

## Knowledge about Hospital Waste Management among Final Year Medical Students of a teaching hospital, Lahore

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### ABSTRACT

**Aim:** To determine the following among the final year students of the Lahore Medical & Dental College, Lahore: their knowledge & awareness regarding biomedical (BM) waste management policy and practices, their attitude towards biomedical waste management, and their awareness regarding needle-stick injury and its prevalence among different categories of health care providers.

**Methods:** A cross-sectional study was conducted using a questionnaire with closed-ended questions. It was distributed to 100 final year MBBS students at Lahore Medical & Dental College. The questionnaire was used to assess their knowledge of biomedical medical waste disposal. The resulting answers were graded and the percentage of correct and incorrect answers for each question from all the participants was obtained.

**Results:** Of the 100 questionnaires, all were returned and the answers graded. The results showed that there was a poor level of knowledge and awareness of biomedical waste generation hazards, legislation and management among the final year MBBS students. It was surprising that only 8(8%) final year MBBS students had excellent knowledge about infectious waste generated from a health care facility, while 92(92%) of students had poor knowledge about it.

**Conclusions:** It can be concluded from the present study that there are poor levels of knowledge and awareness about BM waste generation hazards, legislation and management among the students of a private Medical College. Regular monitoring and training are required at all levels.

**Keywords:** Dental Practice, Biomedical Waste, Hazards

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### INTRODUCTION

Hospital Waste Management (HWM) is the term applied to the waste generated during the diagnosis, treatment or immunization of human beings or animals or in the research activities pertaining thereto or in the production or testing of biological including categories viz General waste, Pathological waste, Radioactive waste, Chemical waste, Infectious waste, Sharps, Pharmaceutical waste, Pressurized containers<sup>1</sup>. It is estimated that 10-25% of health care waste; which refers to all the waste generated by a health care establishment, is hazardous, with the potential for creating a variety of health problems<sup>2</sup>. Legal provisions [Biomedical Waste Management and Handling Rules 1998]<sup>1</sup> exist to mitigate the impact of hazardous and infectious hospital waste on the community. But these provisions are yet to be fully implemented. The absence of proper waste management, lack of awareness among our medical staff about the health hazards from biomedical wastes, insufficient financial and human resources, and poor control of waste disposal are the most

critical problems connected with healthcare waste. The hazardous impact of medical waste on the public and environment is enhanced manifold if adequate and appropriate handling of these wastes is not adopted<sup>3</sup>. Hence, Hospital waste collection and proper disposal has become a significant concern for both the medical and the general community<sup>4,5</sup>. Various studies on awareness of Hospital waste across the country reveal that the awareness among health professionals about the hazards and its appropriate management techniques is unsatisfactory<sup>3,5,6</sup>. Similar studies about the awareness of Hospital waste management in the medical students<sup>7</sup> and nurses are few. The Medical and Nursing students during and after completing their studies are at potential risk for hazards due to Hospital waste because of the contact with hospitals. Adequate knowledge about the health hazard of hospital waste and proper methods of handling is necessary to protect themselves, their patients as well as the community from various adverse effects of the hazardous waste. Considering all these aspects, this study was conducted with the main objective of assessing the awareness in the final year medical students about Hospital waste, its hazards and management.

**Rationale of the study:** Rationale of this study is mainly to reduce waste generation, efficient

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collection, handling and disposal in such a way that it controls infection and provides safety for employees working in the hospital environment. This study was therefore, conducted to understand the Knowledge amongst the final year Medical students in a teaching institution as regards to HWM management practices.

The primary objective is to assess the knowledge about hospital waste, its main hazards and more importantly its management known by the final year students because tomorrow many of them are going to work independently in various health facilities and be the health leaders. If the knowledge is not up to the mark than hospital waste management imparting of knowledge need to be enhanced.

## METHODOLOGY

This descriptive cross-sectional study was conducted for a period of 4 months from January to April 2016 at Lahore Medical and Dental College, Lahore. Independent variables checked in the study were gender and color codes of HWM and dependent variables were waste generated and needle stick injuries. Study population was 100 from final year MBBS students. Random sampling technique was used. Sample size was 100 students.

**Data collection tool & process:** A questionnaire for the study was prepared. The purpose of the study was explained and cooperation requested to conduct the study. Relevant literature search carried out through computerized literature searches of MEDLINE, EMBASE, Pubmed, NORA, Google scholar Databases and manual search irrespective of the date of publication using MESH terms- 'hospital waste management', Data analyzed using SPSS version 20. Descriptive statistics used to assess the level of knowledge of hospital waste management. P-value of <0.05 was taken as statistically significant.

## RESULTS

Randomly selected 100 final year MBBS students, as mentioned above, all responded to the questionnaire. It was surprising that only 8(8%) final year MBBS students had excellent knowledge about infectious waste generated from a health care facility, while 92(92%) of students had poor knowledge about it. Almost half 41(41%) of students had an excellent awareness of BM waste management practice. Of the 100 students who completed the study, 46(46%) students agreed that hospital waste management course in community medicine was sufficient to practice / handle waste in hospitals, however 34(34%) did not agreed to it and 20(20%) were on

neither side. 62(62%) of the students have emphasized that college should organize separate classes or continue medical education program to upgrade knowledge about hospital waste management. safe management of health care waste and they agreed that they will attend voluntarily programs that enhance upgrade of knowledge about waste management. In the questions about knowledge and suggestions for labelling container before filling it with waste of any importance and should infectious waste be sterilized by autoclaving before disposal, 96(96%) and 68(68%) went in favor of it. Rest 4(4%) and 32(32%) said no or don't know respectively. When the level of knowledge of needle-stick injuries was assessed, it was good to know that 95 (95%) knew that it is a health concern and they do discard used needle immediately. However it was found out not encouraging that only 50(50%) were in practice of not re-capping used needles, though 96 (96.0%) were aware of consequences about needle stick injury, of which even 4(4%) MBBS students sustained a needle stick injury during the last 12 months. 53(53%) only knew that it should be reported to a doctor, who is the right person in a hospital setup, but the knowledge about filling a incident report among the participant students was found out to be only 19(19%). It's been amazing to know that 18(18%) of final year students were not even vaccinated against Hepatitis B and only 68(68) were fully vaccinated for It. 14(14%) did not knew if they were vaccinated or not.

## DISCUSSION

The present study was conducted in a private Medical college in Lahore City, Pakistan. It showed that there was a poor level of knowledge and awareness about BM waste generation hazards and management among medical students. Even the level of knowledge and awareness about needle-stick injury was not adequate.

The results of the study are somewhat accordance with previous studies. A study<sup>8</sup> conducted in New Delhi, India, among the 64 dentists who were teachers in Government institutions reported that the majority of the respondents were not aware of the proper clinical waste management regulations. Similar results were found in a study of hospital medical personnel in Agra<sup>9</sup>, which indicated a lack of knowledge and awareness towards legislation on BM waste and even more recently in a study in a dental hospital/clinic in Amritsar<sup>10</sup>. The same problem may exist even at more specialized medical institutions because in another study, one-third of the staff of a tertiary level hospital in Visakhapatnam were not aware of where the waste

from the hospital was ultimately treated and disposed of<sup>11</sup>. According to the others, the waste was collected in bags and dumped at an open space inside the hospital premises prior to collection by a private agency of which they were not sure.

Few studies done elsewhere have also showed that educational intervention on Bio Medical Waste Management is very effective. Shishir Basarkar in his study conducted in Mumbai revealed statistically significant difference found among member who received training of bio-medical waste management. He found that pre and post test score is highly significant showing that the effectiveness of structured teaching program.

### CONCLUSION AND RECOMMENDATION

It can be concluded from the present study that there is poor level of knowledge and awareness about BM waste generation hazards and management among final year Medical students of a private Medical College, Pakistan. A subsequent literature review suggests that this is a common problem in many other health care institutions in both Pakistan and other countries. It is imperative that waste should be segregated and disposed of in a safe manner to protect the environment as well as human health and this can be best achieved by have structured programs at the level of Medical Institutes.

**Recommendations:** Regular monitoring and training are required at the Medical College level, so the Medical students are well trained about BM waste management, especially when they come to practice levels. Continuing education and training programmes and short courses on cross-infection and biomedical waste management are suitable means of improving the knowledge of medical students and other staff employed in various Medical teaching hospitals. Various demonstration programmes should be conducted for those personnel who are in direct contact of BMW to increase their level of understanding and associated risks. BMW management should be strictly implemented and monitored in a systematic and simplistic manner by authoritative bodies in Pakistan and other developing countries. The governmental bodies should take responsibility of making these services available to the practicing doctors as well as hospitals. The authors recommend similar studies in

different Medical Colleges, hospitals and further research to provide accurate data for future decision-making.

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