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Original Article

A study on bio-medical waste management and universal precautions among health care personnel working in a PHC area.

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ABSTRACT

Aims: 1) To assess knowledge, attitude and practices of medical officers, staff nurses, laboratory technicians, pharmacist and field staff regarding BMW (Bio-medical Waste Management and UP (Universal Precautions). 2) To know the difference in the levels of awareness and practice regarding BMW & UP between trained and untrained health care personnel. 3) To provide recommendations for proper BMW Management and Universal Precautions. **Material & Methods:** This was a Cross-Sectional study conducted among health care personnel working at the Primary Health Centre with 25 sub-centers in Penamaluru Mandal, Krishna district, AP. A total of 63 health care personnel comprising of Medical Officers, Staff nurses, Pharmacist, CHO, PHN, male and female MPHA and MPHWP participated. Data was collected with a pre-designed and pretested proforma with a semi-structured questionnaire. **Results:** Only 44 (69.8%) of HCP could define what BMW is. Only 21 (33.3%) knew that there is a legislation regarding the management of BMW. Only 54 (85.71%) were aware of the common types of wastes disposed and 52 (82.5%) were able to identify color codes of bins for waste disposal. 26 (41.2%) had some knowledge about hazards of improper disposal of BMW but only 18 (28.57%) were practicing them properly. Correct knowledge regarding Universal Precautions was found among 36 (57.14%) HCP. The level of difference of KAP between trained and untrained personnel was observed but not statistically significant. **Conclusion:** KAP regarding various aspects of BMW and UP was inadequate among health care personnel of Primary health centre. The present study revealed the necessity of training with a periodic follow-up and monitoring.

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1. Introduction

Biomedical waste is the most hazardous and potentially dangerous of all the wastes arising in the community [1]. Improper management of medical waste may pose health hazards through transmission of diseases, not only to health workers and their families, but to patients and their relatives, especially children whose play activity and mouthing behaviour increases their contact with medical waste, thus exposing them to injuries and infections [2].

It is estimated that annually about 0.33 million tones of hospital waste is generated in India and the waste generation rates per 0.5 kg to 2 kg per bed per day [3]. For proper management of Bio-Medical waste, the Ministry of Environment and Forests has promulgated the Bio-Medical Waste (Management and Handling) Rules, 1998 [4].

Health care personnel are expected to have proper knowledge, practice and capacity to guide others for waste management. Health care workers have an important opportunity to manage the environmental effects of their practice. Their efforts may seem small, but each step builds a base of sound behaviour and thinking that are necessary for the success of the whole.

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The present study was to find out the real state of affairs of the awareness, knowledge, attitude and practices of the HCP (Health Care Personnel) working at a Primary Health Center regarding BMW management and Universal Precautions.

2. Materials and methods

Study Design: Cross - Sectional Study

Study Setting: 25 Sub-centers of Penamaluru Mandal PHC, Krishna district, AP.

Study Population: Sixty three

Study Period: November'2011

Data Collection: Pre-designed, pre-tested and semi-structured questionnaire.

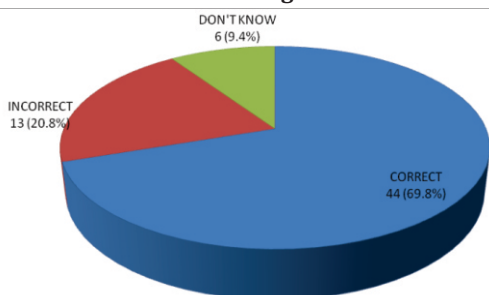
Analysis: Data was analyzed using Graph pad soft ware V.5 in proportions and chi-square tests.

3. Results & Discussion

Table 1

Designation	Number	Trained
MEDICAL OFFICER	2	2 (100%)
CHO	1	1 (100%)
PHN	1	1 (100%)
PHARMACIST	1	0
STAFF NURSE	3	2 (75%)
LAB TECHNICIAN	1	1 (100%)
MPHA (F)	3	3 (100%)
MPHA (M)	3	2 (75%)
MPHW (F)	40	9 (22.5%)
MPHW (M)	5	0
CLASS-IV	1	0
SANITARY STAFF	2	0
TOTAL	n= 63	21 (33.3%)

Fig 1: Awareness of the meaning of Bio-Medical Waste



Only 21 (33.3%) knew that there is a legislation regarding the management of BMW. Only 54 (85.71%) were aware of the common types of wastes disposed and 52 (82.5%) were able to identify color codes of bins for waste disposal. Only 34 (53.9%) had proper knowledge regarding all the ten categories of BMW. Similar observations were done by Vanesh Mathur et al in their study conducted at the hospitals in Allahabad City [5].

26 (41.2%) had knowledge about hazards of improper disposal of BMW but only 18 (28.57%) were practicing them properly. Only 32 (50.7%) had correct knowledge regarding proper disposal of syringes. The study conducted by Shalini Sharma too exposed the poor awareness and practices among the HCP [6].

Correct knowledge regarding Universal Precautions was found among 36 (57.14%) HCP. Only 25 (39.7%) were following safe injection practices and all participants (100%) got vaccinated against Hepatitis-B. Awareness of PEP against HIV was among 32 (50.79%). Only 33 (52.3%) had knowledge of management of spills of body fluids on floor.

In a total of 63 HCP a number of 21 (33.33%) underwent training on BMW at least once previously. The difference in the level of knowledge among trained and untrained was studied.

Table 2: Difference of Knowledge between Trained and Untrained on Categories of BMW

	CORRECT	INCORRECT	DON'T KNOW	TOTAL
TRAINED	13 (61.9%)	6 (28.5%)	2 (9.5%)	21
UNTRAINED	21 (50%)	14 (33.33%)	7 (16.6%)	42
	34 (53.9%)	20 (31.7%)	9 (14.2%)	63 (100%)

$X^2 = 0.968$ P value = 0.616 NOT SIGNIFICANT

Table 3: Difference of Knowledge between Trained and Untrained on Hazards of Exposure to BMW

	CORRECT	INCORRECT	DON'T KNOW	TOTAL
TRAINED	12 (57.1%)	6 (28.5%)	3 (14.2%)	21
UNTRAINED	14 (33.3%)	12 (28.5%)	16 (38.09%)	42
	26 (41.2%)	18 (28.5%)	19 (30.1%)	63 (100%)

$X^2 = 4.55$ P value = 0.103 NOT SIGNIFICANT

Table 4: Difference of Knowledge between trained and untrained on Colour Codes of bins

	YES	NO	TOTAL
TRAINED	19 (90.4%)	2 (9.6%)	21
UNTRAINED	33 (78.5%)	9 (21.5%)	42
	52 (82.5%)	11 (17.5%)	63 (100%)

$X^2 = 1.377$ P value = 0.241 NOT SIGNIFICANT

Table 5: Difference of KAP between Trained and Untrained on Universal Precautions

	CORRECT	INCORRECT	TOTAL
TRAINED	12(57.1%)	9(42.9%)	21
UNTRAINED	24(57.1%)	18(42.9%)	42
	36(57.1%)	27(42.9%)	63(100%)

$\chi^2 = 0.00$ $P\text{value} = 1.00$ **NOT SIGNIFICANT**

No statistically significant difference in the level of knowledge was observed between those who were trained previously in BMW management and the untrained, regarding categories of BMW, colour coding of bins, hazards of exposure to BMW and universal precautions thus signifying the need to train, retrain and monitor the HCP.

Statistical significance between trained and untrained health care personnel was observed with only knowledge on PEP against HIV infected needle stick injury ($p = <0.05$).

4. Conclusions

The present study outlines the gap between BMWM rules and inadequate state of awareness and execution in practice by the HCP in concordance to studies by Mathur and Shalini independently [5,6]. The study also reveals the insignificant difference of KAP between trained and untrained health care personnel, thus emphasizing the need to train, retrain and monitor them periodically.

Recommendations

1. BMWM training should be made compulsory for all health care personnel working in Primary health centres and other health care centres from accredited training centres.
2. The reorientation sessions should be regularly conducted.
3. Training for sanitary staff should be emphasized.
4. Quality assessment of Bio-medical waste management should be done from time to time.

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