ISSN Print: 2394-7500
ISSN Online: 2394-5869
Impact Factor: 5.2
IJAR 2018; 4(1): 60-62
www.allresearchjournal.com
Received: 11-11-2017
Accepted: 12-12-2017

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Assessment of medical waste management in P.B.M. hospital, Bikaner: A pilot study

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Abstract
The present study aims to provide information about the management segregation, storage and of medical waste in our tertiary care centre, Bikaner. A cross sectional study was employed and simple random sampling technique was used to distribute a semi structured questionnaire among 100 medical& paramedical staff at this tertiary care hospital. The results disclosed that this health care facility still suffers from inappropriate biomedical waste management. According to 30% respondent segregation is not done by the medical & paramedical staff and around 60% of staff don't know where medical storage place is and don't know there is mark to show place of storage. Besides 20% of respondent don't know if there is any mean for transferring medical waste & 30% don't know its type or whether it is available always or not. In the survey it has been highlighted that there is no provision of HCW management training courses in the hospital. Therefore the health care institution should give more consideration towards policies for proper management & disposal of medical waste in order to develop medical waste management practices in hospital.

Keywords: Medical waste management, tertiary care centre, HCW management training courses

Introduction
The biomedical waste management & handling rules of 1998 of Govt. of India requires every occupier of an institution generating bio-medical waste which includes a hospital, nursing home, clinic dispensary, veterinary institution, animal house, pathological laboratory, blood bank by whatever name called to take all steps to ensure that such waste is handled without any adverse effect to human health & environment.[1] Proper management of BMW generated in a healthcare facility is one of the most important functions of a HCW management committee as its improper management not only poses risk to human beings and environment but may also invite legal action against HCW as well as hospital administration.
With this concern a study was conducted in our tertiary care teaching hospital of Bikaner, to determine the current status of awareness & practices regarding BMWM among the HCWs in the hospital to identify the areas of deficit and to forward the results to BMWMC of the hospital to take requisite corrective actions.

Material &Method
A pilot study was carried out in P.B.M. hospital Bikaner, A tertiary Care hospital linked with a Govt. medical college after receiving formal approval from ethics committee of medical college & associated hospital.

Study methods & tools
A self-response questionnaire was developed comprising of questions related to collection, & segregation, storage & transportation of medical waste.
Selected by systemic random sampling and pilot tested by questionnaire. The data collected were based on a four page survey aimed at assessing background of the health care workers, the process of segregation handling, transportation and storage of medical waste in addition to training programs for health workers and medical waste handlers as well as to assess if there are any control measures for their safety.

The response rate from health care worker was 100% as the questionnaire was completed in each hospital during frequent.
Visit by the survey team which was helpful in obtaining the information and the study subject were co-operative with the survey team.

Results

A total 100 questionnaires were distributed and received back. The 100 respondents comprised of 38 doctors, 42 paramedical staff, 14 technicians and 6 pharmacists, doctor included in the study were senior residents, residents, medical officers & few senior doctors including teaching faculty members. Period of work experience varied from less than 5 yrs (49%), 6-10 yr (26%) and more than 10 yrs (25%).
Grading of individual and overall response is shown in Table 1-5. The results of the study were forwarded to BMWMC to stress on the areas of deficit and to strengthen them by adequate training programmers.

Table 1: Distribution of respondents based on socio demographic factors

Gender	Male - 61 Female - 39
Field of Work	Doctor – 38 Paramedical Staff -42 Pharmacist- 06 Lab. Technician- 14
Type of Service	Permanent -66 Contract-34
Area of Hospital	OPD-42 OT- 08 Ward-34 ICU-08 Emergency-05 Pharmacist-03
Working Experience	1-5 Year -49 6-10 Year-26 11-15Year-05 >15 Year- 20

Table 2: General Investigation in Training Issues

Have you been Trained	**Yes-60** **No-40**
Place of Training	PBM Hospital Bikaner CMHO OFFICE NACO NABH
Training Period	1-3 DAYS

Table 3: Medical waste segregation practice at Hospital

1. Is biomedical waste segregated	Yes -97 No- 02 Don't know -01
2. Who segregate BMW	Medical staff – 70 Cleaning worker -29 Don't know -01
3. Place of segregation	At the beginning near the source - 33 Container -63 Don't know- 04
4. Are color coded containers indentified & distinguished	Yes -94 No-01 Don't know-05
5. Are biomedical waste bags subjected to tear	Yes always-20 No-42 Rarely-17 No-19 Don't know-02
6. Are biomedical waste sacks/bags fastened properly	Yes always -63 Sometimes-24 Rarely-04 No-02 Don't know-07
7. Are their provisional measure to prohibit liquid running out from waste	Yes always-44 Sometimes-14 Rarely-13 No-22 Don't know-07

Table 4: General investigation in MW storage issues

1. where is biomedical waste storage area located in the Hospital	Not Applicable 10 don't know 39 incinerator 0 MW containers 47 General containers 04
2. Is there special mark to show place of storage	Yes 41 No 22 Don't Know 37
3. Is storage area sufficient inside hospital	Yes 45 No 17 Don't Know 38
4. For how long the biomedical waste used to be storage	1-2 days 65 3-5 days 08 More than 7 days 04 Donot know 13
5. Is the storage area closed properly	Yes, always 38 Some times 16 Rarely 05 No 13 Don't know14
6. Is storage area protected well	Yes 42 No 18 Don't Know 40

Table 5: General investigation in MW transport

1. Is there mean for transferring biomedical waste	Yes- 83 No-06 don't know-11
2. Type of transferring mean	Special mean-62 Common mean18 Not available-09 don't know 11
3. Does biomedical waste transferring mean available always	Yes- 79 No -12 don't know- 09
4. Who is incharge of the matter of transferring mean	Special worker-41 workers -29 Don't know-30

Discussion

BMW has two important vital parts, primarily management of hazardous waste of different types generated from different sources, which involve properly segregation, collection, transportation & lastly disposal, secondly proper training & supervision of different categories waste by personnel involved in whole BMW management system.

An active BMWMC exists in the hospital which has formulated action plans and guidelines for the BMWM and the same has seen circulated to all the departments and displayed at major waste generating areas. The study was planned to assess the awareness & practices regarding the biomedical waste management among the hospital staff of this tertiary care institute.

Results of the study shows that training courses & awareness programs about medical waste management for healthcare workers at hospital were limited as 60% of worker denied about any training regarding BMWM, Whereas only 40% HCW'S have received training.

As regards medical waste segregation 97% of respondents stated that medical waste is segregated while 2% denied the existence of segregation for medical waste at hospital, whereas 1% don't know if there is any segregation or not (Table-2).

94% of workers accepted that they indentifies the colour coded bags and medical waste is never disposed in the same kind of bags in which domestic wastes are disposed although 63% of works inghihghted that bags are subjected to tear inspite of being fastened properly. There are partially provisional measures to prohibit liquids running out from waste with 20% always 42% sometimes and 17% stated that measures are rarely while 21% of respondents were disapproved with presence of any kind of provisional measures to prohibit liquid running out of waste health care waste segregation practice in this study was similar to some other developing countries like Jorden[2] & karachi[3] which revealed that segregation of all waste materials was not conducted according to definite rules & standards.

Medical Waste storage issues

Results represented in Table 4 show that around 39% of respondents don't know where medical storage place is and don't know if there is mark to show place of storage whereas 55% stated that there is no storage area in hospital and on inquiry we also found that there is not such storage area in hospital where medical waste can be stored. however 35% of respondents don't know for how long the medical waste used to be stored whereas according to BMWM rules the in hospital medical waste should not be stored for more than 2 days in hospital.[2] since there is no specified area in the hospital so medical waste remains in containers if there is not vehicle available for transportation, Whereas A study by Patil G in Jhansi (India) shows that they are not to be stored for more than 18 hrs offsite.

Medical waste transportation Issues

While 83% of respondents said there is mean for transferring medical waste, 11% of them said they don't know if it is there and 20% don't know its type or if its available always. Regarding the person who is charge of the matter of transferring mean 30% of then don't know about this.

In most of the Govt. hospitals in India collection and internal transportation are carried out primarily by private contractors who have little experience in BMWM practices.

For the medical waste intended for offsite disposal, generates must segregate sharps & fluids from other wastes. The material which are packed must be rigid, leak, resistant, impervious to moisture & strong enough to resist tearing and bursting.

Untreated medical waste containers must be labelled as "infectious waste or medical waste" or any universal "bio hazard" symbol.

Bio medical waste management programme cannot be properly applied without the willigence, devotion, self motivation, cooperation and participation of the health care workers, patients & their relatives. If we want to save our environment & health of community we must ensure our selves to this important issue for better environment.

Conclusion

This study revealed that medical waste management have not received adequate consideration in this Govt. hospital since there is inadequate storage of biomedical waste although segregation and transportation of waste is done in the hospital and the staff of the hospital has not received adequate training in BMWM.

Some Suggestion & Recommendations are

1. It is advised that infections waste should be collected separately from the laboratory & OT and should go directly to the incinerator and should not be transported through the patient area.
2. Rather replacing the polyethylene begs in the respective bins the bins should be collected each time and replaced with clean bins with polyethylene bag already in them.
3. Periodic meetings should be conducted involving administrative and maintenance staff who are directly or indirectly involved with waste management in order to share technical & practical difficulties.
4. A compulsory inducting training programme should be conducted for all new staff in the hospital to familiarize them with the operating procedures practiced in the hospital.
5. A diploma course in hospital waste management should be initiated keeping the needs of developing nations in mind.

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