

## STUDY ABOUT AWARENESS AND PRACTICES ABOUT HEALTH CARE WASTES MANAGEMENT AMONG HOSPITAL STAFF IN A MEDICAL COLLEGE HOSPITAL, BANGALORE

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### ABSTRACT

**Background:** The waste produced in the course of healthcare activities carries a higher potential for infection and injury than any other type of waste. Inadequate and inappropriate knowledge of handling of healthcare waste may have serious health consequences and a significant impact on the environment as well.

**Objective:** The objective was to assess knowledge, attitude, and practices of doctors, interns, nurses, laboratory technicians, attenders and housekeeping staff regarding biomedical waste management.

**Materials and Methods:** This was a cross-sectional study done in a medical college rural hospital. A total of 383 health personnel were included in the study with their prior consent. Study subjects include doctors (56), interns (65), nurses(83), laboratory technicians(44), attenders (78) and housekeeping staff (57).

**Results:** Doctors, nurses have better knowledge than other staff regarding health care waste management. Knowledge regarding the colour coding and waste segregation at source was found to be better among nurses and laboratory staff. Regarding practices related to health care waste management nurses were better. However, injury reporting was nil across all the groups of health professionals.

**Conclusion:** The importance of training regarding health care waste management needs emphasis; lack of proper and complete knowledge about biomedical waste management impacts practices of appropriate waste disposal.

**Keywords:** Health care waste management, hospital, medical professionals

### INTRODUCTION

The healthcare services while providing services, curative, promotive or preventive inevitably create waste which itself may be hazardous to health. It carries a higher potential for infection and injury than any other type of waste. Inadequate and inappropriate knowledge of handling of healthcare waste may have serious health consequences and a significant impact on the environment as well. It is estimated that annually about 0.33 million tonnes of hospital waste is generated in India and, the waste generation rate ranges from 0.5 to 2.0 kg per bed per day.( 1) Wherever, generated, a safe and reliable method for handling of biomedical waste is essential. Effective management of biomedical waste is not only a legal necessity but also a social responsibility. In developing countries like India the waste is carried to the outskirts of the city and dumped indiscriminately in a most insanitary way. In addition to this new health care institutions are built without any consideration for waste handling and management. Though legal provisions [Biomedical Waste (management and handling) Rules 1998] exist to mitigate the impact of hazardous and infectious hospital waste on the community, still these provisions are yet to be fully implemented.(2) The absence of proper waste management, lack of awareness 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 hospital waste management has diverse ramifications as it not only affects the health of patients but also of healthcare workers (doctors, nurses, attenders and housekeeping staff etc.) and general public. Apart from lack of awareness the hospital personnel seem to ignore standard procedures. Waste handling and disposal is often considered only the job of class IV worker.

These workers are rarely provided with PPE, immunization or training. Adequate knowledge about the health hazard of hospital waste, proper technique and methods of handling the waste, and practice of safety measures can go a long way toward the safe disposal of hazardous hospital waste and protect the community from various adverse effects of the hazardous waste. With this background, this study was conducted with the main objective of assessing knowledge, attitude, and practices of doctors, nurses, laboratory technicians, and other staff regarding health care waste management.

## MATERIALS AND METHODS

This cross-sectional study was carried out in a medical college hospital in Bangalore rural. The study subjects comprised of interns, doctors, nurses, lab technicians, attenders and housekeeping staff. A total of 383 study subjects were included in the study. The study period was from January 2011 to June 2011. They were interviewed and observed for health care waste management practices. These interviews and observations were conducted on a predesigned and a pretested questionnaire and checklist. The study had been approved by the ethical and research committee of the institute. At the end of the study training was given regarding the same. The data was collected and analysed using proportions.

## RESULTS

In Bangalore city majority of hospitals including government and private as well as nursing homes use a common private provider for the collection, management, and disposal of healthcare wastes. The hospital where the present study has been done is in the rural parts of Bangalore.

In the present study a total of 383 subjects were interviewed. The composition was as follows interns (17%), doctors (14.6%), nurses (21.7%), laboratory technician (11.5%), attenders (20.4%), and house-keeping staff (14.9%). All the study subjects agreed that hospital waste should be segregated and needs to be disposed properly. Totally 47.5% study subjects knew about categories and the treatment

of health care waste (HCW) correctly, of which (81.9%) were nurses, (76.8%) were doctors, (38.5%) were interns, (27.3%) were technicians and (19.3%) were housekeeping staff. Only 12 (3.13 %) study subjects knew about categories of HCW of which 5 (62.5%) were technicians. Majority of the study subjects (95.8%) had knowledge about various health problems caused by HCW, of which 38.8% were nurses.

Out of the total 383 subjects 87.5% agreed it should be segregated at the point of waste generation. Only 5.7% were not aware about the health waste management team and 13.8% did not know the Biohazard symbol. But 32.9% did not know regarding the legislation associated with health care wastes. Out of the total study subjects 12% thought proper disposal of wastes should totally be the responsibility of the Government. And 9.9% of the study subjects considered it an unnecessary extra work burden on the hospital staff. Majority (96.1%) were aware of the colour coding for waste segregation but they did not have any clear idea of what should be disposed in which bin. Only 88.8% were aware liquid health care wastes should be treated and should be disposed properly.

It was observed in the present study that the knowledge and practices in doctors and the nursing staff was good. Among the other study subjects the knowledge of interns, attenders and lab technician was satisfactory.

The attitude of the study subjects toward separation of infectious and non-infectious waste, proper disposal and implementation of rules was positive. Majority (82%) were in favour of implementation. Only 63.6% study subjects committed that they will cooperate in HWM team. The nurses (91.5%) had a better attitude toward separation of wastes, proper disposal, implementation of rules and cooperation in programs. The attitude of attenders and housekeeping staff was found to be almost similar. Most of them thought it is an extra amount of work and were not very keen in implementing and attending training programs. The teaching faculty was keen in getting all the rules implemented but majority were not ready to share the

responsibilities. The reason mentioned were that not enough time, should be given to nurses as they are continuously in the wards etc.

No staff ever reported any injury to the Medical Superintendent or causality medical officer which would have occurred due to improperly disposed waste. However, needle stick injuries were reported by the housekeeping staff and attenders when questioned in detail during the study period. The housekeeping staff did not feel it was important to report such injuries and some were not aware of the hazards associated with it. Most of them did not know that they had to report such injuries.

Study subjects	Total	Aware (%)
Doctors	56	43 (76.8)
Interns	65	25(38.5)
Nurses	83	68(81.9)
Technicians	44	12(27.3)
Attenders	78	23(29.5)
House keeping staff	57	11(19.3)

**Table 1 : Knowledge about the HCW categories and treatment**

## DISCUSSION

HCW management needs systemic efforts. It requires and mandates participation of all. The responsibilities should not lie with the civic body alone. The civic body can act as a coordinating agency and provide support. There is much to be done where the waste is generated. The activities include reduction of waste generated, segregation, decontamination of infected waste, proper containment of waste; secure transportation of the waste, occupational health and safety measures and by creating awareness.

Knowledge about biomedical waste management rules among the technically qualified personnel like the doctors, nurses, and laboratory staff was satisfactory but was low among the attenders and housekeeping staff. This was similar to the findings from other studies.(3,4,8) In Gujarat, it was found that doctors were aware of risk of health hazards,

whereas attenders and housekeeping staff had very poor knowledge about it.(4) Knowledge about color coding of containers, and waste segregation which is most important pivotal point and crucial for further waste management, was also found to be better among the doctors and nurses as compared to that of the other staff. In the present study they were not very clear as to what should go in each coloured bin.

In the present study interns were included in the survey. It was surprising that though the interns had knowledge but the attitude and practices was not satisfactory. No other previous studies had included interns in their study. This may be because they would have the knowledge about HCW management as they are recently gave their examination, but about the attitude and practices is not satisfactory because less practical exposure .

Low level of knowledge is mainly attributed to poor training facilities and also to relatively low educational level of the staff. Training of both the technical staff and the nontechnical staff is critical for the proper and appropriate management of biomedical waste. Similar findings were found in other studies too (3,4,6) It was also found that in the present study the nurses had significantly positive attitude when compared to the technicians and the housekeeping staff (  $P < 0.05$ ). In one of the study, it was found that 98% of the nurses and 79% of the housekeeping staff had a positive attitude while only 59% of the technical staff had a positive attitude. (4) It was found that the nurses practiced HCW management better than the technical and housekeeping staff and a significant difference was found (  $P < 0.001$ ). Only 95 (19%) of the subjects collected plastic waste separately of which 56 (59.8%) were nurses. In a study it was found that in a tertiary hospital, it was found that 100% nurses, 70% of the housekeeping staff and only 47% of the technical staff practiced HCW management. (3) At Jhansi it was found that the process of segregation, collection, transport, storage and final disposal of infectious waste was done in compliance with the standard procedures. It was also found that the non-infectious waste was collected separately in different containers and treated as general waste.

(4) In Chandigarh, the medical establishments in the rural area and smaller ones in the urban area dispose off their biomedical waste along with municipal solid waste and no waste management system exists. (10) In one of the district in Gujarat, there was no effective waste segregation, collection, transportation and disposal system at any hospital. (4) In Karachi, it was observed that 25% hospitals were segregating sharps, pathological waste, chemical, infectious, pharmaceutical and pressurized containers at source. (11) The practice of reporting of injuries resulting from improperly disposed biomedical waste was found to be completely absent among the staff. Stein et al. in their study reported that among doctors and nurses, only 37% reported that they ever suffered needle stick injury. (12) Low reporting of injuries may be attributed to the fact that most of the doctors and other technical and nontechnical staff are unaware about a formal system of injury reporting which should be established within all the health facilities.

### CONCLUSIONS AND RECOMMENDATIONS

Lack of proper and complete knowledge about biomedical waste management impacts practices of appropriate waste disposal.

The nurses comparatively were having better knowledge and attitude, and also practiced HCW management better than the housekeeping and technical staff. Regular training of nursing, technical and housekeeping staff should be done and system of monitoring should be evolved. Nursing staff who are correctly practicing HCW management should be involved as role models for others. It was seen that the attitude and practice of interns regarding HCW was less satisfactory. As they are the future doctors they should be trained at that time to improve their practical knowledge and practices regarding it.

Following recommendations are proposed: (i) strict implementation of biomedical waste management rules (ii) 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, (iii) training of non technical and housekeeping staff should be specially emphasized, and (iv) 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.

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