A Study on Assessment of Awareness and Knowledge of Biomedical Waste Management

Jyoti Jaiman[1] and Dr. Anjali Juyal[2]

[1]MSc. Research Scholar, Department of Food Science and Nutrition, College of Community and Applied Sciences, MPUAT, Udaipur, Rajasthan, India.

[2]Guest Faculty, Department of Resource Management and Consumer Science, College of Community and Applied Sciences, MPUAT, Udaipur, Rajasthan, India.

Abstract:

Biomedical waste (BMW) generated in our nation on a day to day basis is immense and contains infectious and hazardous materials. It is crucial on the part of the employees to know the hazards of the biomedical waste in the work environment and make its disposition effective and in a scientific manner. To ascertain the levels of and the expanse of gaps in knowledge, attitudes and practices among students, post graduates, staff nurses and professors in Udaipur, Rajasthan. A cross sectional study was carried out using questionnaire as the study tool among the students and targeted samples. A total no of 30 respondents fill the Questionnaire and according to their response find gaps in the knowledge amongst all the cadres of the study respondents. The study reveals that there is a need to increase knowledge among the people regarding biomedical waste management by continuing training program.

Keywords: BMW, Knowledge, Survey, Assessment, Udaipur

Introduction:

As stated by K. Park "Let the waste of the sick not contaminate the lives of healthy". Health care system in India has advanced terrifically, but this comes with production of a huge amount of Biomedical Waste, which poses a great threat to living beings and environment of a whole (Narang *et al*., 2012). The term "biomedical waste" has been defined as "any waste that is generated during diagnosis, treatment or immunisation of human beings or animals, or in the research activities pertaining to or in the production or testing of biologicals and includes categories mentioned in schedule I of the Government of India's Biomedical Waste (Management and Handling) Rules 1998" [Bio-Medical Waste (Management and Handling) Rules,1998 & MoHFW,1998].

Improper and inappropriate disposal has become a major health issue in the recent past. The medical waste generated in India is around 3 million tons per annum out of which about 10 to 35 % of medical waste generated is potentially hazardous, but owing to indiscriminate mixing of this with non-hazardous waste converts entirety waste hazardous (Begum *et al*., 2015; Chaudhari *et al*. 2015; Kaur *et al*., 2015). The hazardous waste thus generated can cause various diseases related to skin, GIT, respiratory disorders and major ones like HIV or hepatitis. Also if this waste is disposed of before suitable treatment it can affect environment rendering air, land and water bodies' contaminated (Selvaraj *et al*., 2013).

Studies documented from different parts of the country; still convey that there are gaps in the Knowledge, lacunae in the attitudinal component and inconsistency in the practice aspects which are matters of concern among the health care professionals as well as normal peoples (Pandit *et al*. 2005, Verma *et al*. 2008, Rao 2008, Kumar *et al*. 2009).

With this background, the study was carried out to assess the current knowledge and attitude of professors, post graduates, students, staff nurses, private jobbers and other peoples in Udaipur city with regard to the management of BMW.

Methodology

Study design: Cross-sectional study with Questionnaire.

Study population: A total number of 30 peoples *i.e.* Students, postgraduates, professors, nursing studnets, staff nurse, private jobbers and other.
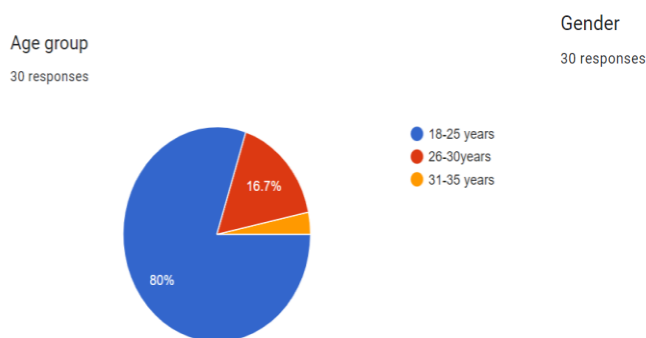

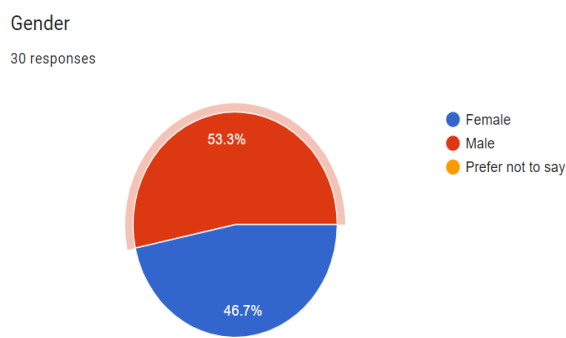**Fig 1** Age group of respondents
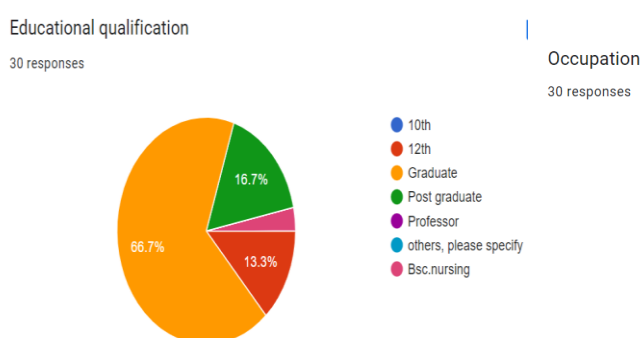

Fig 2 gender of respondents
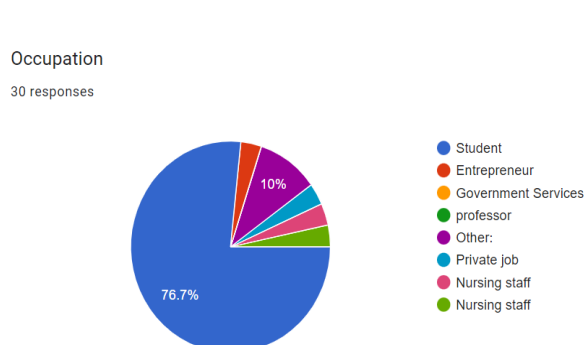

Fig 3 Educational qualification of respondents

Fig 4 Occupation of respondents

Results

- Age distribution of sampled population: Majority (80 %) of population were within the age group of 18-25 years, 16.7 % population of were within 26-30 years.
- Distribution of population according to their gender: Majority (53.3 %) of peoples were Male & 46.7% of peoples were female.
- Educational Qualification and occupation of respondents: Majority 66.7% were graduates while 16.7% were post graduates, 13.3% were B.Sc. Nursing students. There were 76.7% population were student.
- Awareness about BMW management among the sampled population: Majority of people (90%) were aware about it.
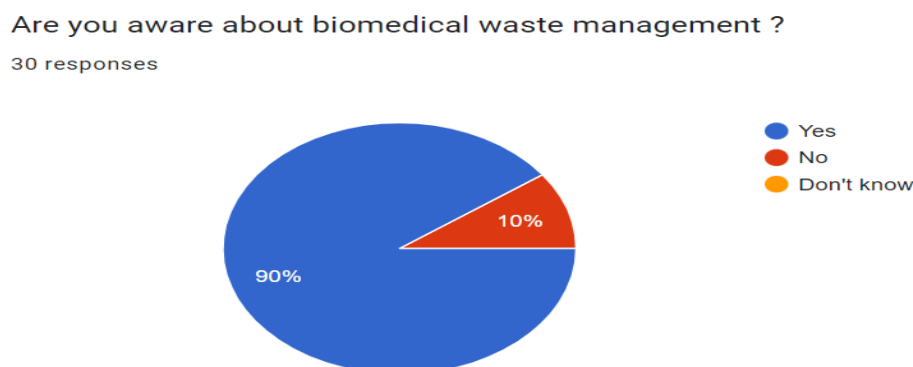

Fig. 5 Awareness of respondents about biomedical waste management.

- Assessment of Level of Knowledge: Samples population were aware about BMW management but they had not much knowledge about it. 83.3% people knew about colour coding of segregation of BMW. Only 31 % respondents knew about disposal of gloves in red colour bag, 17.9% aware about disposal of pharmaceutical medical waste. 35.7% aware about red colour bag which is used for plastic waste. 36.7% people rated 10 on scale of 1-10 that improper management of BMW affect the environment. Majority of people among the sample were never attending any training or awareness programme of BMW management.

Fig.6 Response of respondents about healthcare waste management.
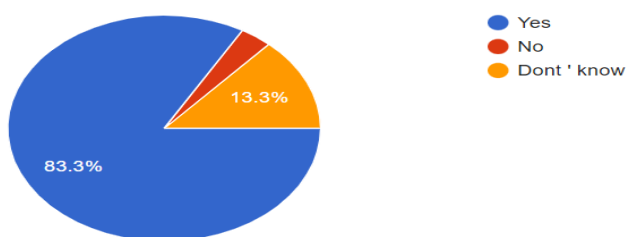
Fig 7 Response of respondents about segregation of BMW

Fig. 8 Response of respondents about disposable of gloves.
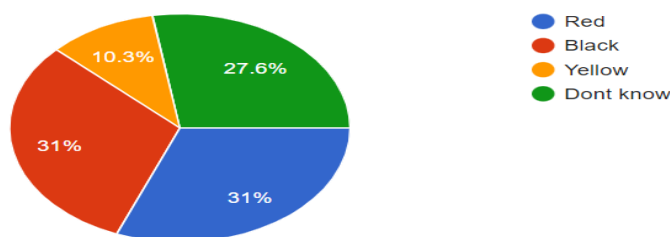
Do you know where pharmaceutical waste is disposed?
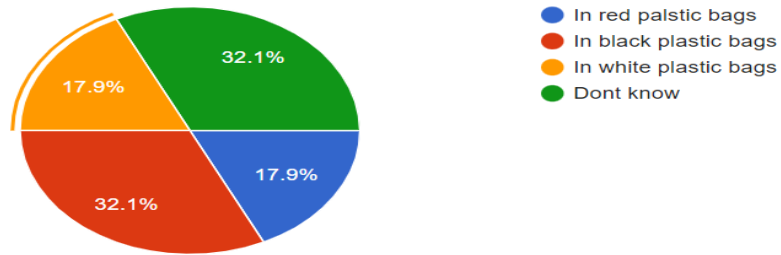
28 responses

Fig. 9 Response of respondents about dispossal of pharmaceuticle waste

Where do you think the used disposable plastic items are disposed in ?
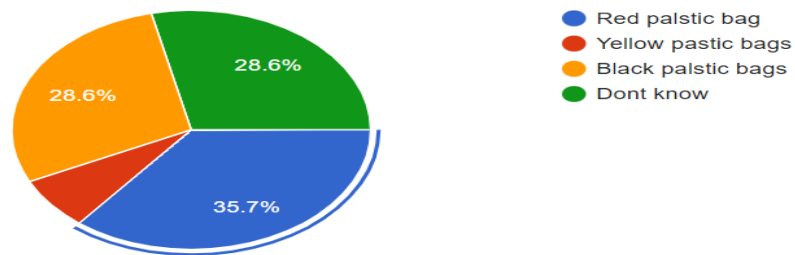
28 responses

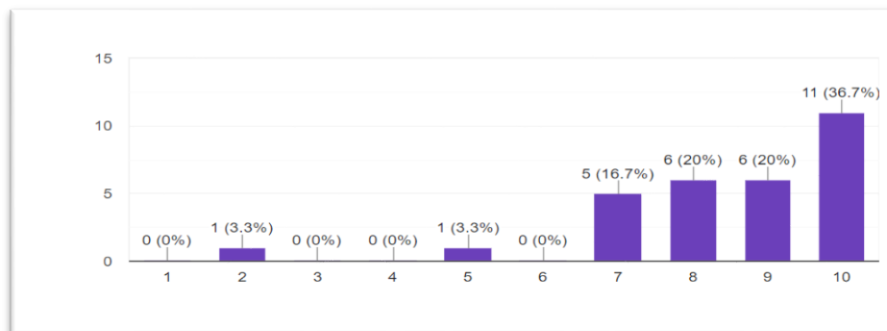Fig. 10 Response of respondents about dispossal of plastic items.

Fig 11 Response of respondents about improper disposal of BMW on scale of 1-10.

Table 1: **Distribution of health care providers according to their socio-demographic variables**

	Demographic variables	Frequency (f)	Percentage (%)
1	Age (in yrs)		
2	18-25	24	80
3	26-30	5	16.7
4	31-35	1	3.3
	Gender		
1	Male	16	53.33
2	Female	14	46.67
	Educational qualification		
1	10 th	0	0
2	12 th	4	13.33
3	Graduates	20	66.67
4	Post graduates	5	16.67
5	Professor	0	0
6	B.Sc. Nursing	1	3.33
7	Other	0	0
	Awareness about BMW management		
1	Yes	27	90
2	No	3	10
	Understanding of color coding		
1	Yes	25	83.33
2	No	1	3.33
3	Don't know	4	13.33
	Knowledge of BMW		
1	Yes	24	80
2	No	6	20
	Training or awareness programmes		
1	Yes	0	0
2	No	30	100

Discussion

The success of a study based on a self-administered Questionnaire essentially depends on the manner in which the questions are formatted, their content, the analysis and the response rate. The present study was conducted in Udaipur City, India. It showed that there was an average level of knowledge and awareness about BM waste management.

The results of the study are in accordance with previous studies. A study [Kishore *et al*. 2000] conducted in New Delhi, India, among the 64 persons who were teachers in Government institutions reported that the majority of the respondents were not aware of the proper clinical waste management regulations. The results of the study are in accordance with those studies.

However, a study [Sushma *et al*. 2010] carried out to assess the dental BM waste management and awareness of waste management policy among private dental practitioners in Mangalore city, India, revealed that a large number of practitioners were aware of the legislation policy but had failed to contact and register their clinic with the certified waste management services of the city.

The assessment of knowledge of respondents regarding bio-medical waste management revealed that majority 24 (80%) had an overall average level of knowledge. Area wise mean percentage knowledge levels indicated that, in the area of safety measures was 60%, classification and color coding of bio-medical waste management was 83.3%.

Conclusion

The following conclusions are drawn on the basis of the findings of the study:

1. 80% were between the age group of 21- 25 years, 16.7% were between the age group of 26-30 years and 3.3 % were 31-35 year.

2. Majority of respondents, 16 (53.33%), were females. 76.7% of respondents were students.

3. The study revealed that majority of sampled population 30 (100%) did not have any intraining or awareness programme about BMW management. It is important that all population should have proper knowledge to practice bio-medical waste management in better way to protect self, the community and more importantly the environment.

Hence in a limited area of setting a similar study should be conducted for students, health care providers and medical employees of the whole district to make a generalized conclusion. Also, comparative studies can be done in private and public sectors of health care providers as well as university students regarding bio-medical waste management. Comparative study may be done in different categories of populations. Finally, studies to evaluate the effectiveness of informational booklet should be done.

References

1. Begum A, Janaki V, Subrahmanyam GVS, Devraj K. 2015. Knowledge about biomedical waste management among health care professionals in a tertiary care teaching hospital, Telangana. *IOSR-JDMS*; 14 (12):31 -38.
2. Chaudhari K, Patel J, Rudani J, Dawda D. 2015. Knowledge, Attitude and Practices among Dentists regarding Bio - Medical Waste Management in Ahmedabad City, Gujarat: A Questionnaire Based Study. *Int J Oral Health Med Res*; 2 (1):23 -26.
3. Government of India, Ministry of Environment and Forests. Bio-Medical Waste (Management and Handling) Rules. Gazette of India. 1998 (27 Jul). Available from: http://envfor.nic.in/legis/hsm/biomed.html
4. Government of India, Ministry of Health and Family Welfare (MoHFW). 2002. National Guidelines on Hospital Waste Management Based upon the Bio-Medical Waste (Management and Handling) Rules, 1998. New Delhi: MoHFW.
5. Kaur D, Pandey A, Tekwani D, Bedekar M, Pai M, Agarwal M. 2015. Awareness of Bio -medical waste management among the health care workers in rural area. *IJBAMR*; 4 (4):351 -357.
6. Kishore J, Goel P, Sagar B, Joshi TK. 2000. Awareness about biomedical waste management and infection control among dentists of a teaching hospital in New Delhi. *Indian Journal of Dental Research*. 11: 157-161.
7. Kishore J, Joshi TK, Sagar B. 2000. Biomedical waste management for nursing professionals: Occupational and nvironmental health. *Nursing J India*;148: 129-31
8. Kumar S, Bhattacharyya JK, Vaidya AN, Chakrabarti T, Devotta S, Akolkar AB. 2009. Assessment of the status of solid waste management in metro cities, state capitals, class I cities, and class II towns in India: An insight. *Waste Management*. 29: 883-95.
9. Misra V, Pandey SD. 2005. Hazardous waste, impact on health and environment for development of better waste management strategies in future in India. *Environment International*. 31: 417-31.
10. Narang SR, Manchanda A, Singh S, Verma N, Padda S. 2012. Awareness of biomedical waste management among dental professionals and auxiliary staff in Amritsar, India. *OHDM*. 11 (4):162 -169.
11. Pandit NB, Mehta HK, Kartha GP, Choudhary Sk. 2005. Management of biomedical waste: Awareness and practices in a district of Gujarat. *Indian J Public Health*. 49: 245-7.
12. Rao PH. 2008. Report: Hospital waste management-awareness and practices: A study of three states in India. *Waste Management and Research*. 26: 297-303.
13. Selvaraj k, Sivaprakasam P, Nelson BTSB, Kumar GHM, Norman P, Pandiyan KR. 2013. Knowledge and practice of Biomedical Waste Management among the medical practitioners of Kanchipuram town, India. *Int.J.Microbiol.App.Sci* 2 (10): 262 -267.
14. Sharma A K. Biomedical Waste (Management and Handling) Rules. First edition. Bhopal. Suvidha Law House. 12
15. Singh R, Mathur RG, Mandal K, Puri S. 2000. The role of information booklet on biomedical waste management for nurses. *Nursing J India*;148: 271-72.
16. Sushma MK, Bhat S, Shetty SR, Babu SG. 2010. Bio-medical dental waste management and awareness of waste management policy among private dental practitioners in Mangalore City, India. Tanzania Dental Journal. 16: 39-43.
17. Verma LK, Mani S, Sinha N, Rana S. 2008. Biomedical waste management in nursing homes and smaller hospitals around Delhi. Waste Management; 28: 2723-34.