

## Evaluation of Awareness Regarding Biomedical Waste Management in Institute of Ophthalmology, Ahmedabad, Gujarat

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**Abstract:** : Introduction: Despite the statutory provision of Biomedical Waste Management, practice in Indian Hospitals has not achieved the desired standard even after years of enforcement of the law. In view of this, the present study on Knowledge, Attitude and Practice (KAP) on the subject was carried out in a tertiary level teaching hospital. Material and Methods: The hospital under scrutiny for KAP is a 250 bedded western regional M. & J. Institute of Ophthalmology. The study is based on a questionnaire designed to understand the KAP of the staff involved in direct patient care facility regarding the biomedical waste management practices. The KAP study enrolled 100 respondents, representing doctors and nurses. Result: Here, a significant gap was observed in the knowledge, attitude and practice of the medical and paramedical staff regarding biomedical waste disposal, their knowledge/understanding of the subject. Conclusion: Induction training and continuous in-service training of the staff regarding BMW disposals are required as it is very important for prevention of healthcare associated infection. [Bhatt S et al NJIRM 2013; 4(2) : 32-35]

**Key Words:** Biomedical waste, KAP study, tertiary hospital, Awareness

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**Introduction:** Biomedical waste (BMW) is waste generated during diagnosis, treatment or immunization of human beings or animals, or in research activities pertaining thereto, or in the production and testing of biologicals, and is contaminated with human fluids.<sup>1</sup> The waste produced in the course of health care activities carries a higher potential for infection and injury than any other type of waste.<sup>2</sup>

Approximately 75-90% of the bio-medical waste is non-hazardous and as harmless as any other municipal waste. The remaining 10-25% is hazardous and can be injurious to humans or animals and deleterious to environment. It is important to realize that if both these types are mixed together then the whole waste becomes harmful.<sup>3</sup> It is estimated that annually about 0.33 million tons of hospital waste is generated in India and, the waste generation rate ranges from 0.5 to 2.0 kg per bed per day<sup>4</sup>

All Bio-medical waste generated in the hospital should be disposed off strictly in accordance with Bio-medical waste management & handling rule 1998. Schedule I of which describes the categories of Bio-medical waste their treatment and disposal methods.<sup>2, 5</sup> Schedule II of which describes the colour coding and type of container for disposal of Bio-medical waste.<sup>2, 5</sup>

The severity is further compounded by the high prevalence of diseases like HIV and Hep B and C. Because of these concerns, the Union Ministry of Environment and Forest, Govt of India, has notified "Biomedical waste (management and handling) rules, 1998" amended on 2<sup>nd</sup> June 2000. These guidelines are issued by the central pollution control board (CPCB). These rules apply to all those who generate, collect, receive, store, transport, treat, dispose, or handle biomedical waste in any form. However at many places, authorities are failing to install appropriate systems for a variety of reasons, such as non-availability of appropriate technologies, inadequate financial resources and absence of professional training on waste management.<sup>5</sup>

The study aims to assess the awareness about the biomedical waste management and universal work precautions (UWP) among the health care personnel and also observing and documenting the prevailing health care waste management system in tertiary level institute of ophthalmology.

**Material and Methods:** This is a cross sectional hospital based study conducted in the month of October 2010 in 250 bedded western regional ophthalmology institute, catering patients from Madhya Pradesh, Rajasthan, Maharashtra and Gujarat .

The study is based on a questionnaire designed to understand the KAP of the staff involved in direct patient care facility regarding the biomedical waste management practices. The KAP study enrolled 100 respondents, representing doctors and nurses to know the knowledge, attitude and practice of the medical and paramedical staff regarding biomedical waste disposal.

In this study hospital staff was randomly selected in each group, which included doctors, nurses, lab technicians and resident doctors, and were interviewed by administering a structured questionnaire in the form of multiple choice questions. Data has been analysed using MS excel. Before this study, each person is individually counselled. We have asked these questions to medical and paramedical staff and analysed them. Data was collected from total 100 persons, which included 46 medical staff and 54 paramedical staff. Each respondent had to choose the correct answer from multiple choice questions, according to their opinion. Sufficient time was given for filling questions.

**Result:** A total of 125 questionnaires were distributed, from which 100 were received back. Out of which 46 were received from medical staff and 54 were from paramedical staff.

In this study percentage wise awareness of biomedical waste management is shown in table 1.

**Table: 1 Overall awareness (in percentage) of BMW management in two groups.**

	Staff	Awareness %
1	Medical	67.6
2	Paramedical	60.2

These questionnaires are divided in three groups, knowledge, attitude and practice. So, percentage of awareness of both groups regarding knowledge, attitude and practice of biomedical waste management is listed in table 2. Table 3 shows Comparison of awareness about biomedical waste with the other study. Table 4 shows the comparison of percentage of awareness of

knowledge, attitude and practise with the other study.

**Table:2 : Percentage of KAP in two groups.**

Group	Total (no)	Knowledge	Attitude	Practice
Medical	46	51.3%	85%	82.14%
Para Medical	54	41.1%	84%	81.92%

**Table: 3: Comparison of overall awareness of BMW management with other study**

Group	MC Yadavannavar et al %	Present study %
Medical	97.4	67.61
Paramedical	80	60.2

**Table:4 : Comparison of KAP with other study**

Group	Present study %			S saini et al %		
	Know ledge	Attit ude	Prac tice	Know ledge	Attit ude	Prac tice
Medic al	51.3	85	82.14	63	83	78.5
Param edical	41.1	83	81.92	32	81	80.7

**Discussion:** A total of 100 subjects were interviewed which included doctors, nursing staff and laboratory technicians.

Our study showed that overall awareness regarding biomedical waste management is less. Which in medical staff was 67.61% and in paramedical staff it was 60.2%. Studying these two groups as such there is no major difference in awareness of biomedical waste management. Comparison of the our study with the study done by MC Yadavannavar et al <sup>6</sup> at shri B M Patil medical college, Bijapur Karnataka is given in table 3. On analyzing the results of these two groups there was no difference in awareness about biomedical waste management. In our study there was minor statistical difference between the medical and paramedical groups; where as in the study of MC Yadavannavar et al <sup>6</sup> statistical difference between the two groups was significant.

Looking at the awareness of knowledge, attitude and practice, percentage of awareness of practice is satisfactory, comparable to the study done by S Saini et al<sup>7</sup> in a tertiary level hospital in New Delhi. In both the studies, practical awareness is more as compared to awareness of knowledge in both medical and paramedical groups. Practical awareness in the present study of medical and paramedical staff is 82.14% and 81.92%. It is comparable to the study done by S saini et al, which was 78.5% and 80.7% respectively. Whereas the theoretical knowledge is not satisfactory in both the studies.

The awareness about universal work precautions like hand washing, barrier protection, safe techniques, mechanical pipetting, safe handling of the sharps, safe handling of the specimens, immunisation with hepatitis B vaccine etc. was adequate (100%) amongst the entire health care personnel.

43.5% medical and 63% paramedical staffs are not aware about the final disposal of biomedical waste in this institute. Almost everybody is aware about the vaccine preventable diseases but many of them do not know what to do after exposure. Since the knowledge about final disposal of dangerous waste as well as its segregation is less, it can lead to major out breaks of diseases, which can be disastrous for the healthcare workers as well as the society. According to this study both the groups are aware about segregation but at some places in the institute they are not segregating biomedical waste properly

Suggestions And Recommendations : The human element is more important than the technology. Almost any system of treatment and disposal that is operated by trained and well motivated staff can provide more protection for staff, patients and the community than an expensive or sophisticated system that is managed by staff who do not understand the risks and importance of their contribution.

- Regular training programme of BMW management with safety precautions including post exposure prophylaxis for paramedical

staff, resident doctors and intern doctors should be organised. This subject should be included in the curriculum of students of medical as well as paramedical.

- The education of the general public is also important. For every patient in the hospital there may be number of visitors. They have to be explained the behavioural requirements of the hospital with regard to hygiene. Posters and leaflets should be used to for awareness.
- All staff, including those in waste disposal, should have regular medical check up and information generated by these checkups used to evaluate procedure, precautions and exposure.
- Tighten security at temporary waste storage area; to avoid illegal trading of waste and switch to recyclable to prevent illegal trading of waste and it also helps in minimizing the hospital waste.
- Hospital waste management committee/ team should keep constant watch over all above mentioned points to avoid impact of biomedical waste on health care worker, patient and community.

**Conclusion:** Though our study shows good percentage of awareness in the KAP, there are some lacunae. To overcome these lacunae induction training of newer staff and continuous in-service training programmes and periodically evolution of the staff is required as it play very important role in prevention of health care associated infection.

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