



ISSN: 0975-833X

Available online at <http://www.journalcra.com>

International Journal of Current Research
Vol. 10, Issue, 12, pp.76506-76508, December, 2018
DOI: <https://doi.org/10.24941/ijcr.33498.12.2018>

INTERNATIONAL JOURNAL
OF CURRENT RESEARCH

RESEARCH ARTICLE

TO ASSESS THE KNOWLEDGE AND AWARENESS REGARDING BIOMEDICAL WASTE MANAGEMENT AMONG HEALTH CARE WORKERS IN TERTIARY CARE HOSPITAL

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ARTICLE INFO

Article History:

Received 15th September, 2018
Received in revised form
04th October, 2018
Accepted 19th November, 2018
Published online 31st December, 2018

Key Words:

Biomedical wastes, Health care workers, Knowledge, Awareness, Tertiary care hospital.

ABSTRACT

Introduction: In year 2013, it was assessed that hospitals and medical institutes in Delhi were generating 70 tonnes/day of biomedical waste, of which only 10.7 tonnes/day were being treated properly. Violation of biomedical wastes rules by some hospitals was evident in some of the medical institutes. So, a study was conducted in a tertiary care teaching hospital in Bhopal. The aim of the study was to assess the knowledge and awareness regarding biomedical waste management among health care workers in tertiary care hospital and to identify the areas of concern to take requisite corrective action. **Materials and Methods:** A cross sectional study was conducted in RKDF institute of medical sciences and research centre Bhopal. Sample size was 100 health care workers. **Results:** Among 100 questionnaires distributed, 30 respondents comprised of Doctors, 30 Nurses, 40 other (i.e technicians and paramedical staff). Period of work experience varied from less than 5 years (51%), 5–10 years (42%) and more than 10 years (7%) among the Health Care Workers. **Conclusion:** Knowledge and awareness among health care workers is required for managing hospital waste.

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Citation: Kamlesh Kunjbihari Nigam, Anshuman Sharma and Sanjeev Kumar Gupta. 2018. "To assess the knowledge and awareness regarding biomedical waste management among health care workers in tertiary care hospital", *International Journal of Current Research*, 10, (12), 76506-76508.

INTRODUCTION

Total waste from health care facility and institutions is defined as health care waste (<http://www.healthcarewaste.org/basics/definitions> (Last accessed on 2018 Sept 25)). Bio-medical waste (BMW) means any waste generated during the diagnosis, treatment or immunization of human beings or animals or in research activities pertaining thereto or in the production or testing of biologicals, including categories mentioned in Schedule I of BMW Management (BMWM) and Handling Rules 1998 (<http://www.moef.nic.in/legis/hsm/biomed.html> (Last accessed on 2018 Nov 2)). The Bio-Medical Waste (Management and Handling) Rules, 1998 published vide notification number S.O. 630 (E) dated July 20, 1998, by the Government of India in the erstwhile Ministry of Environment and Forests provided a regulatory framework for the management of BMW generated in the country (Government of India. Biomedical Waste (Management and Handling) Rules, 2016; Sood, 2011). It was estimated in 2011 that 28% of biomedical waste was left untreated (www.cseindia.org/node/3702 (Last accessed on 2018 Sept 25)).

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In year 2013, it was assessed that hospitals and medical institutes in Delhi were generating 70 tonnes/day of biomedical waste, of which only 10.7 tonnes/day were being treated properly (Delhi Green Blog, 2018). Violation of biomedical wastes rules by some hospitals was evident in some of the medical institutes (Before The National Green Tribunal, 2018; Bhagawati, 2015). So, a study was conducted in a tertiary care teaching hospital in Bhopal. The aim of the study was to assess the knowledge and awareness regarding biomedical waste management among health care workers in tertiary care hospital and to identify the areas of concern to take requisite corrective action.

MATERIALS AND METHODS

A cross sectional study was conducted in RKDF institute of medical sciences and research centre Bhopal. It was interview type of study conducted for a period of one month through self-distributed pre-tested semi-structured questionnaires randomly distributed among four categories of health care workers i.e doctors, nurses and other (technicians and paramedical staff) of the hospital. Sample size was 100 health care workers. Each questionnaire was composed of demographic profile of the subjects and questions to test the

awareness and knowledge regarding biomedical waste management. The overall response of the participants was graded based on correct responses as Satisfactory (more than 70%) and unsatisfactory (less than 70%). Statistical analysis was done by SPSS version 20 software.

RESULTS

Among 100 questionnaires distributed, 30 respondents comprised of Doctors, 30 Nurses, 40 other (i.e technicians and paramedical staff). Doctors included in the study were senior residents and demonstrators. The paramedical staff comprised of laboratory assistants, nursing orderlies, Operation Theatre (OT) assistants and radiographers. Period of work experience varied from less than 5 years (51%), 5–10 years (42%) and more than 10 years (7%) among the Health Care Workers. The results of the study were forwarded to Biomedical waste management council to stress on the areas of deficit and to strengthen them by adequate training programmes.

Overall awareness and knowledge about the guidelines laid down by Government of India for BMWM was present in 90% doctors, 89% nurses and 75% other, which means overall 84% awareness and knowledge about the guidelines laid down by Government of India was seen (table1). However the awareness was least among the other staff (53%) as compared to the nurses (68%) and doctors (80%) (Table 1). This may be because majority of the health care staff (51%) had work experience less than 5 years. This is in similar to the findings of Narang *et al.* (2012) (awareness: 85.4% doctors, 73.7% nurses and 71.4% paramedical staff) regarding the same. Awareness regarding health hazards due to improper BMWM was found to be in 90% doctors, 76% nurses and 60% other staff, which means awareness about improper management was present in 74% (Table 1). It is in contrast to the finding of Narang *et al.* (2012) (100%). Overall response regarding the practice of disposal of BMW waste was 69% (Table 1) In this regard, doctors' response was 73% followed by nurses (65% and) (Table 1). This is similar to the study of Narang *et al.* (2012) (85% doctors).

Table 1. Awareness and knowledge about BMW management among health care workers (n=100)

Awareness and knowledge (%)	Doctors (n=30)	Nurses (n=30)	Others (n=40)
BMW policy by govt. of India	90%	89%	75%
Definition of BMW	100%	95%	70%
Quantity of BMW	75%	80%	71%
Categories of BMW	95%	69%	65%
Health hazards due to improper management	91%	76%	60%
Segregation	69%	52%	44%
Proper disposal	72%	65%	67%
Awareness about BMW management	80%	68%	53%

Table 2. Distribution according to period of work experience among health care workers

Period of work experience	Number (n)	Percent (%)
< 5 years	51	51%
5 to 10 years	42	42%
More than 10 years	7	7%

Table 3. Distribution according to responses of health care workers regarding knowledge and awareness about BMW

Response	Doctors	Nurses	Others
Satisfactory	80%	68%	53%
Unsatisfactory	20%	32%	47%

DISCUSSION

An active Biomedical waste management council exists in the hospital which has formulated action plans and guidelines for the BMWM and the same has been circulated to all the departments and displayed at major waste generating areas. This study was planned to check the awareness regarding BMW among the hospital staff. Overall only 66% of the HCWs were aware of the number of categories of BMW (table 3), as 80% doctors, 68% nurses and 53% other staff had satisfactory knowledge and awareness about BMW. This is contrasting to the finding of Madhukumar *et al.* (2012) (only 3.13% awareness). In our analysis, awareness about this was not good amongst the technicians (53%) and nurses (68%) in contrast to the study by Madhukumar *et al.* (2012) and Mathew *et al.* (2011) where awareness about the same was quite high 62.5% and 100% amongst the technicians and paramedical staff respectively. Among the HCWs 87% (100% doctors, 95% nurses and 70% others) had knowledge regarding the definition of BMW (table 1) which is more than finding of Desmukh *et al.* (2013) (36.9%) and Kahn *et al.* (2013) (only 4.7%).

Awareness regarding segregation was % among the 55% HCWs (Table 1). This was in contrast to the finding of Nandwani *et al.* (2010) in her previous study which was done at a private hospital (82%).

Conclusion

Knowledge and awareness among health care workers is required for managing hospital waste. Awareness is required among not only waste handlers, but also those who produce these hospital wastes. This study revealed some lacunae in knowledge regarding BMWM especially amongst health care workers with experience less than five years. So there is an urgent need for raising awareness on BMWM among the hospital staff in all health-care setups.

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