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REVISED BIOMEDICAL WASTE (BMW) MANAGEMENT GUIDELINES, 2016- KNOWLEDGE, ATTITUDE AND PRACTICES AMONG HEALTHCARE WORKERS IN VARIOUS HEALTH CARE FACILITIES OF CENTRAL INDIA

Medical Science

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ABSTRACT

In accordance with the Government of India Initiative of Swatch Bharat Mission 2017 and Guidelines for Management of Healthcare Waste as per Biomedical Waste (BMW) Management rules 2016, technical requirements of waste handling need to be understood and practiced by each category of the Health Care Worker (HCW). Importantly BMW poses grave risks to the health care providers, patients, community in general and the environment in a larger picture.

OBJECTIVES: Assessment of Bio-medical waste management knowledge, attitude & practices (KAP) including segregation, collection, in-house transportation, pre-treatment, storage and disposal at various secondary and tertiary health care centers of Bhopal.

Assessment of safety practices including vaccination and personal protection equipments (PPE) for the HCW involved in Bio-Medical Waste Management.

MATERIALS AND METHODS: Simple randomised questionnaire based cross sectional study done during Jan-June2019. Standard questionnaire was framed and distributed randomly among the respondent HCW.

Conclusion: Better implementation of the revised BMW management guidelines; continual motivation; and training & retraining is a must to maintain the standards of bio-medical waste management.

KEYWORDS

Biomedical Waste Management (BMW) Guidelines 2016, Health Care Facility (HCF), Health Care Worker (HCW), Knowledge Attitude And Practices (KAP).

INTRODUCTION

During last few decades, the need for better healthcare for an ever increasing population has led to a rapid establishment of health care facilities (both in private and Government sector). This led to an exponential rise of BioMedical Waste (BMW) generation by HealthCare Facilities (HCF).

Waste generated from the healthcare facility is classified as:

- Biomedical waste-15%
- General waste -85%
- Other waste including E-waste and Radioactive waste

A) BIO MEDICAL WASTE

Any waste which is generated during the diagnosis, treatment or immunization of human beings or animals or research activities or in health camps. It includes all the waste generated from the Health Care Facility which can have any adverse effect to the health of a person or to the environment in general if not disposed properly. All such waste has to be managed as per Bio Medical Waste Management Rules, 2016. This waste consists of the materials which have been in contact with the patient's blood, secretions, infected parts, biological liquids such as chemicals, medical supplies, medicines, lab discharge, sharps metallic and glassware, plastics etc.

BMWM Rules, 2016 categorises the bio-medical waste generated from the health care facility into four categories based on the segregation pathway and colour code. Various types of bio medical waste are further assigned to each one of the categories, as detailed below:

1. Yellow Category - infected, toxic and dangerous waste that needs to be incinerated
2. Red Category – recyclable plastic waste
3. White Category – hard puncture proof box for disposal of sharp waste like needle, scalpel etc.
4. Blue Category – non infected glass and metal waste

B) GENERAL WASTE

Consists of all the waste other than bio-medical waste and which has not been in contact with any hazardous or infectious, chemical or biological secretions and does not includes any waste sharps. It consists mainly of

1. Dry waste - News paper, paper & card boxes, Plastic water bottles, Aluminium cans of soft drinks, Packaging materials, Food Containers after emptying residual food ;
2. Wet waste - Organic / Bio-degradable waste - mostly food waste
3. Construction and Demolition wastes

Such waste is required to be handled as per Solid Waste Management Rules, 2016 and Construction & Demolition Waste Management Rules, 2016, as applicable.

C) OTHER WASTES

Other wastes consist of used electronic wastes, used batteries, and radio-active wastes which are not covered under biomedical wastes but have to be disposed as per the provisions laid down under E-Waste (Management) Rules, 2016, Batteries (Management & Handling) Rules, 2001, and Rules/guidelines under Atomic Energy Act, 1962 respectively.

In the current era of increased sensitivity towards BMW management, there needs to be a proper evaluation of Knowledge, Attitude and Practice (KAP) among health care workers so as to assess the need for improvement, wherever required.

Thus the study was conceived to assess the KAP among HealthCare Workers (HCW) (doctors, nurses, technicians, other nontechnical staff and waste handlers) in various health care facilities of Bhopal (both secondary and tertiary care hospitals).

OBJECTIVES

- Assessment of Knowledge, Attitude & Practices (KAP) about current Bio-medical waste management practices including segregation, collection, in-house transportation, pre-treatment, storage and disposal at various secondary and tertiary health care centers of Bhopal.
- Assessment of safety practices including vaccination and personal protection equipments (PPE) for the health care workers (HCW) involved in Bio-Medical Waste Management.

MATERIAL AND METHOD

Simple randomised questionnaire based cross sectional study about Knowledge, Attitude & Practices (KAP) of current BioMedical Waste management practices in various secondary and tertiary health care centers of Bhopal was done during Jan-June 2019.

It was a Multicentric Hospital based study covering 6 small (less than 20 beds), 2 intermediate (up to 50 beds) and 2 big private hospitals

(more than 500 beds). Of these, 5 were confirming to NABH standards. A total of 150 subjects divided into 30 doctors, 30 nurses, 30 Technicians (10 OT, 10 Anaesthesia and 10 Lab), 30 Support staff (Ward boys, Peon etc) and 30 waste handlers were randomly enrolled.

A standard Questionnaire was framed having 10 questions each about Knowledge, Attitude and Practices according to BMW Management Guidelines 2016. Since the subjects were of heterogeneous background, only general questions were framed to remove educational bias. Subjects were urged to return the questionnaire immediately to prevent manipulations.

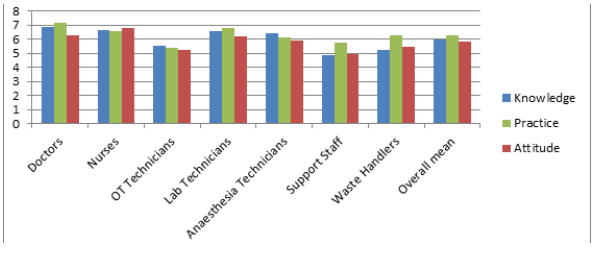
Every Question answered earned 1 mark with no negative marking for wrong ones. Subjects were encouraged to complete the questionnaire to the end.

Subjects were grouped D (Doctors), N (Nurses), T (Technicians), S (Support Staff) and W (Waste Handlers)

Statistics-Group Scores were added and mean derived. All group means were compared under Knowledge, Attitude and Practices Section

OBSERVATION

- Mean Score of Knowledge was highest among doctors interviewed (6.9) closely followed by Nurses (6.63) and Technicians (6.16). Among the technicians, Lab Technicians scored 6.6 while anaesthesia Technician scored 6.4, which is very much comparable to other groups. Average score was 5.23 among Waste Handlers which is an increasing trend from previous studies. The lowest score was 4.83 among Support Staff.
- Nursing staff scored better in Attitude (6.77) than the Doctors (6.27) and Technicians (5.76). Among the Technicians, Lab Technicians scored best (6.2).Waste Handlers scored (5.43) which is very much comparable to Technicians. Support Staff scored (4.93).
- Doctors scored best scores in Practice (7.17) followed by Nurses (6.6) and Technicians (6.1).Among the technicians, lab technicians scored highest 6.8 followed by anaesthesia technicians 6.1.Mean score of lab technicians was even higher than
- nursing staff. Mean score of waste handlers was 6.3 which is very much comparable to nursing and technical staff .Mean score of support staff was 5.73.
- Overall mean score of practice was 6.01, knowledge 5.81 & attitude 6.30.
- KAP about BMW management was better in big institutes (>500 bedded hospitals) and hospitals following NABH guidelines.



Scores of Knowledge, Attitude & Practices among various groups

DISCUSSION

In accordance with the Government of India Initiative of Swatch Bharat Mission 2017 and Guidelines for Management of Healthcare Waste as per Biomedical Waste (BMW) Management rules 2016, more emphasis is given on waste management in both the medical and general community. Importantly BMW poses grave risks to the health care providers, patients, community in general and the environment in a larger picture.

Earlier there were no specific BMW guidelines and it was disposed with normal waste. With increasing pollution and health risk, Government of India framed BMW guidelines in 1998 and revised them in 2016. The health care facilities [HCF], while generating the waste are responsible for segregation, collection, in-house transportation, pre-treatment of waste and storage of waste, before such waste is collected by Common Bio-medical Waste Treatment Facility (CBWTF) Operator. Thus, for proper management of the waste in the healthcare facilities, the technical requirements of waste handling need to be understood and practiced by each category of the staff in accordance with the BMW Management Rules, 2016.

This study was conducted to assess the KAP of all classes of HCW with special emphasis on the technicians and waste handlers.

Different earlier studies showed a wide gap in KAP of BMW guidelines. But this study has revealed a better scenario. This may partly be due to stricter laws and health facilities opting for NABH accreditation.

Now almost all classes of health care workers have adequate knowledge of revised biomedical guidelines. They are also well aware of health risks.

The attitude towards practice of BMW guidelines has also improved but needs continuous motivation and support as well as training for the same.

Practice of revised BMW guidelines has been the most satisfactory aspect of the study. Especially those on the forefront of waste handling and segregation (technicians and waste handlers) are practicing according to suggested guidelines. All of them are using Personal protective equipment with incidence of prick and sharp injury declining to a minimum.

Overall there is still some confusion in colour coding. Motivational levels still need to be maintained.

Groups	Knowledge	Attitude	Practice
Doctors	6.9	6.27	7.17
Nurses	6.63	6.77	6.6
OT Technicians	5.5	5.2	5.4
Lab Technicians	6.6	6.2	6.8
Anaesthesia Technicians	6.4	5.9	6.1
Support Staff	4.83	4.93	5.73
Waste Handlers	5.23	5.43	6.3
Overall mean	**6.01**	**5.81**	**6.30**

Mean score of knowledge, attitude and practice among various groups

CONCLUSION

1. Knowledge about BMW management practices is improving among all the groups especially the technical staff and waste handlers, though the nontechnical staff still needs sensitization.
   Overall the scores have improved but a gap still exists at all levels.
   This may partly be due to change in guidelines in 2016 which resulted in some confusion about BMW management.
   It is recommended to clarify and further simplify colour coding for better understanding by HCW**.**
2. Attitude with BMW management is also improving with nursing staff taking the lead. Attitude of waste handlers has also improved significantly.
   Sadly, there has been a dip in the attitude practices among doctors.
   It is recommended to take motivational measures to maintain and improve attitude towards BMW management.
3. BMW management practices have shown improvement partly because of better implementation of prescribed guidelines.
   Significant improvement was shown by technical staff and waste handlers who are at the forefront of BMW management and are segregators of BMW. Technical staff is implementing best practices of segregating the BMW properly at the source of generation itself.
4. Bigger institutes (>500 beds) have shown the best scores in KAP. Among the smaller institutes, those practising NABH guidelines have shown better scores. This emphasizes the need for training and retraining of HCW at regular intervals.
5. Improving knowledge, keeping motivational levels high and practicing & repracticing of guidelines have improved scores among the junior staff with poor educational background.
6. Knowledge about use of PPE and its almost universal practice among waste handlers is the best outcome of this study. Almost all waste handlers are using gloves, long boots and mask with some even using apron and eye shields as recommended. Almost all of them are vaccinated against Hepatitis B and tetanus. Only a few reported prick and sharp injury during segregation.

LIMITATION

Sample size of the study was small (150). There can be observer bias.

SOURCE OF FUNDING

Participation was voluntary with no source of funding

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