E-ISSN: 2706-8927
P-ISSN: 2706-8919
www.allstudyjournal.com
IJAAS 2022; 4(2): 74-76
Received: 13-02-2022
Accepted: 15-03-2022

Abhishek Saket
Research Scholar, Environmental Biology Department, A.P.S. University, Rewa, Madhya Pradesh, India

Neeta Singh
Principal, Govt. Girls P.G. College, Rewa, Madhya Pradesh, India

Corresponding Author:
Abhishek Saket
Research Scholar, Environmental Biology Department, A.P.S. University, Rewa, Madhya Pradesh, India

Biomedical waste management in Ayurveda hospital

Abhishek Saket and Neeta Singh

Abstract
Biomedical waste management is an important part of traditional and modern health care systems. This paper focuses on the identification and classification of biomedical waste in Ayurvedic hospitals. The terms 'biomedical waste management', 'health care waste management' alone and combined with 'Ayurveda' or 'Ayurvedic' current practices and recent advances in the treatment of these used conditions. We have made a concerted effort to classify biomedical waste in Ayurvedic hospitals as the available data on its collection is extremely rare. Proper waste management is fundamental to hospital hygiene, hospital hygiene and care services. Current methods of disposal using Ayurveda waste sewage /ditches, burning and landfilling. But these methods have their advantages and disadvantages. Our review identified many interesting areas for future research such as the rational use of bioremediation techniques in biomedical waste management and the use of active microbes and solar energy in waste disposal.

Keywords: Biomedical, management, health, Ayurveda

Introductions
Waste means any useless, unwanted or discarded item or material, whether that material or item has any other purpose or will be used in the future. This includes any object or object that is spilled, leaked, pumped, poured, discharged, poured or discarded into the ground or into water or the surrounding air (Department of Environmental Protection, 2010) [1]. Waste generated by health care services includes a wide range of materials, from used needles and syringes to contaminated clothing, body parts, diagnostic samples, blood, chemicals, medicines, medical supplies and radiation (WHO) [2].
According to the rules of the Biomedical Waste (Management and Handling) Rules, 2016 of India, 'biological waste' is defined as any waste generated during the diagnosis, treatment or vaccination of humans or animals or in related research activities or production. or biological testing or health facilities. (Published in India Gazette, 2016) [3].
Medical care is important to our health and well-being, but improper handling of natural waste causes a direct health impact and harms the ecosystem including plants and animals. Biomedical waste management is an important part of traditional and modern health care systems. Waste management includes all activities and measures required to manage waste from its inception to its final disposal (United Nations figures) [4]. Waste generated during health care activities carries a higher risk of infection and injury than any other type of waste. It is important that all medical waste is disposed of locally, properly treated and disposed of (WHO) [2]. The vast majority of health workers in Ayurvedic hospitals knew nothing about proper waste management. Considering its impact on the environment and health, biomedical waste management requires immediate educational attention by increasing awareness during training. We should also focus on the most affordable and eco-friendly methods of its disposal.

Literature review methods
Review was done on literary material available on various extensive data mining was carried out from various texts, peer reviewed journals and some websites of the concerned subjects. Databases like PubMed (1975e2017 Feb), Scopus (1960e2017), AYUSH Portal, DOAJ, DHARA and Google Scholar were searched. We used the medical subject headings 'biomedical waste' and 'health care waste' for identification and classification. The terms 'biomedical waste management', 'health care waste management' alone and combined with 'Ayurveda' or 'Ayurvedic' for current practices and recent advances in the management of these wastes was searched.

Methodology

Data collected from 1 Ayurveda colleges, 1 Government hospitals, 2 major private hospitals and 2 Ayurveda clinics were used to identify the type of wastes, the amount of waste generated and the disposal techniques followed.

Current disposal techniques followed and their demerits

The primary data collected from several Ayurvedic hospitals reveals that the disposal techniques adopted currently for Ayurvedic biomedical wastes are e sewage/drains, incineration and land fill.

Sewage/drains

It is the most common and inexpensive method of disposal. Sewage disposal is usually practiced for liquid wastes. Wastes after Vamana, Virechana, Raktamoksha, Vasti etc. are disposed using this process. Raw disposal of human body fluids and wastes leads to serious health impacts. Hence, concurrent disinfection (Park, 2015) [5] should be done before discarding it into drains.

One of the major problem addressed by Ayurvedic hospitals is the water mixed with oil, mudga churna (Besan powder) after the bathing of patients who underwent abhyanga (oil massage) or any other therapeutic procedures may lead to clogging due to sedimentation. This water when reaches the drains will adversely affects the useful bacterial flora.

The kasayas (decoctions) and liquids other than taila (oils) used for Dhara, Avagaha (a type of fomentation technique like sitz bath), kshalana are also disposed into drains. Most of these herbal preparations don't cause any issues unless and until they properly drained into sewage system. Otherwise stagnant liquid wastes will emit foul odor and promote breeding of flies.

Incineration

It is a common technique adopted for solid and dry herbalorganic wastes; for example, used kizhi (material used for a type of fomentation), by-products of medicines and churna (powders), Kasaya Kalka (residue of decoction) etc. This process is usually selected to treat wastes that cannot be recycled, reused or disposed off in a land fill site (Park, 2015) [6]. It can be done by simple incineration/ burning and using incinerators. Incineration requires minimum land. Another advantage of incinerators is that it can be operated in any weather. The incineration process destroys pathogens and reduces the waste volume and weight but leaves a solid material called biomedical waste ash (Rajor *et al.* 2012) [7] as residue which increases the levels of inorganic salts and organic compounds in the environment.

Demerits of incinerators are it is expensive to build, maintain and operate. The air-borne by-product of incineration is detrimental to the ozone layer. The air-borne particles have a noxious smell and vermin tend to congregate in the facility, potentially spreading disease throughout the area. High energy is required for the process and also requires skilled personnel and continuous maintenance (Negative Impacts of Incineration) [8].

Landfill

Huge amount of solid wastes are disposed using this method. It is the terminal method of disposal of ashes after incineration. Disposal of biomedical waste ash (Silva *et al.* 2002) [9] in landfill may cause contamination of groundwater as metals are not destroyed during incineration. However, this process has a number of drawbacks. Poisonous drugs like Bhallataka (Semecarpus anacardium) etc. are buried deep, otherwise accident exposure to non-purified Bhallataka fruits will leads to burns or adverse skin reactions (Hegde, 2014) [10]. References about its adverse effects of producing swelling and burns were found in Rasatarangini.

Landfills are the world's third largest anthropogenic emission source (Agnihotri, 2014) [11]. Open dumping cause's higher risks of disease transmission, acute pollution problems and open access to scavengers and animals (Singh, Anantpreet and Kaur, 2012) [12]. Carbon dioxide, methane and other harmful gases generated by decaying organic wastes are released into the atmosphere. Methane, a greenhouse gas can itself be a danger to inhabitants of an area because it is flammable and potentially explosive (United States Environmental Protection Agency) [13]. Over dumping and not focusing on the biological treatment of the landfill will cause serious damage to the ecosystem.

Others

Reuse of taila (oils) used for dhara or pizhichil (type of fomentation technique) for the same person. This method is also not ideal because the medicated oil losses its potency and will be contaminated.

Classification of ayurveda biomedical wastes on the basis of disposal methods as per biomedical waste management rules 2016.

Based on the disposal techniques adopted we can classify the wastes on the basis of colour coding.

Yellow - All those wastes that are to be burned.

Red - Recyclable wastes.

Blue - Glass disposed in cardboard boxes.

White - Sharps.

Classifying waste from Ayurveda hospital will make the disposal of it more easier and efficient. Considering the wastes from an Ayurvedic hospital, the wastes to be disposed in yellow bags will be more. Only a little amount of waste is in red and white bags. Blue bags have least significance in Ayurveda hospitals. The sharps in Ayurveda hospitals like salaka and vasti yantra are often reused after proper sterilization.

Conclusions

Ecosystem damage due to the impact of biomedical waste on vayu (air), udakam (water) desam (earth) makes us look like ‘Janapadodwamsam’. Proper identification, classification and disposal of biological waste is therefore a moral and social responsibility of health care professionals. Strict implementation of biomedical waste management rules requires an hour. It should be mandatory for health facilities to train their health workers in accredited training facilities and it should not be a one-time operation but should be an ongoing process. The use of appropriate waste management strategies and their identification in the curriculum helps to develop their understanding of good BMW management practices. We also need more affordable and environmentally friendly technology. A concerted effort is needed from land pollution authorities and better training for health care workers and administrators. Sources of funding None. Conflicts of Interest None.

Acknowledgement
The authors are very thankful to various authorities of Ayurvedic College, Hospital and clinics for cooperation during study period.

References

1. Dept. of environment protection. Biomedical waste rule [Online] [cited 2010 Aug 27]; [12 screens]. Available from URL: http://www.fau.edu/facilities/ehs/info/Biological-Waste-Program.pdf.
2. WHO, Healthcare waste, http://www.who.int/topics/medical_waste/en/.
3. Published in the Gazette of India, Extraordinary, Part II, Section 3, Sub-section (i)] Government of India, Ministry of environment, forest and climate change. Available from URL: http://www.iwma.in/BMW%20Rules,%202016.pdf.
4. United Nations statistics Division - Environment statistics. Unstats.un.org.
5. Park K. Principles of epidemiology and epidemiologic methods, disinfection. Park's textbook of Preventive and social medicine. Twenty 3rd ed. India: Banarasidas Bhanot publishers, 2015, p. 127.
6. Park K. Hospital waste management, Park's textbook of preventive and social medicine. 23rd ed. India: Banarasidas Bhanot publishers, 2015, p. 790.
7. Rajor, Xaxa M, Mehta R, Kunal. An overview on characterization, utilization and leachate analysis of biomedical waste incinerator ash. J Environ Manag. 2012;108:36e41. Epub 2012 May 29.
8. Negative Impacts of Incineration-Based Waste-To-Energy Technology, Alternative energy news, and information about renewable energy technologies. Available at URL: http://www.alternative-energy-news.info/negativeimpacts-waste-to-energy.
9. Silva ACN, Bernardes RS, Moraes LRS, Reis JDP dos. Criterios adotados para seleça~o de indicadores de contaminaç~ao ambiental relacionados aos resíduos solidos de serviços de saúde: uma proposta de avaliaça~o. Cad Saúde Pública 2002;18(5):1401e9.
10. Hegde Prakash L. A text book of Dravyaguna Vijnana, Bhallataka. 1st ed. India: Chaukhambha publications, 2014, p. 152e3.
11. Agnihotri AK. Current scenario of Indian Landfill and its solution through biotechnological approaches. 2nd International Congress on Green Urban Futures, 2014.
12. Singh Anantpreet, Kaur Sukhjit. Treatment and disposal. Biomedical waste disposal. 1st ed. India: Jaypee Brothers Medical publishes, 2012, p. 121e2.
13. United States Environmental Protection Agency, Greenhouse gas emissions overview of greenhouse gases, Available from URL: https://www.epa.gov/ghgemissions/overview-greenhouse-gases