

RESEARCH ARTICLE

HEALTH CARE WASTE MANAGEMENT AND SUSTAINABLE DEVELOPMENT GOALS IN MALAYSIA

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*Department of Community Medicine, Kulliyah of Medicine, International Islamic University Malaysia**This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.***ARTICLE DETAILS****ABSTRACT****Article History:**

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This review paper focuses on the definition of health care waste and its management in Malaysia. This review paper also sheds the light on the legislation related to hazardous waste in Malaysia. Subsequently, it explores the relation of healthcare waste with the Sustainable Development Goals (SDGs) outlined by United Nation.

KEYWORDS

Health care waste, management, hazardous waste, Sustainable Development Goals (SDGs), United Nation.

1. INTRODUCTION

The global health care system expands tremendously in many developed and developing countries. This enables the provision of health care to more people, covering wide geographical areas. More sophisticated treatments can be offered to the patients. Unfortunately, following the advancement in health care, a silent and largely neglected crisis is unfolding. The lifesaving advances generated an ever-growing amount of waste that is not being treated properly. Consequently, multiple problems arise such as excessive carbon emission and waste of resources causing enormous suffering and pollution to the environment [1].

A sustainable health care waste management can have significant impact on the public and environmental health. Globally, health care waste management is underfunded and poorly implemented. Environmental and public health are threatened by the combination of toxic infectious pathogens and other hazardous properties of medical waste. A researcher stated that improperly treated health care waste has put an estimated of over half of the world's population at risk of environmental, occupational, or public health threats [2]. It is imperative for health care facilities, whose priority is to first, do no harm, to prevent these risks to their community and environment [3].

Contrasting from many other hazardous wastes, medical waste management is not directly covered by any international convention. It is usually categorized according to the implication of risks it carries. Similar with normal municipal waste, majority of medical waste are of low risk unless burned. More hazardous types of medical wastes include infectious and sharps wastes, chemical and radioactive wastes, and hospital wastewaters.

From the burning of medical waste, many hazardous gases and compounds will be released. It includes, but not limited to dioxins, hydrochloric acid and furans. On top of that, toxic metals lead, cadmium, and mercury will also be released. Worsening climate change ensued the release of large amounts of carbon dioxide. The disposal of biodegradable waste produces greenhouse gas emissions, including methane, which has a bigger impact on the climate than any other gas than carbon dioxide [4]. In many countries, the lack of recycling and disposal infrastructure means that dumping of waste is the method of choice for waste disposal. The dumping will result in continuous pollution of our air, lands and seas.

The objective of this review paper is to highlight the definition, legislation and management of healthcare waste in Malaysia. In relation to SDGs, healthcare waste contributes significant importance to ensure the sustainability of the universe.

2. METHODOLOGY

This paper reviewed the literature related to waste particularly the healthcare waste. In the Malaysia setting, the guidelines by Department of Environment was referred to as the primary source of information related to healthcare waste legislation and management. Subsequently, the literature related to Sustainable Development Goals (SDGs) was explored to find the importance of healthcare waste management to SDGs.

3. HEALTHCARE WASTE

As defined by WHO, health-care waste includes all the waste generated by health-care establishments, research facilities, and laboratories. In addition, it includes the waste originating from "minor" or "scattered" sources—such as that produced in the course of health care undertaken in the home (dialysis, insulin injections, dressing). WHO categorized the wastes from hospitals and healthcare establishments into infectious waste, pathological waste, sharps, pharmaceutical waste, genotoxic waste, chemical waste, radioactive waste, pressurized containers and wastes with high content of heavy metals [5].

In Malaysia, clinical waste is classified as scheduled waste under the Environmental Quality (Scheduled Wastes) Regulations, 2005 which includes:

- SW403 - Discarded drugs containing psychotropic substances or containing substances that are toxic, harmful, carcinogenic, mutagenic or teratogenic;
- SW404 - Pathogenic and clinical wastes and quarantined materials;
- SW421 - A mixture of scheduled wastes;
- SW422 - A mixture of scheduled and non-scheduled wastes.

4. Hazardous Waste Legislation in Malaysia

The Department of Environment (DOE) is empowered under the Environmental Quality Act 1974 to control and prevent pollution and to protect and enhance the quality of the environment [6,7]. A set of regulations dealing with hazardous waste management which regulate the storage, transport, treatment and disposal of hazardous wastes was enforced since May 1989:

- Environmental Quality (Scheduled Wastes) Regulations, 2005 (to replace the Environmental Quality (Scheduled Wastes) Regulations 1989);

- Environmental Quality (Prescribed Premises) (Scheduled Waste Treatment and Disposal Facilities) Regulations, 1989; and
- Environmental Quality (Prescribed Premises) (Scheduled Wastes Treatment and Disposal Facilities) Order, 1989.

The regulations among other things specify the following requirements:

- Scheduled wastes shall as far as practicable, before disposal, be rendered innocuous;
- Generation of scheduled wastes shall be reduced using the best practicable means;
- Waste generators to notify the DOE of any scheduled wastes generated and keep up -to-date inventory of scheduled waste generated, treated and disposed of;
- Scheduled wastes may be stored, recovered and treated within the premises of a waste generator;
- Incineration, disposal, off site storage and off-site treatment shall only be carried out at prescribed premises licensed by the DOE;
- Use of durable waste containers with clear labels. Storage of wastes shall be proper and adequate;
- Waste generators shall conform to the requirements of the consignment note system when transporting wastes to ensure it reaches the approved destination and are carried out by licensed transporter.
- Waste generators shall provide information to a transporter regarding the nature of the wastes transported and action to be taken in case of accidents.

In term of waste segregation, DOE has outlined that the responsibility of nursing and clinical staff to ensure that segregation of clinical waste is carried out at source and that all clinical wastes are deposited only in yellow bags and sharps in sharp bins only. All healthcare establishments in Malaysia shall adopt the following standard colour coding which is widely accepted. General wastes such as papers, plastics and boxes should be disposed in black bags. Clinical wastes for incineration only should be disposed in yellow bags whereas light blue bags are meant for wastes for autoclaving or equivalent treatment.

The Environmental Quality (Scheduled Wastes) Regulations 2005 states that proper documentation and record of the generation and handling of clinical waste is important to comply with. It requires an inventory be kept and a consignment note system to be used for the transport waste from the hospital to an approved facility. Effective from 1st January 2007, 'e-Consignment Note' web application come into operation and as such, the consignment note can be sent electronically to DOE. Waste generator, contractor and waste receiver of scheduled wastes are requested to use this system for every transaction of waste.

The consignment note captures the details of the waste generator (hospitals or clinics), the transport contractor and the final receiver (licensed facility) together with the information on the clinical waste being transported. An inventory provides an accurate and up-to-date record of the quantities and categories of clinical wastes being generated, treated and disposed of. These records should be retained by the respective parties for a period of three years.

5. HEALTHCARE WASTE AND THE SUSTAINABLE DEVELOPMENT GOALS

On 25 September 2015, during the United Nation General Assembly, all 193 world leaders committed to obtain three extraordinary achievement over the next 15 years - End extreme poverty; fight inequality & injustice; fix climate change. The goals adopt the 2030 Agenda for Sustainable Development that includes 17 Sustainable Development Goals (SDGs). Following the success of the Millennium Development Goals (MDGs), the SDGs was built and aim to go further. Building on the principle of "leaving no one behind", the new Agenda emphasizes a holistic approach to achieving sustainable development for all. The new Goals are unique in that they call for action by all countries, poor, rich and middle-income to promote prosperity while protecting the planet. They recognize that ending poverty must go hand-in-hand with strategies that build economic growth and addresses a range of social needs including education, health, social protection, and job opportunities, while tackling climate change and

environmental protection.

The SDGs also explicitly include waste management to achieve a sustainable world. Healthcare waste management is a key utility service that can be directly linked to several of the 17 Sustainable Development Goals (SDGs). Success in healthcare waste management will speed progress towards meeting UN Sustainable Development Goals, particularly: Good health and wellbeing (SDG3), clean water and sanitation (SDG6), decent work and economic growth (SDG8), and responsible consumption and production (SDG12).

5.1 SDG 3: Ensure healthy lives and promote well-being for all at all ages

Good health and well-being are essential components of sustainable development. Significant improvement and progresses have been achieved particularly in increasing life expectancy, maternal and child health and infectious diseases. Nevertheless, there are still several elements that recorded stall progress. Healthcare waste management is one area that has been persistently under-recognised and under-resourced. Consequently, enormous knock-on effects can be seen among the workers, patients and the community. Solving this problem would remove direct and indirect threats to the health of over half the world's population.

5.2 SDG 6: Ensure availability and sustainable management of water and sanitation for all

SDG 6 aims to ensure the availability and sustainable management of water and sanitation for all. Water scarcity, poor water quality and inadequate sanitation negatively impact food security, livelihood choices and educational opportunities for poor families across the world. United Nation has outlined, by 2020 there will be environmentally sound management of chemicals and all wastes throughout their life cycle in accordance with agreed international frameworks. There must be significantly reduce the release of all wastes to air, water and soil. Subsequently, their adverse impacts on human health and the environment can be minimized. By 2030, the aim is to improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, and improving wastewater treatment and increasing recycling and safe reuse globally. To achieve SDG 6, healthcare waste management must be recognized and incorporated in the management of water, sanitation and health program for health care. On top of that, any waste treatment technologies should not be releasing toxic residues or emission to the water sources.

5.3 SDG 8: Promote inclusive and sustainable economic growth, employment and decent work for all

SDG 8 aims to achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high-value added and labour-intensive sectors. In addition, SDG 8 aims to protect labour rights and promote safe and secure working environments for all workers. Waste workers are too often underpaid, under-educated and under-protected despite carrying out a noble task vital to society. Majority of them lack a living wage and work in unsafe working environment. Paradigm shift must be taken in treating the welfare and protecting the human rights of the waste workers. The job must be recognised as essential public service. The professional standards must be ensured with proper vaccinations, training, decent conditions and a living wage. Socially, the public should have a level of respect for the men and women who carry this noble task.

5.4 SDG 12: Ensure sustainable consumption and production patterns

SDG 12 sets the target, by 2030, there is substantially reduced waste generation through prevention, reduction, recycling and reuse. In order to achieve that, the process in healthcare waste management may start with sustainable procurement. The healthcare facilities need to leverage its buying power to ensure that the materials purchased generate as little waste as possible. Should the waste production be inevitable, the waste produced must be very minimal, non-toxic, recyclable, or simply repairable. Net welfare gains from economic activities can increase by reducing resource use, degradation and pollution along the whole life cycle, while increasing quality of life. The healthcare system can advocate the habit of "doing more and better with less".

6. CONCLUSION

Healthcare waste management is an integral component of action to

achieve at least four out of the 17 SDGs. The safe and efficient management of healthcare waste is essential for public and environmental health. Irrespective of technologies used for treatment and disposal, the standards for the protection of the environment and human health are uniform across all the healthcare establishments.

CONFLICT OF INTEREST

None.

AUTHORS' CONTRIBUTIONS

Conception and design: NF, NA

Drafting of the article: NF, MZY

Critical revision of the article for important intellectual content: NF, MZY, NA

Final approval of the article: NF, NA, MZY

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