Journal of Ayurveda & Holistic Medicine

www.jahm.co.in

eISSN-2321-1563

ORIGINAL RESEARCH ARTICLE- CLINICAL RESEARCH OPEN ACCESS

A CROSS-SECTIONAL SURVEY STUDY TO ASSESS THE KNOWLEDGE, ATTITUDE, AND PRACTICE (KAP) TOWARDS BIOMEDICAL WASTE MANAGEMENT IN AYURVEDIC TERTIARY HEALTHCARE INSTITUTE IN DELHI

NEHA YADAV[1*] PRITI TOMAR[2]

[1*] Ph.D. Scholar, Department of Kaumarabhritya, All India Institute of Ayurveda, Sarita Vihar, New Delhi, India.

[2] Ayurveda Medical Officer (In-charge), Government of Uttar Pradesh.

Corresponding Author Email: vaidyanehaydav04@gmail.com Access this article online: www.jahm.co.in

Submitted on- 12-10-23	Revised on- 15-10-23, 20-10-23	Accepted on-21-10-23

ABSTRACT:

Background- Bio-medical waste means any waste generated during the diagnosis, treatment, or immunization of human beings or animals or research activities pertaining thereto or in the production or testing of biological or health camps. The total Biomedical waste generated in the country is 484 tons per day from 1,68,869 healthcare facilities out of which only 447 tons per day is treated whereas thirty-seven tons per day is left untreated. Lack of awareness about the health hazards related to healthcare waste, inadequate training in proper waste management, absence of waste management and disposal systems, insufficient financial and human resources, and the low priority given to the topic are the most common problems connected with healthcare waste. This project is a survey study highlighting the present status of knowledge attitude and practice knowledge attitude and practice towards biomedical waste management among Postgraduate Scholars, Panchakarma Technicians, and Laboratory Technicians working in the Tertiary Healthcare Institute of Ayurveda in Delhi. **Methodology-** The cross-sectional survey study was conducted in November 2019 as a part of a small project of assessing biomedical waste management among postgraduate scholars, panchakarma technicians, and laboratory technicians in a reputed Tertiary Healthcare Ayurvedic Institute (All India Institute of Ayurveda) situated in Delhi as purposive sampling technique was used to collect a sample size of 50,29,10 respectively. All the questions were dichotomous with yes or no as per their knowledge, attitude, and practice. **Result-** This observational study reveals that majority of Postgraduate Scholars had incredibly good knowledge regarding biomedical waste management except Storage time for BMW as per BMW rules (48 hours). Level of attitude towards BMW is average among all the three groups except financial burden increases because of BMW management increases burden of work. Level of Practice regarding Biomedical Waste management is exceptionally good in all the three groups.

Keywords- BMW, Panchakarma, KAP

INTRODUCTION

Bio-medical waste means any waste generated during the diagnosis, treatment, or immunization of human beings or animals or research activities pertaining thereto or in the production or testing of biological or health camps [1]. The total Biomedical waste generated in the country is 484 tons per day from 1,68,869 healthcare facilities out of which only 447 tons per day is treated whereas thirty-seven tons per day is left untreated [2]. According to WHO, 85% of the total waste generated by healthcare activities is general and non-hazardous waste, while the remaining 85% is hazardous and may be radioactive, toxic, or infectious [3]. The most frequent issues surrounding healthcare waste include low financial and human resources, inadequate training in proper waste management, lack of systems for managing and disposing of waste, ignorance of the health risks associated with it, and low priority given to the issue [4]. Biomedical waste management of such a huge amount is a cumbersome and crucial task for any healthcare institute not only for the betterment of hospital staff, patients, and their attendants but also for the ecosystem as it is a very potent source of infection. It is an integral part of all systems of medicine, be it the contemporary or Indian system of medicine. Amendments and Guidelines of Schedule 1 of Biomedical Waste Management Rules, 2016 [5] are for all Healthcare wastes but no specific guidelines are mentioned regarding specific types of waste produced in Ayurvedic Hospitals. Major waste material coming out of an Ayurveda hospital is the used *Kizhi* (a material used for the fomentation process), and medicated oil discarded after use [6]. Large quantities of this oil are available, and many unscrupulous elements misuse this spent oil. The leftover oil needs to be destroyed or recycled in creative ways in an eco-friendly manner [7]. Ayurveda creates less waste with blood or body parts, except in the case of *Rakthamokshan* (bloodletting), where blood-filled leeches may be considered as biomedical waste [8]. Prior studies were done to explore the awareness [9,10] as well as Knowledge, attitude and practice (KAP) [11] among healthcare professionals about healthcare waste management in a different population setting. Present survey study was further planned to highlight the current status of Knowledge attitude and practice (KAP) towards biomedical waste management among Postgraduate Scholars, Panchakarma technicians, and Laboratory technicians.

METHODOLOGY

The cross-sectional survey study was conducted in November 2019 as a part of a

small project of assessing biomedical waste management among postgraduate scholars, Panchakarma Technicians, and Laboratory Technicians in a reputed Tertiary Healthcare Ayurvedic Institute (All India Institute of Ayurveda) situated in Delhi. Study participants included healthcare workers divided grossly into three groups: Postgraduate Scholars, Panchakarma Technicians, and laboratory Technicians as they majorly deal with Biomedical waste daily. A purposive sampling technique was used to collect a sample size of 50,29,10 among Postgraduate scholars, Panchakarma technicians, and Laboratory technicians respectively. The structured Questionnaire was interviewed personally after the due permission of the author (Dr. Nikita Sharma et al) who had used this questionnaire earlier in her previous study [12]. All the questions were dichotomous with yes or no as per their knowledge, attitude, and practice.

Table no. 1- Questionnaire regarding Knowledge, Attitude, and Practice (KAP) of Biomedical Waste

Knowledge regarding Biomedical waste Management	**Responses**
1. Knowledge about bio-medical waste generation and legislation	Yes / No
2. Healthcare waste is hazardous.	Yes / No
3. Biomedical waste is segregated at the source.	Yes / No
4. Storage time for BMW as per BMW rules (48 hours)	Yes / No
5. Awareness of separate color-coding containers	Yes / No
6. Understanding of color-coding Yellow Bag, Red Bag, Black Bag, Blue Bag	Yes / No
7. Awareness about discarding objects causing punctures or cuts.	Yes / No
8. Awareness about discarding of needles.	Yes / No
9. Identification of bio-hazard symbol	Yes / No
10. Awareness of universal precautions	Yes / No
11. There is an incinerator facility in our hospital.	Yes / No
12. Diseases transmitted through BMW	Yes / No
Attitude toward Biomedical Waste Management	
1. Biomedical waste management is an important issue.	Yes / No
2. Waste management is a responsibility.	Yes / No
3. Financial burden increases because of BMW management.	Yes / No

4. BMW management increases the burden of work.	Yes / No
5. Willing to attend training on BMW management to enhance knowledge.	Yes / No
6. Reporting to concerned authorities if the center is not complying with the guidelines of biomedical waste management	Yes / No
Practice of Biomedical Waste Management	
1. Disposal of sharps in a puncture-proof container	Yes / No
2. Disposal of expired drug in black color bag	Yes / No
3. Disposal of used gauze piece in yellow color bag	Yes / No
4. Not recapping the used needle	Yes / No
5. Discarding of used needles by hub cutter	Yes / No
6. Vaccinated for Hepatitis-B	Yes / No
7. Ever undergone training for biomedical waste management	Yes / No

Scope of the study-

The present study highlights the KAP towards biomedical waste management in Tertiary. Healthcare Ayurvedic Institute in Delhi in the present scenario which may help-

1. Other aspirants are to conduct a similar study in other ayurvedic hospitals in Delhi for overall assessment.
2. Other aspirants to explore the lacunas regarding improper knowledge, attitude, and practice in the future.
3. The institution can organize any awareness lecture or any training program regarding Biomedical Waste Management.

RESULTS

A total number of 89 respondents including 50 postgraduate scholars of all clinical and non-clinical departments in the institute, 29 panchakarma technicians, and 10 laboratory technicians were interviewed personally. This observational study reveals that the majority of Postgraduate Scholars had good knowledge regarding biomedical waste management except for the component of storage time (48 hours) for biomedical waste as per BMW rules, awareness about universal precautions, and knowledge regarding incinerator facilities in hospitals. All the panchakarma technicians had good knowledge regarding BMW Management except for the incinerator facility in this institute. Whereas knowledge regarding BMW among laboratory technicians is satisfactory the level of attitude towards BMW is average among all the three groups i.e., Postgraduate

scholars, Panchakarma technicians and Laboratory technicians except the financial burden increases because of BMW management and BMW management increases the burden of work. The level of Practice regarding Biomedical Waste management is very good in all three groups i.e., Postgraduate Scholars, Panchakarma Technicians, and Laboratory Technicians. All the subject participants of all three groups have undergone training programmed for biomedical waste management.

Table no. 2- Level of Knowledge regarding Biomedical Waste Management

Knowledge regarding Biomedical Waste Management	Postgraduate Scholars		Panchakarma Technicians		Laboratory Technicians	
	n=50	%	n=29	%	n=10	%
1. Knowledge about bio-medical waste generation and legislation	44	88	28	96	10	100
2. Healthcare waste is hazardous	49	98	27	93	18	95
3. Biomedical waste is segregated at the source	49	98	28	96	20	100
4. Storage time for BMW as per BMW rules (48 hours)	21	42	27	93	10	50
5. Awareness of separate color-coding containers	50	100	29	100	16	90
6. Understanding of color-coding Yellow Bag, Red Bag, Black Bag, Blue Bag	50	100	28	96	20	100
7. Awareness about discarding objects causing punctures or cuts	49	98	25	86	16	90
8. Awareness about discarding of needles	50	100	29	100	19	98
9. Identification of bio-hazard symbol	36	72	29	100	17	90
10. Awareness of universal precautions	22	44	28	96	20	100
11. There is an incinerator facility in our hospital	16	32	10	34.4	6	30
12. Diseases transmitted through BMW	48	96	22	75	16	90

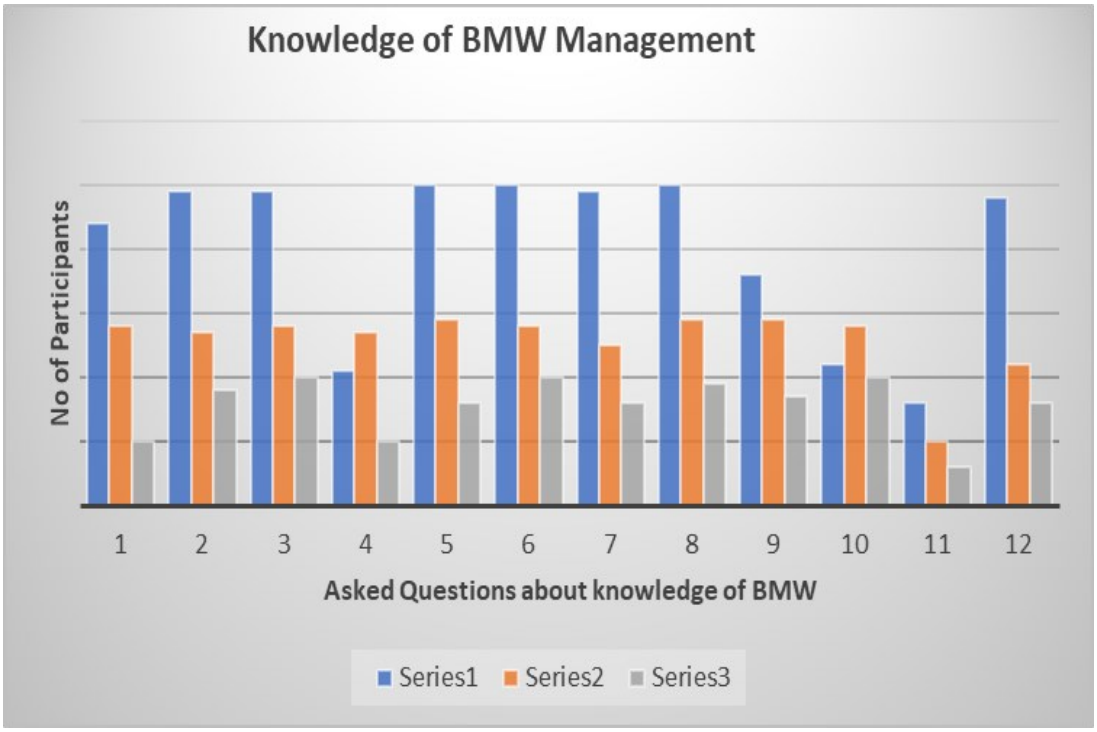

Figure no. 1 where series 1,2,3 shows: PG scholars, PT, and LT respectively.

Table no. 3- Level of Attitude towards Biomedical Waste Management

Attitude regarding Biomedical Waste Management	Postgraduate scholars		Panchakarma technicians		Laboratory technicians	
	n=50	%	n=29	%	n=10	%
1. Biomedical waste management is an important issue	50	100	29	100	10	100
2. Waste management is a responsibility	50	100	29	100	10	100
3. Financial burden increases because of BMW management	23	46	8	27	8	80
4. BMW management increases the burden of work	23	46	8	24	4	40
5. Willing to attend training on BMW management to enhance knowledge	46	92	29	100	6	60
6. Reporting to concerned authorities if the center is not complying with the guidelines of bio-medical waste management	41	82	29	95	7	70

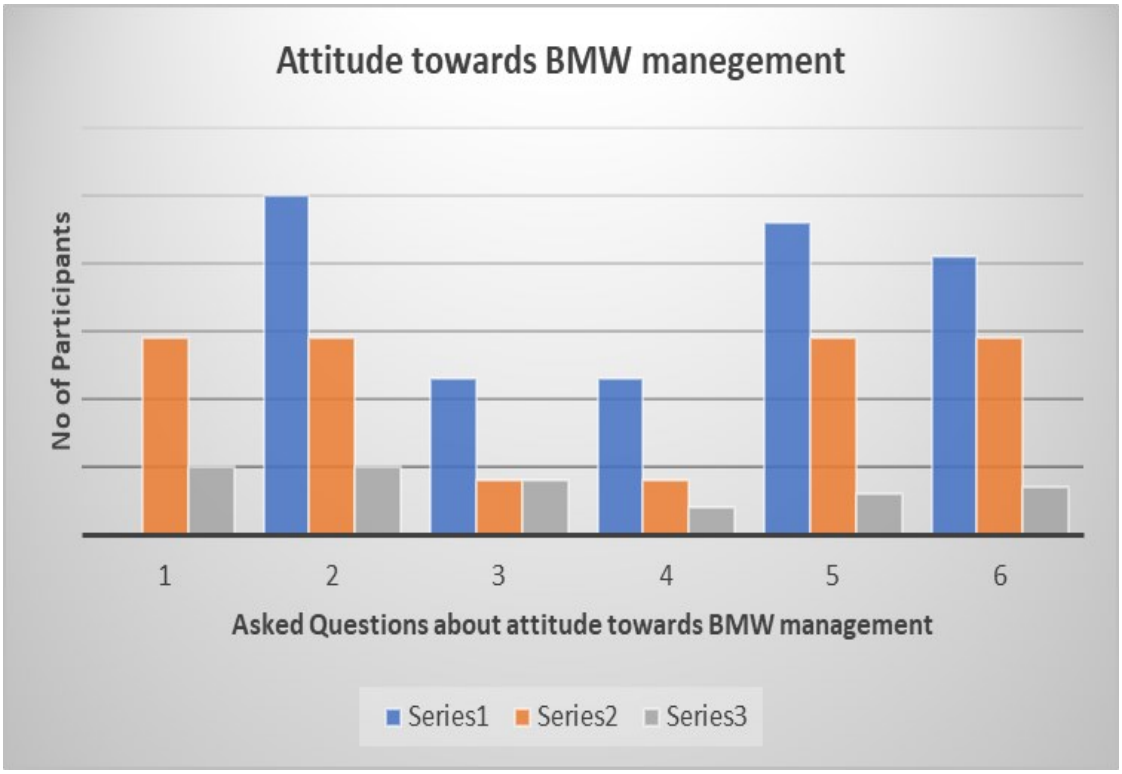

Figure no. 2- where series 1,2,3 shows PG scholars, PT, and LT respectively.

Table No. 4- Level of Practice Regarding Biomedical Waste Management

Practice regarding Biomedical Waste Management	Postgraduate scholars		Panchakarma technicians		Laboratory technicians	
	n=50	%	n=29	%	n=10	%
1. Disposal of sharps in a puncture-proof container	49	98	29	100	9	90
2. Disposal of expired drug in black color bag	40	80	27	89	2	20
3. Disposal of used gauze piece in yellow color bag	50	100	30	100	10	100
4. Not recapping the used needle	42	84	30	100	10	100
5. Discarding of used needles by hub cutter	44	88	25	86	10	100
6. Vaccinated for Hepatitis-B	40	80	29	100	10	100
7. Ever undergone training for bio-medical waste management	40	80	29	100	9	90

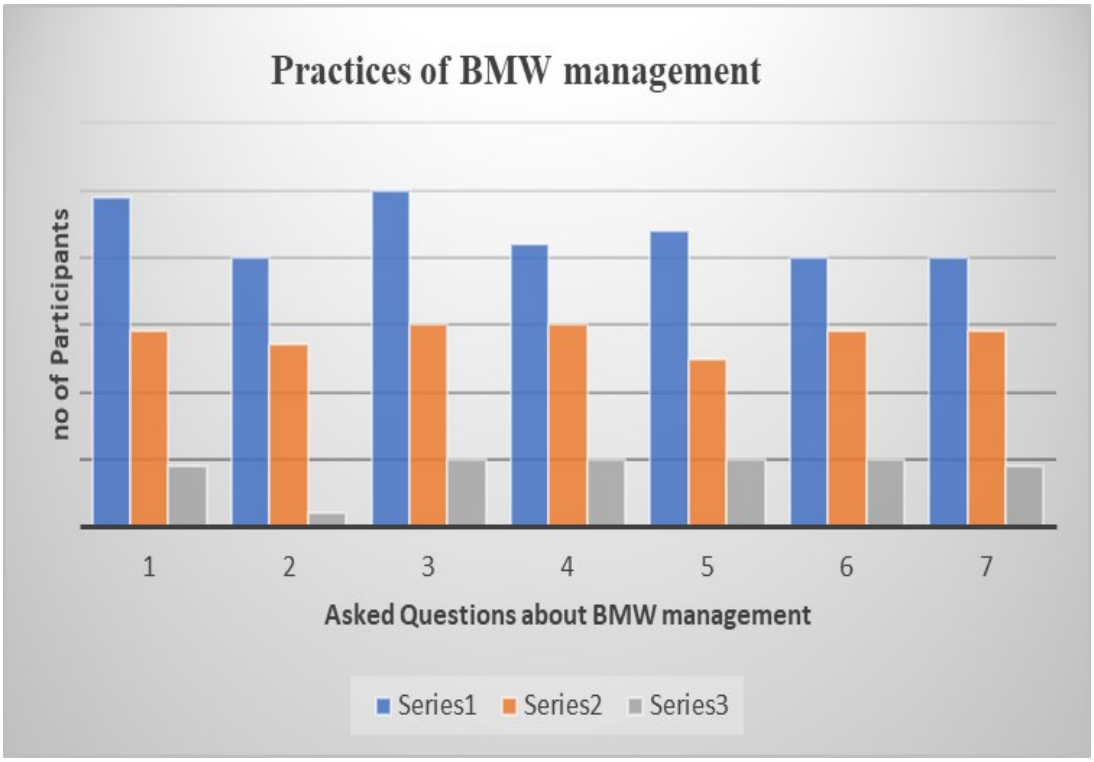

Figure no. 3 where series 1,2,3 shows: PG scholars, PT, and LT respectively.

DISCUSSION-

The study was conducted on a predesigned and pretested questionnaire and a cross-sectional study design was selected as a similar design was adopted in other studies also. Previous research work has been done by Dr Nikita Sharma et al on BMW management. That study showed gaps in the knowledge of all categories of respondents. The knowledge of the existence of biomedical waste management was better among doctors (96%) as compared to nurses (88%), paramedical staff (70.9%), or the cleaning staff (16.9%). The knowledge of practical aspects of BMW management was better in nurses, paramedical staff, and cleaning staff. It highlighted the lack of knowledge at every level. The knowledge, attitude, and practices.

The need for comprehensive training for all the categories of hospital staff is highly recommended. Awareness and better practices are essential for understanding the domain of burden of work, health hazards, and financial loss and hence, innovative strategies, plans and campaigns can be done for sustainable and effective healthcare waste management[13]. Knowledge about biomedical waste management rules among all three groups was high but was low regarding Storage time for BMW as per BMW rules (48

hours) among Postgraduate scholars; this was like the findings from other studies as well. Similarly, knowledge and attitude towards color coding of containers, and waste segregation which itself is probably the most important pivotal point and crucial for further waste management, was also found to be good among all the study subjects of all the three groups. Similarly, the level of practice in the healthcare institute is also good among all the three groups. Training programs play a vital role in prevailing awareness among all healthcare givers and patients about proper handling, segregation, and treatment of any hospital waste as it is a potent source of infection and injury. This is a small study attempting to reveal the present status of this crucial issue of BMW. More such studies are to be conducted in all other Ayurvedic Hospitals in Delhi too with many subject participants so that real facts are explored. Also, there are no validated or standardized guidelines mentioned anywhere regarding a specific type of waste produced in any Ayurvedic hospital. So, it is high time that Ayurvedic aspirant Researchers are encouraged to make a list of special types of wastes produced during/after any Ayurvedic therapy and standardize/validate as to which waste is to be disposed of in which color-coded dustbin and how they are treated.

CONCLUSION:

Concluding from the results, the importance of training regarding biomedical waste management cannot be overemphasized, lack of proper and complete knowledge about biomedical waste management impacts practices of appropriate waste disposal.

The following recommendations are to be proposed regarding biomedical waste management:

- Strict implementation of biomedical waste management rules is the need of the hour.
- It should be made compulsory for healthcare facilities to get their healthcare personnel trained from accredited training centers. These training sessions should not become merely a one-time activity but should be a continuous process depending upon the patient input in different healthcare facilities.
- Training of sanitary staff should be specially emphasized.
- It should be ensured that the injuries happening to the healthcare personnel are reported to the person in charge of biomedical waste management or to the biomedical waste management committee, and they report it in the prescribed format to the pollution control board.

FINANCIAL SUPPORT: All India Institute of Ayurveda, New Delhi.

ACKNOWLEDGEMENT: The authors want to acknowledge All India Institute of Ayurveda, New Delhi for study setting.

REFERENCES

1. Guidelines for Management of Healthcare Waste as per Biomedical Waste Management Rules. Central Pollution Control Board Ministry of Environment, Forest & Climate Change. [2023Oct19]. Available from: https://cpcb.nic.in/uploads/Projects/Bio-Medical-Waste/Guidelines_healthcare_June_2018.pdf
2. Datta, P, Mohi GK, Chander J. Biomedical waste management in India: Critical appraisal. Journal of laboratory physicians 2018; 10(1): 6–14.
3. Health-care waste. WHO. 2018Feb8 [cited 2023Oct20]. Available from: https://www.who.int/news-room/fact-sheets/detail/health-care-waste
4. Padmanabhan KK, Barik D. Health Hazards of Medical Waste and its Disposal. Energy from Toxic Organic Waste for Heat and Power Generation. 2019:99–118.
5. Bio Medical Waste Management Rules – 2016. 2018Mar27 [2023Oct12] Available from: https://dhr.gov.in/document/guidelines/bio-medical-waste-management-rules-2016
6. Rajan R, Robin DT, M V. Biomedical waste management in Ayurveda hospitals - current practices and future prospectives. J Ayurveda Integr Med. 2019 Jul-Sep 10(3):214-221.
7. Kandasamy S, Sharma M, Kamyotra J. Spent oil management and its recycling potential in India inventory and Issues. Procedia Environmental Sciences 2013; 18:742–755.
8. Rajan R, Robin DT, M V. Biomedical waste management in Ayurveda hospitals - current practices and future prospectives. J Ayurveda Integr Med. 2019 Jul-Sep 10(3):214-221.
9. Sharma A, Sharma V, Sharma S, Singh P. Awareness of biomedical waste management among health care personnel in jaipur, India. Oral Health Dent Manag. 2013; 12(1):32-40.
10. Letho Z, Yangdon T, Lhamo C, et al. Awareness and practice of medical waste management among healthcare providers in National Referral Hospital. PLoS One. 2021;16(1):e0243817
11. Sharma N. Study to Assess the Knowledge, Attitude and Practices of Biomedical Waste Management among Healthcare Personnel at a Tertiary Care Hospital in Haryana. Journal of Advanced Research in Medical Science & Technology 2017; 1:34-39.
12. Sharma N. Study to Assess the Knowledge, Attitude and Practices of Biomedical Waste Management among Healthcare Personnel at a Tertiary Care Hospital in Haryana. Journal of

Advanced Research in Medical Science & Technology 2017; 1:34-39.

13. Lee SM, Lee D. Effective Medical Waste Management for Sustainable Green Healthcare. Int J Environ Res Public Health. 2022 Nov10; 19(22):14820.

CITE THIS ARTICLE AS

Neha Yadav, Priti Tomar. A cross-sectional survey study to assess the knowledge, attitude, and practice (KAP) towards biomedical waste management in Ayurvedic tertiary healthcare institute in Delhi. *J of Ayurveda and Hol Med (JAHM)*. 2023;11(9):196-207

Conflict of interest: None

Source of support: None