

To Assess Knowledge and Practice of Biomedical Waste Management among Health Professionals Working at Tertiary Care Hospital

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ABSTRACT

Background: Healthcare workers are potentially exposed to blood and body fluids during course of their work and therefore they are at risk of infection with blood-borne pathogens. Evidence exists that compliance with Universal Precautions reduces the risk of infections and protects healthcare practitioners. Hence, this study was undertaken to assess the knowledge and practices of health care professionals regarding biomedical waste management. Aims and objectives of the study were to assess the knowledge of health care professionals regarding Bio - Medical Waste Management and to observe the practices of health care professionals in hospital settings.

Objectives: 1.To assess the knowledge and practices regarding bio-medical waste management among the health professionals.2. To assess the attitude regarding bio-medical waste management among the health professionals.3.To find the association of knowledge and practices regarding bio-medical waste management among the health professionals with selected demographic variables.

Methods: This was a cross sectional study conducted among health professionals working in Acharya Vinoba Bhave Rural Hospital, Sawangi (Meghe), Wardha from January to March 2017 among 110 health care professionals including Doctors, Nurses and Laboratory technicians. Pretested predesigned structured questionnaires and checklist were used. Data was collected and the statistical analysis was done by using Frequencies and percentages were presented for categorical variables.

Results: the overall knowledge regarding bio-medical waste management were excellent (>75% score) among all the health care professionals including doctors, nurses, lab technicians the practices regarding biomedical waste management among the nurses were excellent 86.6% as compared to doctors and lab technicians. There was association of knowledge with demographic variable, years of experience across all the health care professionals.

Conclusion: The importance of training regarding biomedical waste management needs emphasis on lack of appropriate and complete knowledge regarding biomedical waste management impacts practices of correct waste disposal. Based on the findings of the present study, it can be concluded that in spite of having good knowledge regarding hospital waste management the practices among the doctors and lab technicians were not up to the mark as compared to nurses,

Key words: Knowledge, Practices, Biomedical Waste Management, Tertiary Care Hospital, Health Care Professionals

INTRODUCTION

Biomedical wastes are defined as the waste that is generated during the diagnosis,

treatment or immunization of human beings or animals, or in research activities pertaining there to, or in the production of

biological waste management; healthcare wastes hold higher priority due to their hazardous nature. ^[1]

According to World Health Organization (WHO), some parts of healthcare wastes are considered more hazardous that can affect human health and pollute the environment badly. In a working environment that has unsafe health care waste management practices, it may result in an exposure to infectious wastes by Healthcare workers (HCWs), patients, clients that could in turn create infection due to blood borne pathogens. In the preceding time, many efforts have been directed towards proper and safe management of hazardous healthcare waste for less developed wastes that emerge from healthcare institutions

Which are named as hospital wastes, and that cause considerable environment pollution. Such wastes represent significant health risks to the hospital employees, patients and the society.

Biomedical waste management has recently emerged as an issue of major concern not only to hospitals, primary health-care centers and nursing home authorities but also to the environment. Advances in medical facilities and the introduction of more sophisticated instruments have increased the waste generation per patient in health-care units worldwide According to the World Health Organization (WHO), high-income countries generate on average up to 0.5 kg of hazardous waste per hospital bed per day. Although the figure for low-income countries is only 0.2 kg per hospital bed per day, healthcare waste is often not separated into hazardous or non-hazardous wastes, making the real quantity of hazardous waste potentially much higher.

In the persuasion of the aim of reducing health problems, eliminating potential risks, and treating sick people, healthcare services inevitably create waste which itself may be hazardous to health. 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. is estimated that annually about 0.33 million tones of hospital waste is generated in India and, the waste generation rate ranges from 0.5 to 2.0 kg per bed per day. 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. ^[2,3]

METHODS

The present study was a descriptive cross sectional study conducted among 110 health care professionals including doctors, nurses and laboratory technicians posted in casualty, medical, surgical, orthopedic, obstetric and gynecology and pediatrics units (wards) of, Acharya Vinoba Bhave Rural Hospital, Sawangi (Meghe), Wardha, India from January 2017 to March 2017.

The Study was started after obtaining permission from the concerned authorities of the hospital. Non probability Purposive sampling technique was used to select the sample for this study. Pretested predesigned structured questionnaires were used for data collection after obtaining study participants consent, which consisted of 34-items regarding knowledge and practices of biomedical waste management. By using structured knowledge questionnaires. Data was collected from the doctors, nursing staff and laboratory technicians present at the time of data collection and willing to participate in the study.

The questionnaire consisted of three parts. Part one consisted of demographic data of health care professionals including age, sex, and duration of professional service or experiences.

Part two consisted of 18 questions related to knowledge regarding biomedical waste management. For scoring the knowledge of each study participant one

score was given to each correct answer and zero to the wrong answer.

Part three was designed to evaluate practices of biomedical waste management. This part included 16 questions related to the use of protective devices, disposal of sharps; disposal of waste, decontamination of spills/used articles. For scoring the practices of each participant one score was given for each correct practices and zero to incorrect, incomplete and not done

practices. For both part two and three, Scores less than 25% were considered poor knowledge and practice and 25 to 50% were considered as average and 50 to 75% were considered as good however, scores of above 75% were considered as very good knowledge and practice. The data was analyzed using the descriptive and inferential statistics. The data analyzed was presented using tables and diagrams.

RESULTS

Table no-1 Demographic data n=110

Age (years)	Doctors(n=45)	Nurses (n=45)	Laboratory Technicians (n=20)
Mean (SD)	25.8 (1.5)	31.2 (9.7)	40.6 (5.6)
Range	21-31	20-59	23-55
Sex (no. %)			
Male	29(64.44)	07(15.55)	15(75)
Female	16(35.55)	38(84.44)	05(25)
Duration of work experience (years) (no. %)			
>2	28(62.22)	25(55.55)	12(60)
≥2	27(60)	20(44.44)	08(40)
Received training on waste disposal at the hospital			
Yes	35(77.77)	37(82.22)	18(90)
No	10(22.22)	08(17.77)	02(10)

Table no.2. knowledge score regarding biomedical waste management n=110

Knowledge regarding biomedical waste	Doctors (n=45)	Nurses (n=45)	Laboratory technicians (n=20)
Biomedical waste management rules	38(84.44)	40(88.88)	17(85)
Color coding for waste containers	28(62.22)	37(82.22)	16(80)
Segregation of waste at source	32(71.11)	32(71.11)	14(70)
Disinfection of hospital waste before disposal	33(73.33)	41(91.11)	16(80)
Transmission of disease through biomedical waste	43(95.55)	42(93.33)	19(95)

Table no.3. Practices score regarding biomedical waste management n=110

	Doctors (n=45)	Nurses (n=45)	Laboratory technicians (n=20)
Disposal in specified colorcoded containers	25(55.5)	39(86.6)	13(65)
Disposal of sharps in puncture proof containers	24(53.33)	38(84.44)	10(50)
Reporting of injuries due to improperly disposed sharps	25(55.5)	39(86.66)	08(40)

Table.4. Significance of association of knowledge in relation to years of experience n=110

Mean knowledge score	F-value	P value
19.77± 2.421	1.46	NS, p<0.05

The tabulated 'F' values for years of experience was 2.13(df=1,46) which is much less than the calculated 'F' i.e. 1.57 at 5% level of significance. Also the calculated 'p'=0.02 which was less than the acceptable level of significance i.e. 'p'=0.05. Hence it is interpreted that years of experience of health care professionals is associated with their knowledge score.

In the present study the findings revealed that there was a significant association between the level of knowledge with years of experience ($p \leq 0.05$).

RESULT

In AVBR hospital of Wardha city, the collection, management, and disposal of healthcare wastes has done by the hospital appointed class four staff having their own incinerator unit

In Wardha city, and at timely training regarding biomedical waste management to

the healthcare personnel is arranged by the hospital administrative management.

Analysis of data revealed that on all counts, doctors, nurses, and laboratory technicians have better knowledge regarding biomedical waste management. Knowledge regarding the color coding and waste segregation at source was found to be better among nurses and laboratory staff as compared to doctors. [Table 2]

Regarding practices related to biomedical waste management, doctors were ignorant on all the counts. No sanitary staff ever reported any injury which would have occurred due to improperly disposed waste. However, injury reporting was low across all the groups of health professionals [Table 3].

In the present study the findings revealed that there was a significant association between the level of knowledge with years of experience ($p \leq 0.05$). [Table 4].

DISCUSSION

The study findings supported to our study conducted worldwide.

A study conducted by Mohd Shafee, NB Kasturwar, and N Nirupama⁶ in Karimnagar town, Andhra Pradesh among 500 paramedical staff working in various private nursing homes and clinics that revealed that the staff lacked the required knowledge about BMW management but a positive attitude was found to improve the current situation in BMW management. ^[4]

A study in 5 government and 12 private hospitals in Sana'a, Yemen showed poor awareness among waste workers regarding medical waste handling, and a lack of differentiation between domestic and medical waste disposal ^[5]

A cross-sectional study in 8 surgical departments at Al Mansoura University Hospital in Egypt showed that 36.8% of doctors, 32.1% of housekeepers and 27.4% of nurses had satisfactory overall knowledge related to waste management. ^[6]

Also a study from Bangalore showed that the nurses had significantly more positive

attitudes compared with technicians and housekeeping staff. ^[7]

CONCLUSION

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

Recommendations: Periodic research on bio-medical waste management and role of Health Care Professionals should be undertaken. The 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.

Limitations: The study was confined to health care workers of A V B R Hospital only; further studies are required on a larger population to generalize the results, in the formulation and implementation of BMW guidelines.

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Conflicts of interest

There are no conflicts of interest.

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