ejpmr, 2022, 9(2), 368-372

SJIF Impact Factor 6.222

EUROPEAN JOURNAL OF PHARMACEUTICAL AND MEDICAL RESEARCH

www.ejpmr.com

Research Article

ISSN 2394-3211

EJPMR

ADHERENCE TO BIOMEDICAL WASTE MANAGEMENT AND HANDLING RULES AT PUBLIC HEATH INSTITUTIONS OF A DISTRICT OF HILLY STATE OF NORTH INDIA

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Article Received on 26/11/2021 **Article Revised on 16/12/2021** **Article Accepted on 07/01/2022**

ABSTRACT

Objectives: To evaluate adherence to BMW management and handling rules at public health institutions regarding generation, hazard, legislation along with orientation about latest updates. **Methods:** Cross-sectional study, participants are given pretest before orientation workshop & reevaluated after posttest after orientation workshop. **Results:** In our study regarding knowledge of participants regarding BMW management and handling rules we found that 75% of the participants knew about latest amendments, 70% of participants knew about exact duration beyond which BMW cannot be stored in health care facility, 80% of the participants could tell correctly regarding segregation of metallic implant and 87% were correct regarding segregation of discarded medicine. Regarding aptitude of participants regarding BMW, we found that 83% had good rapport with HPSPCB and 93% had obtained authorization from it. Regarding practices followed by Participants regarding BMW where it was found that 90% of them were following correct sterilization practices, 87% had adherence to PEP. Two open ended questions regarding steps of donning and doffing of PPE were correctly explained by 93% of participants. In posttest after orientation workshop score of all participants was more than 90 to 100%. **Conclusions:** Adherence to biomedical waste management and handling. This Evaluation Study will help strengthen the existing knowledge and will help create awareness among participants after orientation workshop. The purpose of this workshop is also to improve and implement latest BMW management and handling rules at all health institutions.

KEYWORDS: BMW, hazard, legislation, PEP, PEP, HPSPCB.

INTRODUCTION

Bio Medical waste means any waste which is generated during the Diagnosis, curative, rehabilitative and research services along with treatment and immunization of humans.[1] Adequate knowledge about biomedical waste management rules along with knowledge regarding safe practices prove to be great blessings to a healthcare provider facility and enables it to handle and dispose the waste in the safest and most effective way. These rules apply to all persons who generate, collect, receive, store, transport, treat, dispose, or handle bio medical waste in any form including hospitals, nursing homes, clinics, dispensaries, veterinary institutions, animal houses, pathological laboratories, blood banks, AYUSH hospitals, clinical establishments, research or educational institutions, health camps, medical or surgical camps, vaccination camps, blood donation camps, first aid rooms of schools, forensic laboratories and research labs.[2] Health care waste is a unique category of waste generated by healthcare facility which needs to be segregated by the quality of its composition, source of generation, its hazardous nature and the need for appropriate protection during handling, treatment and disposal. Mismanagement of the waste affects not only the generators, operators but also the common people too.[3]

COVID-19 pandemic has great impact on BMW management and emphases on perfect management of BMW. Central Pollution Control Board (CPCB) has kept on issuing guidelines on Covd-19 and have revised the same frequently as per need based along course of pandemic. This revision-4 of guidelines issued to provide revised guidance on segregation of general solid waste and biomedical waste from quarantine centers/home-care/healthcare facilities treating COVID-19 patients and to recommend on disposal of PPEs. It includes management of COVID-19 waste generated from Isolation wards, sample collection centers, laboratories, quarantine centers, camps, home quarantine, care facilities & guidelines to Common Biomedical Waste Treatment Facility (CBWTF).[4]

The present study concludes that Bio medical waste is one of the most hazardous waste generated by human beings. Management of the bio medical waste is becoming a challenging issue in India. Governmental and non-governmental agencies have recognized the biomedical waste management as matter of concern. More and more studies must be conducted in qualitative as well as quantitative access for bio medical waste so that the proper management of bio medical waste takes place. Proper methods of treatment of bio medical waste needs to be developed for health and environmental safety.[5] It is critical that the different professionals engaged in the healthcare sector have adequate Knowledge, Attitudes and Practices (KAP) with respect to biomedical waste management. The purpose of the study is not to criticize any lack of Knowledge or practice in the individuals but to expose the deficiencies in the KAP system and appraising the same. This study will be carried out to evaluate the knowledge and to bridge the gap for better management of biomedical waste disposal to evaluate and orient the participants regarding latest updates will definitely prove fruitful.

MATERIAL AND METHIODS

Study area: Public health institution of Mandi district of Himachal Pradesh, India.

Study design: cross-sectional study.

Study Period: 1st September to 31st December 2021.

Inclusion criteria: Medical Officers who came from different health care institution to attend the workshop on BMW and gave informed consent.

Exclusion criteria: Medical Officers who didn't c came to attend the workshop on BMW and didn't gave informed consent.

Sampling Technique: All Medical Officers who were present during the orientation workshop on BMW were given questionnaire. Data was taken after informed consent. Participants were given pretest before orientation workshop & reevaluated after posttest after orientation workshop.

Study Tools: Data was collected after pre tested and pre designed Questionnaires for Medical Officers on BMW. Questionnaire consisted of 10 Questions where 8 were close ended and 2 were open ended.

Statistical Analysis: Data collected was analyzed with the help of Statistical Methods.

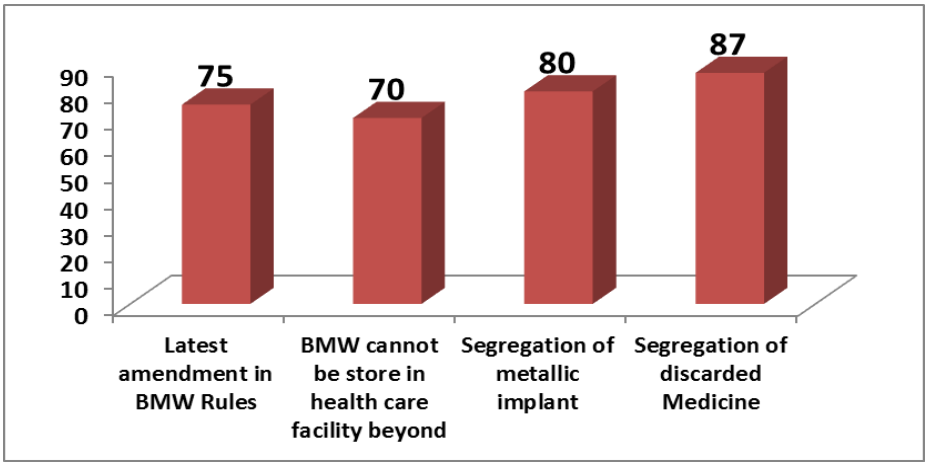
RESULTS

Table 1: Adherence to biomedical waste management and handling rules.

Total no. of Participants N=60			
S.No.	**Knowledge, Aptitude& Practices**	**n**	**%**
1.	Latest amendments in BMW Rules	45	75
2.	BMW cannot be store in health care facility beyond	42	70
3.	Segregation of metallic implant	48	80
4.	Segregation of discarded Medicine	52	87
5.	Rapport with HPSPCB	50	83
6.	Authorization obtained from HPSPCB	56	93
7.	Practices of sterilizations	54	90
8.	Practices of PEP drugs	52	87
9.	Steps of Donning of PPE	56	93
10.	Steps of Doffing of PPE	56	93

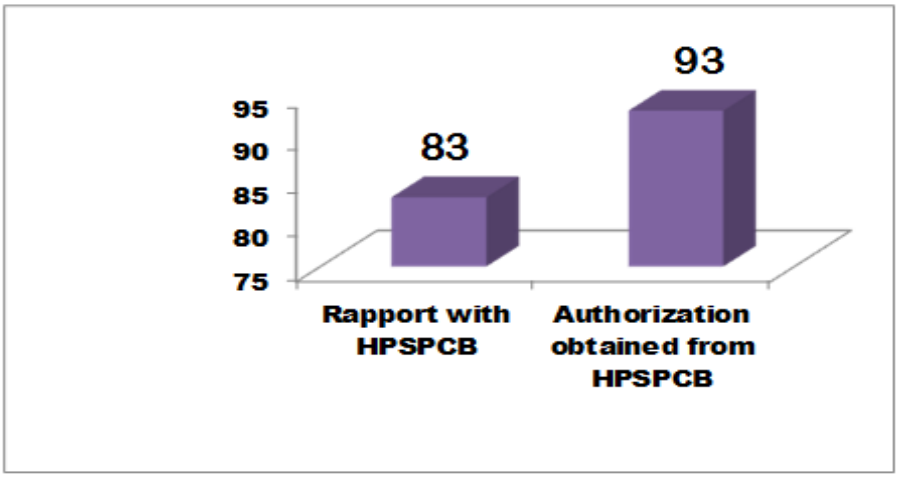
BMW- Biomedical Waste, HPSPCB- Himachal Pradesh State Pollution Control Board, PEP- Post Exposure Prophylaxis, PPE- Personal Protective Equipment.

Table 1 & Fig.1 depicts about the knowledge of participants regarding BMW management and handling rules. In our study it was found that 75% of the participants knew about latest amendments, 70 & of participants knew about exact duration beyond which BMW cannot be stored in health care facility. 80% of the participants could tell correctly regarding segregation of metallic implant and 87% were correct regarding segregation of discarded medicine.



 # BMW- Bio Medical waste

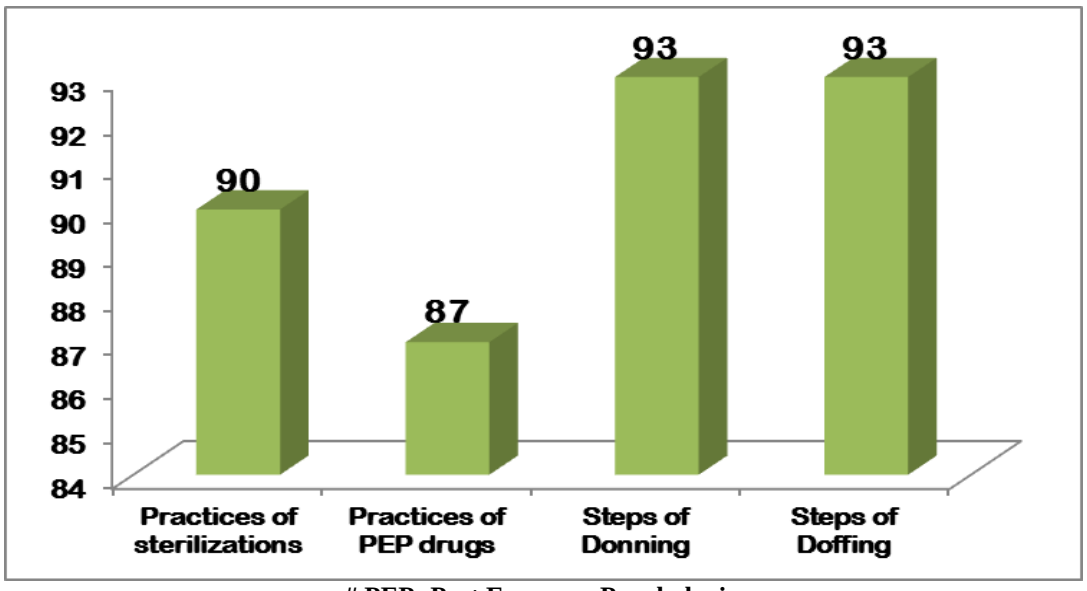
Fig. 1: depicting the knowledge of Participants regarding BMW.



#HPSPCB- Himachal Pradesh State Pollution Control Board

Fig 2: illustrating Aptitude of Participants regarding BMW.

Table1 & Fig. 2 describes about the aptitude of participants regarding BMW here 83% had good rapport with Himachal Pradesh State Pollution Control Board and 93% had obtained authorization from it.



 # PEP- Post Exposure Prophylaxis,

Fig 3: Practices followed by Participants regarding BMW.

Table1 & Fig.3 illustrates practices followed by Participants regarding BMW where it was found that 90% of them were following correct sterilization practices, 87% had adherence to Post Exposure Prophylaxis (PEP). Two open ended questions regarding steps of donning and doffing off of PPE (Personal Protective Equipment) were correctly explained by 93% of participants.

In posttest after orientation workshop score of all participants was more than 90 to 100% which depicts that all doubts were cleared during workshop.

DISSCUSSION

In our study it was found that in pre and post evaluation there was great improvement in knowledge of participants. Rao et al, A cross sectional study was carried out using questionnaire as the study tool among the health care professionals in a tertiary care teaching hospital. The study demonstrated gaps in the knowledge amongst all the cadres of the study respondents. The knowledge in relation to BMW Management including the hospital BMW protocols was more desirable among doctors, but practical facets were better in nurses and the lab technicians. Knowledge, Attitude and Practice amongst the different cadres of staff members were found to be significant statistically. It is critical that the different professionals engaged in the healthcare sector have adequate Knowledge, Attitudes and Practices (KAP) with respect to biomedical waste management. Many studies across the country have shown that there are still deficiencies in the KAP of the employees in the organizations and hence it is necessary to make the appraisal of the same.[6]

In our study was aimed at segregation of BMW, in a similar study done by Anurag V. Tiwari et al, where they attempted to study the classification, legislation and management practices in relation with biomedical waste in India. The paper included various management practices adopted for BMW by various countries. Total 60 studies related to literature, legislative aspect, hospital experience, city experience, country experience were reviewed. In the country like India only 1 to 1.5% is Bio medical waste of the total amount of solid waste generated in a city, of which 10-15% is considered infectious. The paper aims to create awareness amongst the participants. The key step in reducing the hazards from Bio medical waste is to segregate the waste at source.[7]

In our study we have observed good rapport with HPSPCB, in a similar study done by Sutha Irin A, where she reviled that the, health care facilities in private and governmental hospitals still struggle with unsuitable biomedical wastes management which had not received enough concern. In the surveyed hospitals, there was lack in implementing training courses about healthcare waste management. Hence, the Ministry of Health and health care institution and hospitals should be given more consideration towards policies for proper management and hospital wastes disposal in order to develop medical waste management in Chennai City. The study was concluded with recommendations for improvements on biomedical waste handling and treatment in order to render proper and adequate waste disposal system in health institutions.[8] In our study 93% of institutions have got authorization by state pollution control board, which is worth appreciating effort.

The Pictorial Guide on Biomedical Waste Management (BMWM) Rules, 2016 (amended in 2018 & 2019) is a product of joint research by the Centre for Chronic Disease Control (CCDC), Centre for Environmental Health (CEH) −Public Health Foundation of India (PHFI) and Health Care Without Harm (HCWH).[9] As per storage of BMW at Health Care Facility No untreated bio-medical waste shall be kept stored beyond a period of 48 hours.[10] In our study segregation of different categorized of BMW, color coding of bins was well illustrated and proved informative to participants.

CONCLUSION

Adherence to biomedical waste management and handling is of utmost importance to health care professionals. Frequent trainings should be imparted to all workers so as to obtain the best outcomes. Negligence at any level can prove hazardous to all human beings including environment. This Evaluation Study will help strengthen the existing knowledge and will help create awareness among participants after orientation workshop. The purpose of this workshop is also to improve and implement latest BMW management and handling rules at all health institutions.

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