is rarely separated from municipal waste. This is a possible health hazard not only for municipal workers and stray animals, but also for the general public. Essentially everyone should practice biomedical waste management in a safe and environmentally friendly manner. A clean and healthier environment is the outcome of good biomedical waste management. It has the potential to minimize pollution and the danger of disease.

Aim and Objectives: This study aims to evaluate rural and urban residents' knowledge, attitudes, and perceptions of domestic BMW, to analyse how domestic BMW is used in both rural and urban regions and to raise awareness of BMW practices in both rural and urban regions.

Methods: This will be Cross-sectional study planned in households around urban and rural health centers of our institution. Data will be collected by visiting the site, inspection, personal interviews regarding perceptions and practices of domestic bmw segregation treatment and disposal.

Results: Results will be derived from the data collected after appropriate analysis.

Key words: Biomedical waste management, Domestic waste, Hazardous waste, Waste segregation

HOW TO CITE THIS ARTICLE: Laksh Shubhangi Agrawal, Abhishek Joshi, Himabindu Reddy, Aditya Dhonde, Ashok Mehendale, A Study to assess Perceptions and Practices Regarding Domestic Biomedical waste Management among Urban and Rural Inhabitants of Wardha District, J Res Med Dent Sci, 2022, 10 (12): 243-246.

Corresponding author: Laksh Shubhangi Agrawal

e-mail✉: lakshshubhangi1999@gmail.com

Received: 28-November-2022, Manuscript No. jrmds-22-77127;

Editor assigned: 30-November-2022, PreQC No. jrmds-22-77127(PQ);

Reviewed: 15-December-2022, QC No. jrmds-22-77127(Q);

Revised: 19-December-2022, Manuscript No. jrmds-22-77127(R);

Published: 26-December-2022

INTRODUCTION

Biomedical waste (BMW) is any waste generated during the diagnosis, treatment, or vaccination of human or animal research subjects, or in the manufacture or testing of biological or pharmaceutical products, or in health camps as stated by WHO. There are different types of waste produced in different sectors of areas. The sectors of area are divided into

- ✓ Domestic sector.
- ✓ Healthcare sector.
- ✓ Industrialisation sector.
- ✓ IT sector.
- ✓ Agricultural sector.
- ✓ Municipal sector.
- ✓ Open areas.
- ✓ Commercial.

✓ Institutional.

Waste can be divided 1. Based on their toxicity: hazardous waste and Non–Hazardous waste. Hazardous waste comprises radioactive, commercial, electronic, and medical waste whereas non-hazardous comprise municipal, organic, non-organic, and materialistic. Based on their nature: Solid waste, liquid waste, and gaseous waste [1].

Infectious materials created during health-care activities such as treatment, diagnosis, and immunization of humans and animals are included in hospital trash. It may also entail the investigation of research-based operations. It has a greater ability to spread diseases in the environment. It contains gauze, syringes, fluids, and medications, among other things. The trash is normally separated according to the WHO-recommended bio-medical waste management system, which is color-coded [2].

Industrial waste is produced during industrial activities which comprise of manufacturing of products. It can be hazardous and non-hazardous forms. Residual and unwanted waste is released from the industrial sector. Air pollution and water pollution are commonly seen during industrialization development.

Domestic waste refers to garbage generated by domestic duties, such as vegetable and fruit peelings, plastics, and other kitchen wastes, as well as non-hazardous waste. To avoid infection of people and other animals, it is normally collected by government garbage facilities workers and delivered to waste disposal and segregation facilities, then to landfills.

Rapid urbanization, urban growth, and economic development have not only transformed the physical scale of cities, but they have also put a tremendous strain on infrastructural services across India. The IT industry generates a significant quantity of electronic waste. It comprises devices and goods which have lost their efficacy or are damaged, increasing the contamination rate. It includes television sets, computers, radio, and other devices.

Farms, poultry houses, and slaughterhouses are the most common sources of agricultural waste. Manure, crop residues, weeds, leaf litters, sawdust, forest debris, and livestock waste are the most common wastes produced. Pesticides damage water, air, and soil, as well as salt and waste drainage from fields. If the trash is not managed and the chemical residue is sprayed straight to agriculture, it could wind up near streams and rivers. Municipal waste is generated from the commercial or residential areas in the municipal locality. It is solid or semi-solid excluding industrialized hazardous waste. It comprises food residues, wood waste, papers, textiles, plastics, and rubber.

On July 20, 1998, the Ministry of Environment and Forest, Government of India, promulgated the Bio-Medical Waste (BMW) (Management and Handling) Rules 1998 [1]. Under the BMW Management Rules, 2016 as modified , stakeholders are obliged to follow these principles in addition to current procedures. Among these are the disposal of personal protective equipment, home care waste, solid waste disposal, liquid waste disposal, and stakeholders' duties for resolving problems faced by health care professionals and biological waste handlers. In July 2020, the fourth version of the recommendations was released, with updated information on the separation of general solid waste and biological waste from quarantine centers, home-care, and other facilities. and health-care institutions treating COVID-19 patients, as well as disposal recommendations [3].

The BMW practices are founded on the notion of the four R's: reduce, reuse, recycle, and repair. It focuses on strategies for preventing waste creation and recovering as much waste as possible rather than disposing of and removing poisonous hazardous waste from the environment. But BMW rules focus on waste generated from health care facilities and currently do not have provision for dealing with domestic BMW waste. If the BMW is not properly handled, it can pose a number of dangers to health-care personnel, patients, communities, and the environment. Because there are no guidelines for dealing with domestic biomedical waste, it is rarely separated from municipal waste. This is a possible health hazard not only for municipal workers and stray animals, but also for the general public [4]. Scavengers who select open, unprotected health-care waste for recycling without gloves, masks, or shoes, and second, syringe reuse without appropriate sterilization, worsened the BMW problem in India [2]. Another problem that plagues both households and pharmacists is the throwing of outdated drugs, which are often regarded useless but nevertheless work albeit with reduced effectiveness. It has been discovered that 99% of his waste is dumped with municipal rubbish and goes straight to landfills [3]. Despite the developments in scientific knowledge, the amount and kind of waste is increasing, and this has a negative influence on human life. Health and environmental risks are posed by a lack of understanding among all types of health workers and inappropriate treatment of biological waste [5]. It poses chemical and radioactive risks in addition to infectivity concerns.

The Indian government has established categories for ordinary households, which are easily identifiable by two colour codes: blue and green. Wet and biodegradable garbage is represented by blue, whereas dry and non-biodegradable waste is represented by green [5].

The proper handling of biological waste requires waste segregation. It should not be mixed with other types of garbage and should be separated from them before being transported or stored. To minimize misunderstanding, the containers should be properly labeled. To avoid overfilling, all of the bags should only be filled to 2/3 capacity [6].

In the case of general garbage, local authorities are responsible for disposal, whereas in the case of bio-

hazardous waste, procedures such as deep burial, autoclaving, and microwave treatment, shredding, secured landfilling, and incineration can be used. The importance of biological waste management is to enhance the procedures that ordinary people use. It helps in the reduction in the incidence of infection and other health hazards in the community. It is a very important component of environmental protection as well as it guarantees sanitary, efficient, and cost-effective trash storage, collection, and transportation without polluting the environment. This practices of the 4R's also bring about a very positive change in a community as it aids in following the sustainable lifestyle that everyone must follow [7].

In India, home biomedical waste (HBMW) is commonly used in combination with regular domestic garbage, generating new public health risks. Ignoring HBMW in the 2016 BM W management regulations has left a huge void in addressing this already-overlooked public health paradigm. As a result, HBMW management necessitates a mission-oriented strategy. Soiled diapers used by babies or old-aged , Discarded menstrual pads , cotton or clothes used to wipe blood products , utilized contraceptives, lancets and RBS testing strips of diabetics , and out-of-expiry -date medications are just some examples of potentially hazardous waste generated in homes. It has been estimated that 99% of this household waste gets discarded alongside municipal refuse and is delivered straight to landfills [8].

Infectious, chemical, and pharmaceutical waste can all pose health risks. Human immunodeficiency virus (HIV)/AIDS (acquired immunodeficiency syndrome) and hepatitis-B and hepatitis-C infections can all result from needle-stick injuries caused by contaminated needles. These wastes also endanger the health of stray animals, birds, the neighborhood, and the environment as a whole.

The first step in successful HBMW management is to acknowledge the problem. Quantification is the next stage. Based on a short survey of 500 families, India creates 62 million tonnes of waste each year, which is increasing at a rate of 4% per year; the percentage of biological and hazardous waste is increasing at a rate of 4% per year. Third, decentralization of the process should be prioritized. Currently, only 60% of residential garbage is collected, and only 15% of that waste is processed. Fourth, it should be reevaluated from the standpoint of recycling. It has been discovered that a significant amount of BMW can be recycled, with some of it requiring just sterilization. Recycling has the ability to generate revenue and may also serve as an employment generator. Finally, the importance of raising awareness cannot be overstated. In India, which has been aimed to Swachh Bharat Abhiyan awareness efforts, an HBMW vertical may be added to the existing campaign for a greater and larger reach [9].

In a study done by AIIMS, Countless of antibiotics, painkillers, and other drugs are pouring down the Yamuna river, growth can be attributed to our habit of discarding unused pharmaceuticals in the waste. The medicines might end up in milk, vegetables, and other agricultural products, as well as causing superbugs that are resistant to most antibiotics. Drug concentrations have been found in high amounts in groundwater and in the vicinity of landfills. Antibiotic contamination in the environment may facilitate the spread of resistance genes to human commensalism and dangerous microorganisms. To keep this under control, a protocol for segregating medical waste is necessary [10]. Municipal solid waste is rising in concentration, with a high proportion of organic garbage and improper disposal, making a significant contribution to greenhouse gas emissions and other air pollutants. Mismanagement of municipal solid waste (MSW) has negative environmental repercussions as well as public health hazards and other socioeconomic problems. For waste management and treatment, the mitigation strategy necessitates an ecologically friendly interpretation of the waste. Recyclables conversion helps to address environmental concerns such as greenhouse gas emissions and waste management, allowing for a greener environment while also boosting the economy [9].

Objectives

To evaluate rural and urban residents knowledge, attitudes, and perceptions of domestic BMW.

To analyse how domestic BMW is used in both rural and urban regions.

To provide recommendation to improve BMW knowledge, attitudes, and practices in rural and urban regions.

METHODS

Research design

Present study will be a cross-sectional study.

Study setting

This cross- sectional study is planned to be conducted in households around urban and rural health centers of our institution. Data will be collected by visiting the site, inspection, personal interviews regarding perceptions and practices of domestic BMW segregation treatment and disposal.

Study participants

The participant of the study will include the people of the households selected for the survey.

Inclusion criteria

Any member of the selected house >18 yrs., involved in domestic waste handling.

Maids working in urban household, handling the waste of the selected house.

Exclusion criteria

Non-consenting/unwilling participant.

Children <18 yrs. old.

Sampling procedure and sample size
10 houses from each block of urban Arvi-Naka and Rural Arvi-Naka will be randomly selected for the study.

Data collection, sources and measurement
One-on-one interviews will be conducted with all participants. After duly obtaining informed consent, sociodemographic information was collected first followed by perceptions about BMW, knowledge regarding the same and the methods employed in handling with it . Data will be collected using a pre-designed questionnaire.

The questionnaire will be made in English, translated to local language Marathi and Hindi. The questionnaire will have different sections dealing with

Knowledge regarding waste management.

Attitude regarding waste management.

Perception regarding waste management.

Practices regarding waste management.

Statistical methods
Data collected will be filed in MS–Excel. We plan to analyse the data using Epi Info statistical software. Applicable descriptive statistics will be used to express results in percentages ratios rates and proportions. The results of this analysis will be presented in form of graphs and tables.

Expected results
We will have data about how much of the population under study is has proper knowledge about domestic bio-medical waste and what are the inhibitors in practice of prescribed waste segregation and disposal.

DISCUSSION

Implications
The results of this study will imply if the inhabitants if Wardha had knowledge about disposal of domestic bio-medical waste and its possible health hazards. That information can be used to provide information to the concerned authorities and health care workers about the lacunae and develop an appropriate strategy for improving the situation in the community. Various means of circulating information can be employed to increase awareness about domestic biomedical waste management in the community. Few of the related studies were reviewed [11-13].

CONCLUSION

Will be arrived upon after systematic completion of the study.

ETHICS COMMITTEE APPROVAL

Confidentiality will be maintained throughout the research and the information of the subjects will be accessible only to the researchers. The protocol will be submitted to IEC, DMIMS-DU for due clearance.

REFERENCES

1. Bhalwar R. Text book of public health and community medicine. Bhalwar R, Vaidya R, Tilak R, et al. 1st Ed. New Delhi: Department of Community Medicie, AFMC, Pune, 2009; 1201.
2. Salkin IF, Kennedy ME. Review of health impacts from microbiological hazards in health-care wastes. Geneva WHO. 2004.
3. Patil AD, Shekdar AV. Health-care waste management in India. J Environ Manage 2001; 63:211-220.
4. Tarvadi PV. A study on waste disposal management in a tertiary care hospital. J Punjab Academy Forensic Med Toxicol 2018; 18:54-57.
5. Mandal SK, Dutta J. Integrated bio-medical waste management plan for Patna city. Institute of Town Planners. 2009.
6. Gupta S, Mohan K, Prasad R, et al. Solid waste management in India: options and opportunities. Resour Conserv Recy 1998; 24:137-154.
7. Ramasamy A, Dash S. Neglect of household biomedical waste. Econ Polit Wkly 2019; 54:19.
8. Sharma A. Malady of household biomedical waste: New awakening beckons? Toxic alert 2013.
9. Mani S, Singh S. Sustainable municipal solid waste management in India: A policy agenda. Procedia Environ Sci 2016; 35:150-157.
10. Velpandian T, Halder N, Nath M, et al. Un-segregated waste disposal: An alarming threat of antimicrobials in surface and ground water sources in Delhi. Environ Sci Pollution Res 2018; 25:29518.
11. Vanlalsawmi J, Wankhede P, Shambharkar M. Assess the awareness on Ill effect of electronic waste on health among general population of selected urban community. Int J Modern Agric 2020; 9:21–24.
12. Agrawal S, Dakohde S, Singh B, et al. Drinking water practices, quality and git disturbances at household level in rural setting of Wardha District, Maharashtra, India. J Pharm Res Int 2021; 33:18-27.
13. Thakur R, Jumade P, Waghmare R, et al. Perceptions, practices and health hazards, of agricultural workers from rural Central India with regard to pesticide use--A cross sectional study. J Evol Med Dent Sci 2020; 9:3528-3533.