

Study on Knowledge, Attitude and Practices (KAP) of Bio-Medical Waste Management at Veer Surendra Sai Institute of Medical Science and Research (VIMSAR), Burla

Sunelirani Mishra, Chandan Sahu*, Malaya Ranjan Mahananda
P.G. Department of Environmental Sciences, Sambalpur University,
Odisha, India

Abstract—

Hospital is a holy place where the sick get a new life to return fresh to main form of life. However, the biomedical usable and hospital activities may play a vital role in the health condition of the patients and the surrounding environment. Hence, it is very important to have knowledge about the biomedical waste and their handling. The present study tried to assess the knowledge, attitude and practice (KAP) of VIMSAR, Burla to find the status of the biomedical waste management and handling.

Keywords— Biomedical waste, health, environment, KAP, handling

I. INTRODUCTION

Hospitals are known for the treatment of sick but simultaneously have adverse effects on human health and environment due to the garbage and filth generated during the hospital activities. Hospital waste poses a potential health hazard to the health care workers, public and flora and fauna of the area [1]. Hospital acquired infection, transfusion transmitted diseases, rising incidence of Hepatitis B, and HIV, increasing land and water pollution lead to increasing possibility of catching many diseases. Air pollution due to emission of hazardous gases by incinerator such as Furan, Dioxin, Hydrochloric acid etc. [2] have compelled the authorities to think seriously about hospital waste and the diseases transmitted through improper disposal of hospital waste. Hence it led to the implementation of “The Biomedical waste (management and handling) rules, 1998”.

Proper management of hospital waste is essential to maintain hygiene, aesthetics, cleanliness and control of environmental pollution. The hospital waste like body parts, organs, tissues, blood and body fluids along with soiled linen, cotton, bandage and plaster casts from infected and contaminated areas are very essential to be properly collected, segregated, stored, transported, treated and disposed of in safe manner to prevent hospital acquired infection [3] [4] [5]. Various communicable diseases, which spread through water, sweat, blood, body fluids and contaminated organs, are important to be prevented. The Bio Medical Waste scattered in and around the hospitals invites flies, insects, rodents, cats and dogs that are responsible for the spread of communication disease like plague and rabies. Rag pickers in the hospital, sorting out the garbage are at a risk of getting tetanus and HIV infections. The recycling of disposable syringes, needles, IV sets and other article like glass bottles without proper sterilization are responsible for Hepatitis, HIV, and other viral diseases. It becomes primary responsibility of Health administrators to manage hospital waste in most safe and eco-friendly manner. Hence, it is of prime importance to inculcate proper management and handling techniques of these wastes to eliminate any likely chances of proliferation of communicable disease or vectors, which includes proper training regarding the biomedical waste (BMW) management and handling [6]. The present study highlighted the assessment of the knowledge, attitude and practices of various staffs of Veer Surendra Sai Institute of Medical Science and Research (VIMSAR), Burla to smoothen and streamline the existing process for the betterment of the hospital and the area.

II. METHODOLOGY

Study settings were at Veer Surendra Sai Institute of Medical Science and Research (VIMSAR), Burla, Sambalpur. Sample size was 50 including all levels of staff of the hospital. Study tool was a pre designed questionnaire [7][8][9][10][11][12]. The questionnaire had three parts. The first part contained questions regarding the assessment of knowledge, the second part contained questions regarding assessment of practice(s) and finally the last part had the questions for the assessment of attitude. The questionnaire was designed and pretested for its authenticity and validity. The questionnaire was then administered and the staffs were requested to fill it up and subsequently data were collected. In case of lower group of staffs those were unable to write, the data were collected verbally. The final data was tabulated and interpreted after the application of proper statistical method (Two way-ANOVA without replication test).

III. RESULT AND DISCUSSION

Table I: Number and percentage of staffs to various bmw aspects

Verbal questions	Number of Staffs out of 50	Percentage (%)
Heard about BMW	48	96%

Heard about BMW rules, 1998	44	88%
Know about bio-hazard symbol	33	66%
Aware about different categories of BMW	20	40%
Perception about different health problems due to BMW	35	70%
Knowledge about color coding bags	25	50%

Table II: Knowledge, attitude and practices result of vimsar regarding BMW

	Number (out of 50) and Percentage of staff members on various aspects of BMW		
	Knowledge	Attitude	Practice
Below average	14(28%)	8(16%)	12(24%)
Average	17(34%)	18(36%)	14(28%)
Above average	19(38%)	24(48%)	24(48%)

The study revealed the knowledge about various aspects of BMW (Table I). Almost all respondent i.e. 96% (48 people) heard about BMW but only 88% (44 people) of them heard about the BMW rules, 1998. 66% (33 people) of the entire studied population know about the bio hazard symbol and only 40% (20 people) respondent could remember the ten category of BMW though it was in their graduate curriculum. Being health care personnel, 70% (35 people) of the study population were aware that improper management of BMW causes different health problems like AIDS, Hepatitis B&C etc. and only 50% (25 people) of the study population knew about colour coding of bags for collection of BMW.

In this study, staffs of various levels were assessed about the KAP regarding BMW management. The study revealed that the KAP was not satisfactory (Table II). All the aspects of the study were categorized as below average, average and above average depending upon their responses in the questionnaire. The knowledge regarding the BMW among the various group of respondents were found to be 28% in the below average category, 34% in the average category and 38% in the above average category while that of the attitude of the staffs of VIMSAR towards BMW revealed 16% of them were in the below average category, 36% staff were in the average category and 48% of them were in above average category. However, the results confirmed that only 24% of the staff had below average practice for BMW, 28% of them had average practice and 48% were in the above average category respectively.

Table III: Number of staff members scoring 50% or more in various bmw aspects of the study

Aspects \ Designation	Knowledge	Attitude	Practice
Doctors	3	5	5
Nurse	6	6	8
Lab. Technician	4	4	3
BMW handler	4	5	4
Others	2	4	4

Table III gives the result regarding the number of staffs belonging to various designations and scoring at least 50% or more in the questionnaire provided to them regarding the various aspects of BMW and its rule which clearly suggests that the number is very thin and this is due to the lack of proper training programs and lack of interest among the various staff of VIMSAR.

The data so obtained were subjected to a Two-way ANOVA (without replication) at 0.05 and 0.01 confidence levels to find out whether significant variation exist between them with respect to designation of the staff members and various aspects of BMW or not. The result so obtained after the ANOVA test clearly shows that there is a significant variation with respect to the designation of the staff members towards the BMW at 0.05 significant level ($F_{cal} = 6.8, p < 0.05$) as is shown in Table IV and no significant variation was found with respect to various aspects of BMW even at 0.01 significant level ($F_{cal} = 2.2, p > 0.01$) as is shown in Table V.

Table IV: Two way-anova without replication at 0.05 level of confidence limit

Source of difference	SS	df	MS	Fcal	Ftab	NS/S
Designation	20.4	4	5.1	6.8	3.84	S
Aspects	3.33	2	1.67	2.22	4.46	NS
Error	6	8	0.75			
Total	29.73	14				

Table V: Two way-anova without replication at 0.01 level of confidence limit

Source of difference	SS	df	MS	Fcal	Ftab	NS/S
Designation	20.4	4	5.1	6.8	7.01	NS
Aspect	3.33	2.00	1.67	2.22	8.65	NS

Error	6	8	0.75			
Total	29.73	14				

IV. CONCLUSIONS

Our study clearly suggests that the KAP regarding the biomedical waste management in VIMSAR, Burla has a good scope of improvement and the designation has quite an impact on the management strategies. This might have been due to the illiteracy of many staff members at the lower level regarding the BMW rules. Hence intensive training program for all level of staffs and a regular monitoring system encompassing information, education, communication and practice of BMW management inside the VIMSAR campus is recommended.

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