

AWARENESS AMONG HEALTH CARE PROFESSIONALS REGARDING BMW IN JHARKHAND

Dr. Umesh Kumar¹, Dr. Ramesh Kumar², Dr Sushil Kumar³

¹Principal, Government Women's Polytechnic, Ranchi (India)

²Professor, Computer Science & Engineering, Bhilai Institute of Technology, Bhilai, Durg (India)

³Principal, Pragati College of Engineering & Management, Raipur (India)

ABSTRACT

Everything in this has its life and after sustained use however long or short it may be has to come to the fold where it has lost its usefulness and is termed as waste. The wastes, irrespective of its domain are hazardous, harmful and deadly. The hazardous and deadly injurious wastes needs care segregation and creation of meaningful awareness among the classes who are coming across. The disposed Bio Medical Waste is one among extreme deadly and hazardous. Every time and every front has a select group of persons who are more prone to come in contact and risk the worst. These highly vulnerable group prone to contact needs to be highly educated & aware about the risks and consequences they are to confront after getting infected after deadly contamination. The survey and analysis reveals that even best educated and aware group i.e. Doctors is also at high risk if by mistake or otherwise are less careful in handling from them also. The least educated and aware group of Ward boys and sanitary group persons who are more likely to get contamination are less educated and aware. Extensive state of art technology and awareness education is need of hour for making them knowledgeable and able to get rid of the ill effect from these malicious disposed and waste bio medical wastes.

Keywords: BMW, Hazards, Training, Vernable Group, Professionals Awareness, Medicos, Health Worker.

I. INTRODUCTION

Every product, system or material thing which comes in existence has a life and after its life turns to non usable product and is termed as waste. The arena of products and things ranges from house hold to cosmetics to deadly required medical requirements. Waste will always be seen and remain as major threat for contamination and ecological and environmental issue irrespective of its evolution for mankind and development in industrial, day to day life, essential and social spheres. Wastes creation ranges from home, school, other public places, industries and even the much needed medical shops and hospitals and primary health centers. The quality and concern regarding its hazardousness and threat of wastes produced only vary as per source and place they are generated. The major question is not generation of waste, as it is bound to with evolution and generation of product, but is from where and how it comes up and finally ends up. Every person responsible for waste generation; has some duty and needs some expertise to minimizing it and handling so that it does not affect

other dealing it. Very often it is viewed that some people are environmentally conscious and generate less waste of their own. IN case of countries, the serious and technically developed ones create less waste and manage elongation of lifecycle by recycle, reuse and other techniques. The lesser developed countries generate more wastes as developed technology and awareness among masses is lesser. Ironically the need for awareness is high in such underdeveloped nations only. Very often the game of passing bug is also very well evident from have ones to have not ones in name of technology transfer and help.

Best way of handling waste is to limit its generation. The situation of countries is equally valid for their states within India also. The developed states keep their population more aware and he literacy rate is also high which makes them less prone to the ill effects of infections from theses deadly contaminations. For the present consideration the development is of vital importance as the development of states will call for number of primary health centers across the state in numbers and the establishment in terms of hospitals will also be high. The health centers and hospitals are located in the urban and rural are under the government and private banners. The ill effect will not see the persons as per their background but will affect as per the awareness and provisions of protection made available.

The age old generation of typical waste coming out of primary centers, Hospitals and Nursing Homes has to be categories of different types. These are Hazardous and deadly in nature beyond any ones expectations. The select group is likely being affected from these most deadly contaminations. A study for awareness about the different aspects of such is need of hour for making associated persons aware about their getting affected and getting prey to such situation.

The combined study across the private and government sector and even in government sector among the contractual and permanent employees has shown clear results. The economical status mostly speaks about the affordability, training undergone and knowledge about the seriousness. The situation obtained from the survey shows the level of awareness as alarming in the lower educated persons and section of involved in disposals who are less educated and less prepared and able to get cured if affected by these as their economical affordability is also marginal. Regular training and awareness camps for such persons can be suggested to be of prime importance so that they are able to protect themselves and work carefully.

Wastes Types :- Broadly different types of wastes can be classified as:-

Municipal Waste

Agricultural Waste

Industrial Wastes

Civil Constructions & Demolition Wastes

Electronic Wastes

Biomedical Waste

Further each category can be classified in sub classes and explanations and definitions can be attributed.

Biomedical Waste & Its Types: Waste coming from hospitals, surgical wards, surgery, general medical practitioner's work places, medicines factories, primary health centers, health care facilities, veterinary hospitals and labs are termed as bio medical wastes. To be précised one may say that items in this group include outcomes of actions from surgical items, pharmaceuticals, blood, body parts, wound dressing materials, needles and syringes. Bio medical wastes can be further classified as general waste, hazardous waste deadly wastes on its composition and effectiveness of affecting the person coming in its contact or contamination.

As per "Bio-Medical Waste (Management & Handling) Rules, 1998" the "Bio-medical waste" means any waste, which is generated during the diagnosis, treatment or immunization of human beings or animals or in research activities pertaining thereto or in the production or testing of biological, and including categories mentioned in Schedule I; [1] It has been categorized in 10 categories namely

Categories of Bio Medical Wastes as per "Bio-Medical Waste (Management & Handling) Rules, 1998" are

Table 1 : Categories of Bio Medical Wastes

Category	Types	Explanation of items
Cat 1	Human Anatomical Waste	Human tissues, organs, body parts.
Cat 2	Animal Waste	animal tissues, organs, body parts carcasses, bleeding parts, fluid, blood and experimental animals used in research, waste generated by veterinary hospitals colleges, discharge from hospitals, animal.
Cat 3	Microbiology & Biotechnology Waste	Wastes from laboratory cultures, stocks or specimens of micro-organisms live or attenuated vaccines, human and animal cell culture used in research and infectious agents from research and industrial laboratories, wastes from production of biological, toxins, dishes and devices used for transfer of cultures
Cat 4	Waste sharps: needles, syringes, scalpels, blades, glass, etc. that may cause puncture and cuts	This includes both used and unused sharps.
Cat 5	Discarded Medicines and Cytotoxic drugs	Wastes comprising of outdated, contaminated and discarded medicines.
Cat 6	Solid Waste	Items contaminated with blood, and body fluids including cotton dressings, soiled plaster casts, lines, beddings, other material contaminated with blood
Cat 7	Solid Waste	"Wastes generated from disposable items other than the waste sharps such as tubing's, catheters, intravenous sets etc
Cat 8	Liquid Waste	Waste generated from laboratory and washing, cleaning, house-keeping and disinfecting activities
Cat 9	Incineration Ash	Ash from incineration of any bio-medical waste
Cat 10	Chemical Waste	Chemicals used in production of biological, chemicals used in disinfection, as insecticides, etc

Among the bio medical waste categories the cat 3, 4 and 5 are deadly ones and needs utmost care and awareness by the handlers.

On an average 1.45 kg BMW is generated per patient per day in Indian hospitals compared to 4.5 kg in developed countries. As per western figures, approximately 15- 20% of this total BMW waste is hazardous. The percentage in case of India would be much higher because proper waste segregation and waste disposal methods

either does not exist or not practiced. [2,4]. In case of primary health centers the rate of generation of bio medical waste is of the order of 1/3 rd of the one from hospitals.

II. PRESENT STUDY ON AWARENESS & DISCUSSION

The study was conducted during March – May of 2015. Jharkhand state was divided into six zones. Each zone in three sectors namely primary health centers , Hospitals in Private sectors and Hospitals in Government sectors having 50 or more beds . A questioner for getting information regarding awareness level of Doctors, Para medical staffs and other staff members who are involved in the BMW was developed. A cross sectional study was conducted in primary health care centers leading private hospital and nursing homes in Jharkhand district headquarters. The questionnaire framed had questions regarding general awareness, biomedical wastes (BMWs), knowledge regarding biomedical hazard, its representation by symbol, the storage time after collection, its disposal techniques, collection details regarding container for needle syringe, typical internationally accepted colour coding of bags used for storage and disposal, details about hazards due to exposure of BMWs.. Out of made available 1000 questioners only 100 from doctors, 90 from nurses, 110 lab technicians, 125 from ward boys and 150 from safai karmcharies were received. The participation of various groups was voluntary. A pretested knowledge based questionnaire on biomedical wastes handling, was first provide in terms of handouts.

Filed in questioners, details from interviews and other wise available data were collected and compiled. The study group after collection of details and data provided participants with proper information about the correct handling of these BMWs. Techniques of proper handling for health education on safe biomedical waste handling were provided.

Statistical methods were applied to get graphical representations of correct responses was assessed and analyzed. Distribution of questionnaire among available doctors, Nurses, Lab Technicians, Ward Boys / Women and Sanitary Workers engaged in health centers, Hospitals and clinics were circulated and collected

The data obtained from the samples were as follows:

Table 2 Data of Distributed questioners and received from different segments

Group	Questioners made available	Questioners received
Doctors	150	100
Nurses	200	90
Lab Technicians	200	110
Ward Boys / Women	200	125
Sanitary (Safai) Workers	250	150

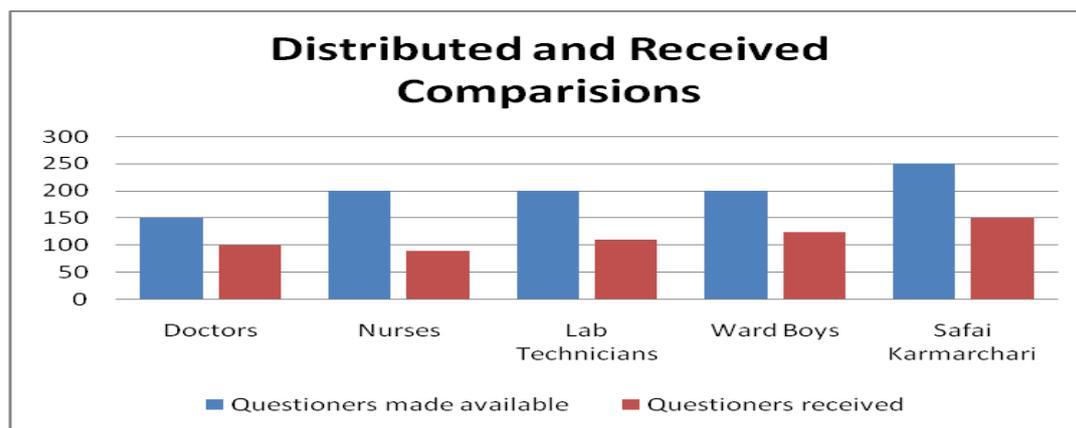


Figure 1

It is clear that most responsive group is the one who is best educated and prepared to handle the situation. The educational background plays an impressive role in such statistical participations.

Table 3 Knowledge about General Awareness of BMW

Parameter	Doctors	Nurses	Lab Tech	Ward boy / Women	Sanitary Workers
Known	81	44	61	55	34
Unknown	11	25	28	45	56
No idea	08	21	11	25	60

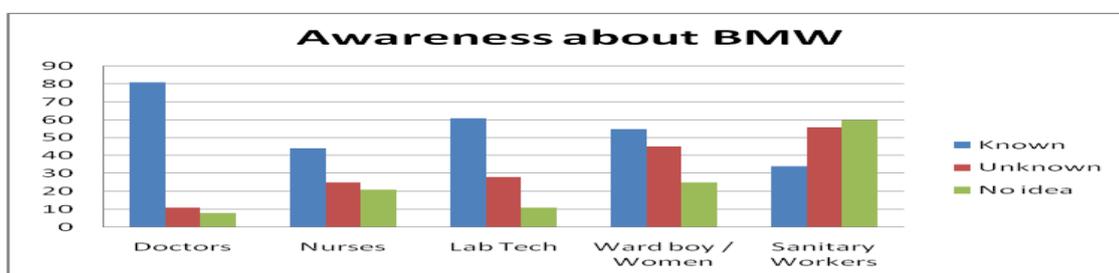


Figure 2

Analysis shows that the known group of Doctors is very high. Level of Sanitary workers is below average and needs more alertness. The ignorant proportion is also present in all the sections. The largest of this ignorant group exists in sanitary workers who are more prone and excessively vulnerable to exposure of these BMW infections.

Table 4 Knowledge about Bio Medical Symbols

Parameter	Doctors	Nurses	Lab Tech	Ward boy / Women	Sanitary Workers
Yes	92	73	88	92	38
No	08	17	22	32	112

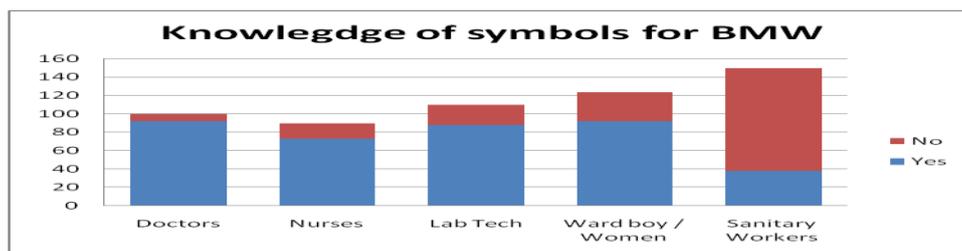


Figure 3

The proportion shows that the ignorant group is the lesser educated ones. The education level is proportional to the knowledge parameter of symbols knowledge.

Table 5 Disposal Techniques of sharp items among BMW

Parameter	Doctors	Nurses	Lab Tech	Ward boy / Women	Sanitary Workers
Yes	72	51	69	36	16
No	16	18	15	48	87
Do not care	12	21	21	41	47

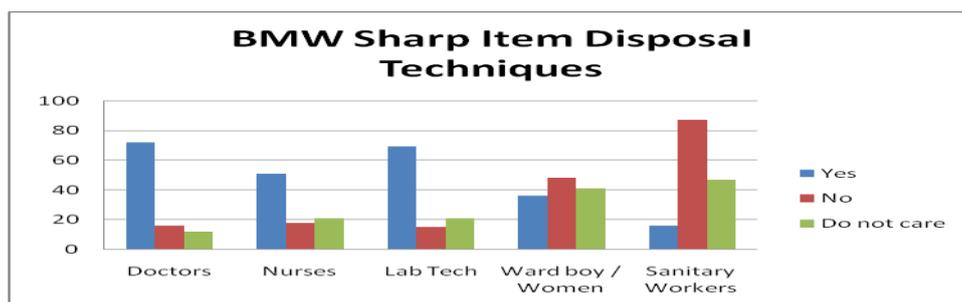


Figure 4

As best case the knowledge among the sanitary workers must be very high as they are the ones who will assess and dispose the BMW but it is observed that the level of no information is highest among the section. Ignorance level is also very high here. Ironically knowledge level is least in this group. The trend seems to follow the education level about knowing disposal techniques.

Table 6 Disposal of Hazardous and contaminated items of BMW

Parameter	Doctors	Nurses	Lab Tech	Ward boy / Women	Sanitary Workers
Sensitive	77	66	60	34	11
Careless	14	18	34	66	73
Don't know	09	6	16	35	46

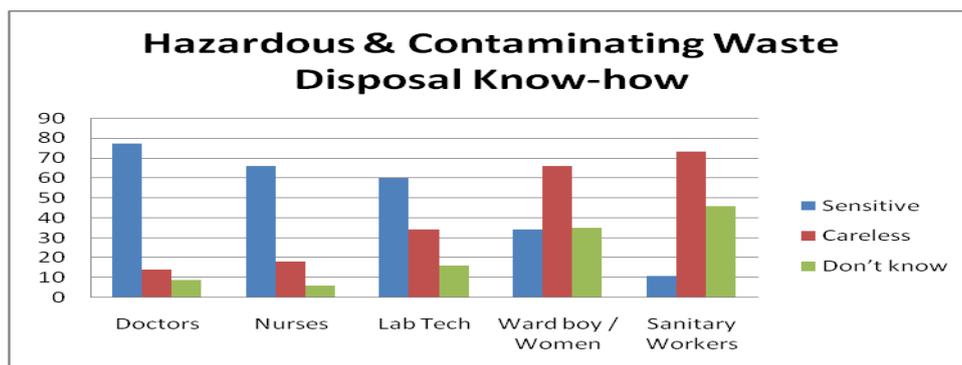


Figure 5

The techniques and ways of disposal for even hazardous and contaminated wastes of Bio Medical Waste level is also alarming. The parameter of knowledge among section vernable is alarming. The Ward Boy and Sanitary workers are mostly disposing such materials and they are either careless or ignorant about harms. This requires more training and better training for awareness.

Table 7 Maximum Storage Time of collected BMW

Parameter	Doctors	Nurses	Lab Tech	Ward boy / Women	Sanitary Workers
➤ 48 hrs	64	33	31	21	15
< 48 hrs	37	44	43	21	18
No idea	9	13	39	83	117

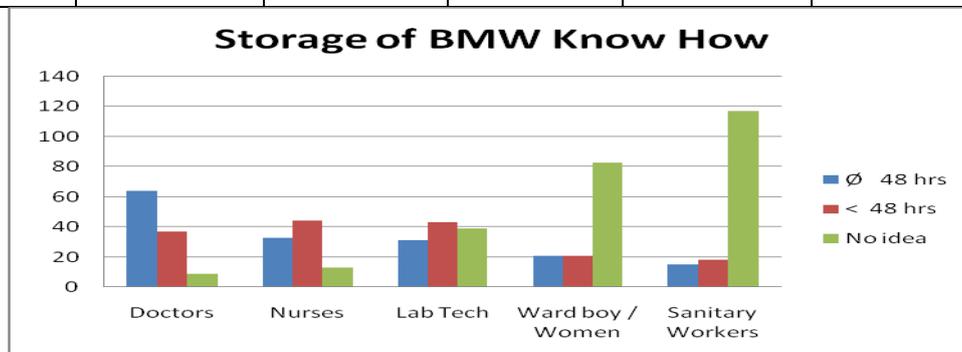


Figure 6

Peaks shown in the graph about level of knowhow for Sanitary workers and ward boys is alarmingly high. The concern of know how among lab technicians is also significant. The level of no idea among Doctors and nurses who are taught about these in their courses shows that how they are not in touch of prevailing conditions and having need of training on regular basis.

Table 8 Disposal Methods of collected BMW

Parameter	Doctors	Nurses	Lab Tech	Ward boy / Women	Sanitary Workers
Known	28	10	18	8	12
No Idea	19	26	12	21	21
Follow others	53	64	80	96	117

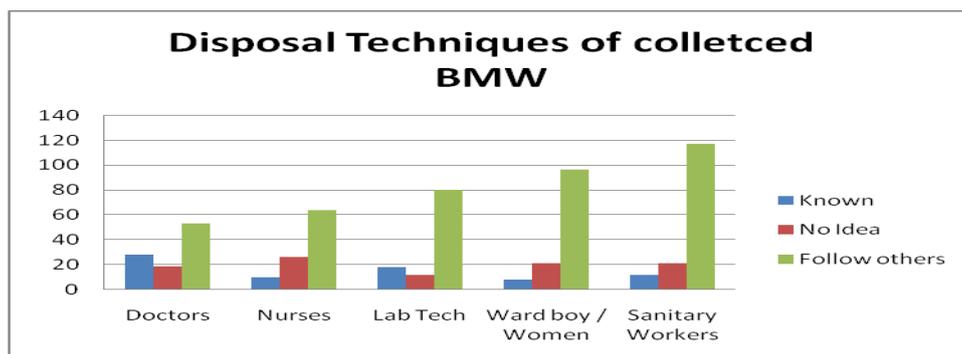


Figure 7

The trend of following others is predominant in all segments. The proper know how for different techniques of disposal is not known to even highly elite group. The environmentalist and specialized persons for waste handling ones are required to educate and provide extensive training. The health dept of Jharkhand state needs to have a look on situation and accordingly arrange training.

Table 9 Types of Hazards Affecting Exposer of BMW

Parameter	Doctors	Nurses	Lab Tech	Ward boy / Women	Sanitary Workers
Known	92	44	30	6	2
No Idea	4	34	24	29	102
Follow others	4	12	56	90	46

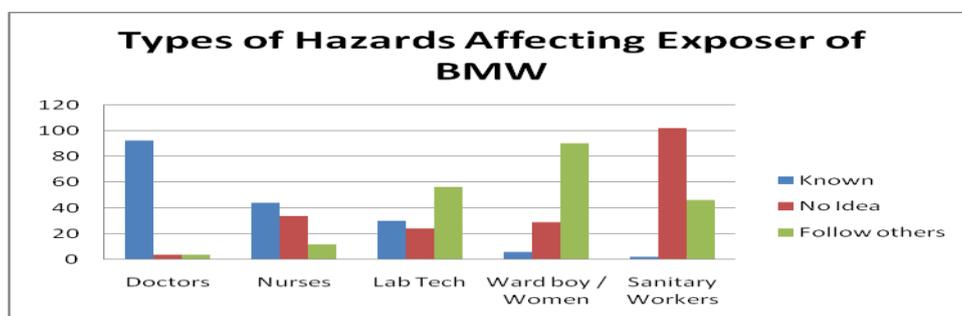


Figure 8

Exposer or contamination after coming in contact of BMW is of various types. The handler group is all of these. The wastes are mostly handled by the extreme later groups. The disposal and throwing functions are performed by the least educated group. The thumb rule training and know how is at least level and it is highlighte3d in the survey also. Doctors only who are otherwise alert are in proper know how only. A marginal section here is also ignorant. Chances of ignorance cannot be taken.

Table 10 Types of Colour Codes for bags of BMW Knowledge

Parameter	Doctors	Nurses	Lab Tech	Ward boy / Women	Sanitary Workers
Known	64	71	81	67	51
No Idea	26	3	19	43	46
Follow others	10	16	10	15	53

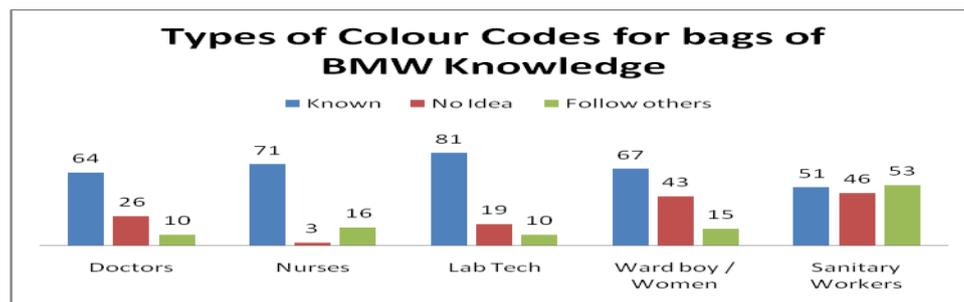


Figure 09

The pattern shows the group responsible for handling is knowledgeable. The need for training requirement is high in the lesser qualified vernable group of sanitary workers.

Table 11 Acts , Rules & Provisions Convergence regarding BMW

Knowledge Attainment	Doctors	Nurses	Lab Tech	Ward boy / Women	Sanitary Workers
Complete	51	23	26	11	3
Partial	49	46	63	31	36
No Idea	0	21	21	83	111

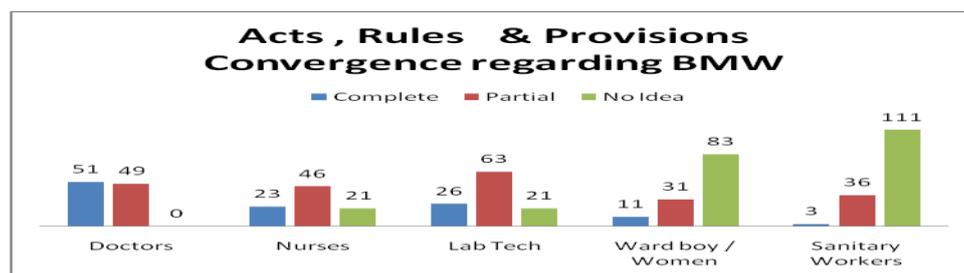


Figure 10

Situation of ignorance or no knowledge regarding acts , rules etc among wad boys and sanitary workers is not an issue, but the lesser know how among lab technicians and nurses is notable. The partial has no parameter in itself , hence know how of general provisions may also have overridden . .

Table 12 Know how about Diseases Spread by BMW

Diseases	Doctors	Nurses	Lab Tech	Ward boy / Women	Sanitary Workers
DM	84	43	83	21	21
HIV	89	76	65	45	11
Hep B	88	78	59	23	13
Hep C	89	69	61	32	14
Leprosy	78	66	78	42	21
RHD	62	68	55	23	12
Syphilis	88	65	75	41	32
TB	91	71	73	21	65
Tetanus	99	72	81	34	54
Others	86	66	71	31	14

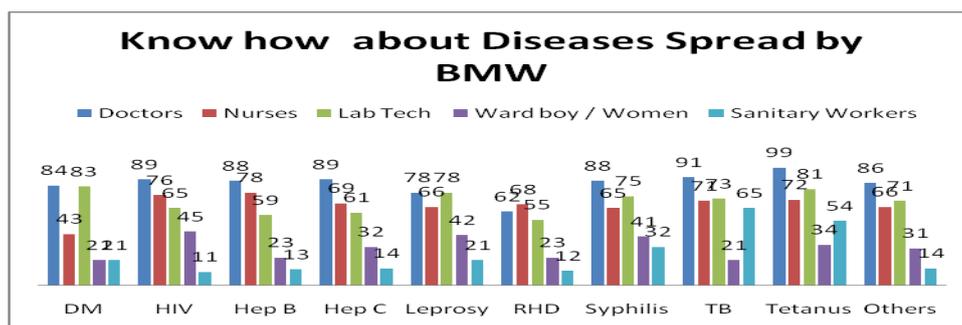


Figure 11

The outcome of the survey about information in this section is depicted in the figure 11. The numbers show the responses against each disease. The more common forms have larger representations. This is no definite evidence about know how about spreading of diseases from these bio medical wastes.

Table 13 Employment Scenario: Permanent vrs Contractual

Employment	Doctors	Nurses	Lab Tech	Ward boy / Women	Sanitary Workers
Permanent	55	56	43	34	146
Contractual	45	34	67	91	4

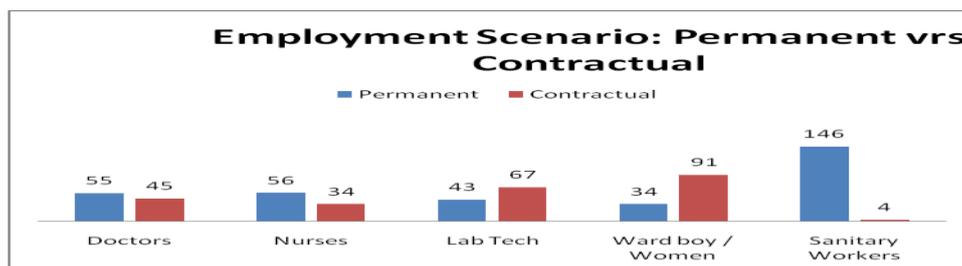


Figure 12

Current scenario of employment in the health and medical care professionals is shown in graphical. The scenario of government hospitals and primary health centers and leading PSU hospitals, health centers and leading private medical hospitals and centers have been included. The presence of contractual sanitary works is adding to the BMW scenario. The trend of keeping lab technicians and ward boys on contractual is in practice but this is a select group which finds place in one hospital or other on rotation. Case of nurse is of rotating nature when it is seen in private hospitals and nursing homes. The Government hospitals and primary health centers have fixed proper training lot.

Table 14 Training Need Assessment for Awareness of BMW

Training Need	Doctors	Nurses	Lab Tech	Ward boy / Women	Sanitary Workers
Yes	32	66	75	95	126
No	68	24	35	30	24

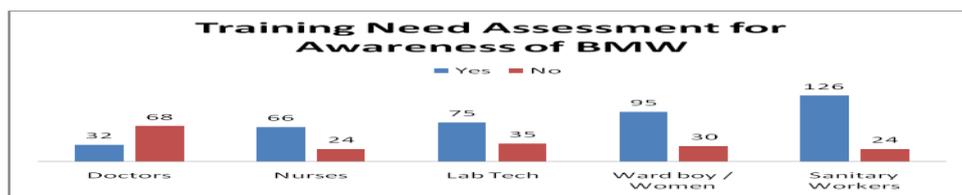


Figure 13

The need assessment among all sections are graphically shown. The need for updation and keeping paces has been expressed by all. The section of sanitary worker, ward boy who are more susceptible to contamination have expressed their greater desire out of fear. The lab technicians, nurses and even doctors have expressed need for training. Training and know how imparting can be done through extensive refresher courses of short duration of weeks time at regular intervals. The repeated training is also required as contractual workers keep changing. New techniques always come and are often less manpower and labor oriented. Setting up of different types of disposal centers and having working knowledge also need to be included in training ambit.

III. CONCLUSION

Disposal of any type of waste is now turning to be technical job. Day by day new technology is creeping in for making the disposal environment friendly and less manpower involving ones. The lot of raddiwalas who often want their livelihood, go to the places where the wastes are piled up and left abundant. The other waste materials may have only environmental and minor health issues but these bio medical wastes are a typical class of wastes which can be deadly and often have very sharp cutting wastes in it. The wastes coming from the contamination and contagious diseases are very deadly and often persons handling are at risk. Level of awareness is very limited even among groups working in it. Scenario of general masses can be inferred from the fact that they are at the nil level. Mass awareness camps and training programs are need of hour. The analysis and discussion of the various group finding show that the group as per their level of education and training lacks proper knowhow and require further awareness. The most educated group is of Doctors are less prone to getting affected with this

type of deadly waste as they are less exposed and are in command of symptoms and treatments.. The group of Nurses and Lab Technicians who are handling the patients of having affection of contaminable disease are prone to get affected during the acts of vaccination during the course when these bio medical waste are getting generated. The economy of patient and carelessness of medical personals are evident. For saving some money multiple injections case for getting other patients affecting can also be the case. The hospital administration even provide facilities, these get carried away in private by employees and lack of facilities force the medical personals to practice such multiple injection from same needle. The disposable and mandatory discarded injection systems which are in practice in developed countries are only solution in such cases. In case of Lab Ward boys / women and Sanitary workers they are the least educated persons and have very less affordability for bearing the medical expenses if they get affected are the most viable persons . These groups have very less knowhow and are groups who for want of employment keep changing their place of working also. The situation of awareness is poor to worse and need extensive training among classes of most vulnerable to least vulnerable ones. Extensive awareness and training camps are required.

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