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KNOWLEDGE, ATTITUDE AND PRACTICE REGARDING BIOMEDICAL WASTE MANAGEMENT AMONG THE HEALTH CARE WORKERS IN HOSPITALS OF KASHMIR

Medical Science

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KEYWORDS

INTRODUCTION:

All activities of living things on earth produce waste in some form or the other. Normally, aerobic and anaerobic processes in the environment degrade such products. These wastes, both biodegradable and non-biodegradable hardly had any impact on the environment until the invention of plastics by the modern man. The process of natural degradation could not keep pace with the increase in waste generated by the everincreasing population of mankind and its necessities. The air, the water and the land are today becoming disposal sinks for the waste[1].The reports and figures available from developed countries indicate that approximately 1-5 kg of waste is generated per bed per day, with substantial inter country and inter specialty differences [2]. The data available from developing countries also indicate that the range is essentially similar but the figures are on a lower side with 1-2 kg per day per bed. In India, it is estimated to be 2.0 kg/ bed/ day [3]. Quantity of solid waste generated per bed per day was found to be 2.02 kg.[4]

Term medical waste is used to describe any waste which is generated in the treatment or immunization of human beings or animals, in research pertaining there to, or in the production and testing of biological. Biomedical waste is defined as "any solid, fluid or liquid waste, including its container and any intermediate product, which is generated during the diagnosis, treatment or immunization of human beings or animals pertaining there in to research activities or in the production or testing of biological and the animal waste from slaughter houses and any other such establishment"

Categories Of Biomedical Waste:

No.	Category Of Biomedical Waste	Treatment And Disposal
I	Human Anatomical Waste	Incineration/deep Burial
II	Animal Waste Generated during research	Incineration/deep Burial
III	Microbiological or Biotechnological Waste-Microorganism, Human/Animal Cell culture	Local Autoclaving, Microwaving, Incinerator
IV	Waste Sharps- Needles, Scalpels, Broken Glass	Disinfection-Chemical Treatment, Autoclaving, Microwaving, Mutilation
V	Discarded Medicines and Cytotoxic drugs	Incineration destruction and drug disposal in secured landfills
VI	Soiled Wastes-dressings, bandages, plaster casts, blood soiled materials	Incineration, Autoclaving, microwaving
VII	Solid Waste disposable items-tubes, catheters, excluding sharps	Disinfection by chemical treatment, Autoclaving, Microwaving, Shredding
VIII	Liquid Waste generated from any of the infected areas	Disinfection by Chemical treatment and discard into drains
IX	Incineration ash	Disposal in municipal landfills
X	Chemical Waste	Chemical treatment followed by discharge into drains for liquid and secured landfills for solids

World Health Organization (WHO) has recommended a five category classification of hospital waste for developing countries for practical purpose. These include:

1. General nonhazardous waste- it can be treated in a manner similar to domestic waste and it poses minimum degree of risk to health. It includes waste generated from sweeping, mopping and dusting of wards, kitchen waste, packaging material, paper pieces, waste water into sewer and human waste
2. Sharps –include pointed or sharp-edged instruments/objects used in relation to various patient care activities. These include hypodermic needles, needles attached with tubing, guide wire, trocars, cannulae, scalpel blade, razors, broken glass, cover slips which are broken and are in contact with infectious agent. These cause transmission of infection directly by puncturing skin or by contact with broken skin or raw areas.
3. Infected waste
4. Chemical and pharmaceutical waste- it comprises of various chemicals and pharmaceuticals used in health care organizations e.g. hydroquinone, glutaraldehyde, silver compounds, methylene chloride, chloroform, ethylene, xylene, acetone, ethanol and phenol-based scrubbing solutions. These can be further divided into here sub-categories

- Hazardous chemical waste
- Non-hazardous chemical waste
- Pharmaceutical waste

5. Other hazardous waste - these have been sub divided into two categories namely:

I) Radioactive
ii) Cytotoxic waste

Radioactive waste materials are used in analytical procedures as diagnostic aids, body organ imaging, tumor localization and subsequent treatment. Special precautions as per guidelines of Bhabha Atomic Research Center have to be followed, as these are toxic, mutagenic, and teratogenic when spilled. The areas which generate this waste are:

a) Research activities-commonly use carbon or hydrogen isotopes and generate large amount of waste with low radioactivity
b) Clinical laboratories-where radioimmunoassay procedures are preformed, waste with low radioactivity is generated
c) Nuclear medicine laboratories- they generate waste from the diagnostic application of radionuclide like ^{123}I and ^{131}I or ^{99}Tc which generate waste of high radioactivity.

Cytotoxic waste is that waste which is toxic to the living cells and can cause death of the cell; for example anticancer agents.

Hazards of Medical Waste:

The exposure to health care waste may result in infections and disease or injury. The hazardous nature of the medical waste may be because:

- It contains infectious material or agents
- It may be genotoxic
- It may contain toxic or hazardous chemicals, drugs or pharmaceuticals
- It may contain sharp mainly syringes, needles, etc

Pathogens in the biomedical waste may infect human body by number of routes-

- Absorption through opening or cut in the skin
- Absorption through the mucous membrane such as splashing in eye
- By inhalation of dust particles containing microorganisms
- By ingestion of food or water by contained hands or consumption of contaminated food or water

Persons who are exposed to the risk of infection from potentially infected waste are-

1. Patients who attend the hospital and who are at special risk from infections and other complications if the waste disposal is not properly organized. They include-

a) Immuno-suppressed patients, whose defense mechanism are altered
b) Patients with bleeding or coagulation disorder
c) Patient on dialysis
d) Intravenous drug abusers, addicts
e) Patient in health care

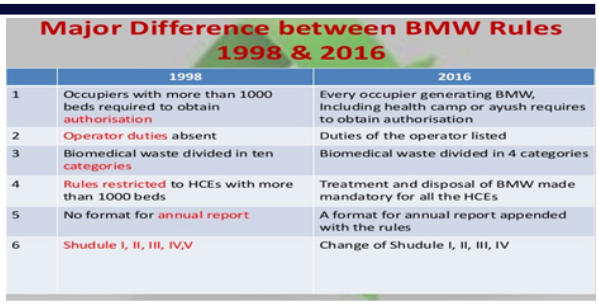
2. All medical and paramedical staff who is involved in medical care. The main groups are-

a) Nurses, auxiliaries
b) Sanitation staff involved in collection, segregation, transport and final disposal of waste
c) Staff working in supportive service areas like laundry, central sterile supply department, theater sterile supply department.

Biomedical Waste Act:

Taking heed of the situation, the supreme court of India took up the matter as a public litigation appeal and on its direction, the Biomedical Waste (Management and Handling) Rules, 1990 were notified under the Environment Protection Act 1986, by the Ministry of Environment and Forestry, Government of India on 28th July 1998.

Government of India reacted towards the global concern and notified the biomedical waste management rules 1998. These rules have been framed in exercise of the power conferred by section 6, 8 and 25 of Environment (Protection) Act 1986.This is applicable to every hospital and nursing home, veterinary institutions, animal houses or slaughterhouses, which generate, biomedical waste within a time frame. This law has exempted clinics, dispensaries and laboratories providing treatment or diagnostic facility to less than 1000 patients per month. The Objectives and rationale of Bio Medical Waste management are mainly to reduce waste generation, efficient collection, handling and disposal in such a way that it controls infection and provides safety to employees working in the system and ensure cost effectiveness by avoiding penalties and fines imposed by regulatory authorities. Accordingly, waste is required to be treated and disposed of in accordance with schedules prescribed. The basic elements is to recognize the waste, identify where waste is generated and determine the cause of generation, plan disposal of the waste in a scientific manner so as to render it environmentally non-hazardous and eliminate the source of infection[5]. To implement these rules more effectively and to improve the collection, segregation, processing, treatment and disposal of these bio-medical wastes in an environmentally sound management thereby, reducing the bio-medical waste generation and its impact on the environment, the Central Government reviewed the existing rules. The Central Government published the draft rules in the Gazette vide number G.S.R. 450 (E), dated the 3rd June, 2015 inviting objections or suggestions from the public within sixty days from the date on which copies of the Gazette containing the said notification were made available to the public. The copies of the Gazette containing the said draft rules were made available to the public on the 3rd June, 2015.



Colour coding and type of container for disposal of bio-medical wastes

Colour Coding	Type of Container -I Waste Category	Treatment options as per Schedule I
Yellow	Plastic bag Cat. 1, Cat. 2, and Cat. 3, Cat. 6.	Incineration/deep burial
Red	Disinfected container/plastic bag Cat. 3, Cat. 6, Cat.7.	Autoclaving/Microwaving / Chemical Treatment
Blue/White translucent	Plastic bag/puncture proof Cat. 4, Cat. 7. Container	Autoclaving/Microwaving / Chemical Treatment and destruction/shredding
Black	Plastic bag Cat. 5 and Cat. 9 and10	Disposal in secured landfill

1. Colour coding of waste categories with multiple treatment options as defined in Schedule I, shall be selected depending on treatment option chosen which shall be as specified in Schedule I.
2. Waste collection bags for waste types needing incineration shall not be made of chlorinated plastics.
3. Categories 8 and 10 (liquid) do not require containers/bags.
4. Category 3 if disinfected locally need not be put in containers/bags.

The hospital medical waste audit

In order for the hospital administrators to be sure that medical waste is being handled and disposed in the most effective manner, and with the least health risk to employees and the community, there must be a comprehensive appraisal of all the activities associated with the generation, handling and disposal processes. Such a medical waste audit will require the following steps[34]:

1. Generation profile
2. Inventory of handling practices
3. Review of disposal practices and alternatives
4. Cost analysis[34]

The government health care system is designed as a three-tier structure comprising primary, secondary, and tertiary facilities. In rural areas, primary health care services are provided through a network of subcenters, primary health centers, and community health centers.[8] The subcenter is the first point of contact between the primary health care system and the community, designed to handle maternal and child health, disease control, and health counseling for a population of 3,000 to 5,000. At least one auxiliary nurse midwife or female health worker, one male health worker, and one female "health visitor" supervise six subcenters.

Despite this elaborate infrastructure, severe shortages of staff and supplies in public-sector health facilities remain. India has a doctor-to-population ratio of 1:1,674, compared with the World Health Organization norm of 1:1,000, a situation that results in acute shortages and uneven distribution of doctors.[9] India's urban poor are especially vulnerable, given that primary care facilities in the cities are generally less organized and fewer in number than in rural communities.[10] Lack of access to care appears to take a toll: nearly 60 percent of urban poor children have not received all recommended immunizations before age 1. Life in slums also exposes people to a variety of diseases.

Private sector: India's private health care sector is not well regulated. Private health care providers deliver an array of outpatient services in solo practices ranging from those not registered with the relevant

medical council to trained medical practitioners to small nursing homes and multispecialty clinics. An estimated 40 percent of private care is provided by unqualified providers.[11]

The private hospital sector has expanded rapidly, and government-sponsored health schemes also rely on private hospitals as a part of public–private partnerships. From 2002 to 2010, the private sector created more than 70 percent of new beds, contributing 63 percent of total hospital beds.[12] Private hospitals currently provide about 80 percent of outpatient care and 60 percent of inpatient care.[13] Until the 1980s, private-sector hospitals were mainly nonprofits run by charitable trusts. With India's economic liberalization, growing middle class, and the rise in medical tourism, the number of private, for-profit hospitals has grown substantially.[14]

Methodology

A prospective study about Knowledge, Attitude and Practice of biomedical waste management was conducted for a period of two months in Kashmir Valley. All the ten districts of the Valley viz Srinagar, Anantnag, Pulwama, Baramullah, Shopian, Bandipora, Kupwara, Ganderbal, Badgam, and Kulgam were included in the study.

Study was conducted at primary and secondary care delivery levelsof the valley viz district hospital, sub district hospital, and primary health centre. All the district hospitals were included in the study.district hospital is a hospital at secondary referral level responsible for a district of a definite geographical area containing a defined population. Its objective is to provide comprehensive secondary health care services to the people in the district.

Out of two hundred twelve (212) primary health centers, fifteen (15) Community Health Centres and forty-three (43) primary health centers were included in the study. Sub district hospitals and primary health centers are the primary health care institutions catering to the population of defined geographical of sub district and block respectively. In addition to above mentioned health care institutions, five leading private Nursing Homes of Srinagar city were included.

The primary health center is the first point of contact between a village community and a medical officer and provides curative and preventive services to 20,000 to 30,000 people. It serves as a referral unit for six subcenters and has four to six beds for patients.

Community health centers are managed and maintained by state governments and are required to have four medical specialists supported by 21 paramedical and other staff, with 30 beds, laboratory, X-ray, and other facilities. It covers 80,000 to 120,000 people.

Finally, an existing facility like a district or sub divisional hospital or a community health center is named as a fully operational first referral unit if it is equipped to provide round-the-clock emergency obstetric care and blood storage. District hospitals function as the secondary tier of public providers for the rural population. Of a total of 628,708 government beds, 196,182 are in rural areas.[18] Government hospitals operate within a yearly budget allocation.

Study population included medical superintendents of district hospitals, 50% of doctors and 20% of nursing staff, laboratory technicians, sanitation staff and auxiliary staff in district, sub district hospitals and primary health centers. The study population was selected randomly and questionnaire was subjected to them. It was a self structured questionnaire designed and pretested via a pilot study. The questionnaire was collected on spot from the participants and data was later analyzed and inferences were drawn.

Observation

The study on Biomedical Waste Management among Health care workers in Kashmir valley about knowledge, attitude and practice had a response rate of 100% and out of 108 study subjects 42 were doctors, 20 were nurses, 29 were sanitation staff and 04 were auxiliary staff. Study revealed (Table 1) that 78.6% of doctors, 40% of nurses, 53.8% of lab technicians, 10.3% of sanitary staff and none of the auxiliary staff were having knowledge about rules of BMW management. 28.6% of doctors, 15% of nurses, 23.1% of lab technicians, 3.4% of sanitary staff and none of the auxiliary staff were having knowledge about authorization of BMW management. About segregation 90.5% of doctors, 100% of nurses, 100% of lab technicians, 75.9% of sanitary staff and 25% of the auxiliary staff were having knowledge. Overall knowledge among doctors, nurses, laboratory technicians, sanitary and auxiliary staff was 49.42%, 14%, 44.22%, 22.4% and 6.25% respectively. Only 5% nurses were having knowledge about colour coding of BMW management, rest of the health care workers were having no knowledge about colour coding.

Average knowledge among health care workers for all parameters about study of BMW management works out to be 32.45%

Table: 1. Knowledge about BMW among Government Hospital Health Workers

	BMW Rules		Authorization		Segregation		Colour Coding	
	N	%	N	%	n	%	n	%
Doctor (n=42)	33	78.6	12	28.6	38	90.5	0	0.0
Nurse (n=20)	8	40.0	3	15.0	20	100.0	1	5.0
Lab. Tech. (n=13)	7	53.8	3	23.1	13	100.0	0	0.0
Sanitation (n=29)	3	10.3	1	3.4	22	75.9	0	0.0
Auxiliary (n=04)	0	0.0	0	0.0	1	25.0	0	0.0
p value	<0.05 (Sig)		>0.05 (NS)		<0.05 (Sig)		>0.05 (NS)	

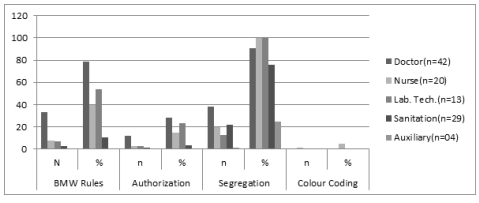


Figure 1: Knowledge about BMW among Government Hospital Health Workers

Study revealed (Table 2) that none of doctors, nurses, sanitary and auxiliary staff were practicing segregation, disposal and transportation of BMW. 15.4% of Laboratory technicians were practicing segregation. Out of all the health care workers only 7.7% of laboratory technicians had received training about BMW management.

Table 2: Practice about Segregation, Training, Disposal and Transportation among Government Hospital Health Workers

	Segregation		Training		Disposal		Transportation	
	n	%	n	%	n	%	n	%
Doctor (n=42)	0	0.0	0	0.0	0	0.0	0	0.0
Nurse (n=20)	0	0.0	0	0.0	0	0.0	0	0.0
Lab. Tech. (n=13)	2	15.4	1	7.7	0	0.0	0	0.0
Sanitation (n=29)	0	0.0	0	0.0	0	0.0	0	0.0
Auxiliary (n=04)	0	0.0	0	0.0	0	0.0	0	0.0
P value	>0.05 (NS)		>0.05 (NS)		>0.05 (NS)		>0.05 (NS)	

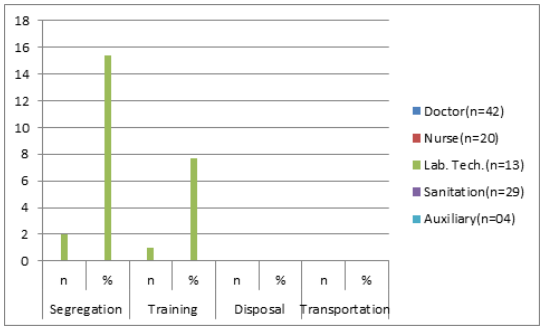


Figure2: Practice about Segregation, Training, Disposal and Transportation among Government Hospital Health Workers

About Attitude (Table 3) of Health care worker on BMW management, 28.6% of doctors accepted that BMW Management as an issue while 71.4% disagrees with it. 73.8% accepted it as a responsibility, 90.5% accepted is as a team work and 50% did not agreed that it is costly. 90% of doctors also disagreed that it increases the work burden. 35% of nurses accepted that BMW Management as an issue, 85% accepted it as a responsibility, 100% accepted is as a team work and 45% did not agreed that it is costly. 70% of nurses also disagreed that it increases the work burden.

15.4% of laboratory technicians accepted that BMW Management as an issue while 84.6% disagrees with it. 69.2% accepted it as a responsibility, 100% accepted is as a team work and 69.2% did not agreed that it is costly. 100% of laboratory technicians also disagreed that it increases the work burden.

51.7% of sanitary staff accepted that BMW Management as an issue while 37.9% disagrees with it. 72.4% accepted it as a responsibility, 55.2% accepted is as a team work and 51.7% did not agreed that it is costly. 69% of sanitary staff agreed that it increases the work burden.

None of auxiliary staff did comment about BMW Management as an issue or not. 75% accepted it as a responsibility, 100% accepted is as a team work and 75% agreed that it is costly.75% of auxiliary staff also agreed that it increases the work burden.

Table 3: Attitude towards Waste Management among Government Hospital Health Workers

		Doctor		Nurse		Lab. Tech.		Sanitation		Auxiliary		P value
		n	%	n	%	N	%	n	%	n	%	
Issue	Agree	12	28.6	7	35.0	2	15.4	15	51.7	0	0.0	<0.05 (Sig)
	Disagree	30	71.4	11	55.0	11	84.6	11	37.9	0	0.0	
	No comment	1	2.4	2	10.0	0	0.0	3	10.3	4	100.0	
Responsibility	Agree	31	73.8	17	85.0	9	69.2	21	72.4	3	75.0	>0.05 (NS)
	Disagree	7	16.7	3	15.0	2	15.4	5	17.2	1	25.0	
	No comment	4	9.5	0	0.0	0	0.0	3	10.3	0	0.0	
Team work	Agree	38	90.5	20	100.0	13	100.0	16	55.2	4	100.0	<0.05 (Sig)
	Disagree	3	7.1	0	0.0	0	0.0	10	34.5	0	0.0	
	No comment	1	2.4	0	0.0	0	0.0	3	10.3	0	0.0	
Costly	Agree	15	35.7	9	45.0	3	23.1	13	44.8	3	75.0	>0.05 (NS)
	Disagree	21	50.0	9	45.0	9	69.2	15	51.7	0	0.0	
	No comment	6	14.3	2	10.0	1	7.7	1	3.4	1	25.0	
Increases work burden	Agree	8	19.0	5	25.0	0	0.0	20	69.0	3	75.0	<0.05 (Sig)
	Disagree	30	71.4	14	70.0	13	100.0	7	24.1	0	0.0	
	No comment	4	9.5	1	5.0	0	0.0	2	6.9	1	25.0	

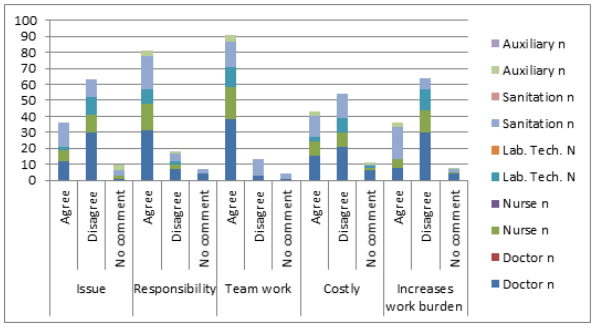


Figure 3: Attitude towards Waste Management among Government Hospital Health Workers

Discussion

A Prospective Study about Knowledge Attitude and Practice of BMW Management was conducted in all the Districts of Kashmir Valley of J&K State. Study included all Seven district hospitals, 43 sub-district hospitals and 15 out of 212 Primary Health Center. A pretested questioner was designed and administered to the study subjects. Response rate was 100 %. Out of all 108 study subjects 45% (42) were Doctors, 21.6% (20) were nursing staff, 14% (13) were Laboratory technician, 31.35 (29) were sanitation staff and 4.3% (4) were auxiliary staff.

Among doctors 69% (29) were males and 31% (13) were females. 100% (20) study subjects among nursing staff were females. 100% (13) Laboratory technician and 100% (4) auxiliary staff were males.89.6% (26) of sanitation staff were males and 10.4% (3) were females.

Regarding Knowledge, the study results reveled that 78.6% , 40%, 53.8%,10.3% and 0% of Doctors, Nursing Staff, Laboratory technician, Sanitation Staff and Auxiliary staff respectively were having Awareness about Biomedical Waste Management Rules.28.6%, 15%, 23.1%, 3.4 and 0% of Doctors, Nursing Staff, Laboratory technician, Sanitation Staff and Auxiliary staff respectively were having awareness about Authorization.90.5%, 100%, 100%, 75.9% and 25% of Doctors, Nursing Staff, Laboratory technician, Sanitation Staff and Auxiliary staff respectively were having awareness about Segregation.0%, 5%, 0%,0% and 0% of Doctors, Nursing Staff, In a study carried out by Gupta Saurabh et al in a hospital in Lukhnow majority of respondents (91.6%) including doctors, paramedical, and auxiliary staff believed that the proper management of BMW was a team work and that safe management efforts by hospital would increase the financial burden while 16.6% of them felt that it was an extra burden on their work. The knowledge, attitude and practice (KAP) regarding BMW was found to be insufficient among all the three categories. Overall, the doctors had better KAP than paramedical and auxiliary staff. Paramedical staff had poor knowledge about the subject. The attitude of paramedical staff was very high among all three categories as 39.2%. Some 31.8% doctors were doing good practices than paramedical and auxiliary staff.[15]

Laboratory technician, Sanitation Staff and Auxiliary staff respectively were having awareness about Colour Coding. In line with the findings with present study the research by Radha R; Assessment of Existing Knowledge, Attitude and Practices regarding Biomedical Waste management among the Health Care Workers in a Tertiary care Rural Hospital [16] reveled that 68.5% , 45.2%, 27.2% and 4% of Doctors, Nursing Staff, Laboratory technician and Sanitation Staff respectively were aware about existence of Biomedical Waste Management Rules.90.3%, 68.6%, 77.2% and 54.1% of Doctors, Nursing Staff, Laboratory technician and Sanitation Staff respectively were aware about Segregation.74.2%,90.4%, 90.9%, and 45.8 % of Doctors, Nursing Staff, Laboratory technician and Sanitation Staff respectively were aware about Colour Coding.

Over all 37.96%, 87.9% and less that1% of study subjects were awareness about Biomedical Waste Management Rules, Segregation and Colour coding respectively. In a similar study conducted by Gupta Saurabh et al. on Environmental Education for Healthcare Professionals with reference to Biomedical Waste Management- A Case Study of a Hospital in Lucknow, India [Intl research J of Environment Sciences Vol. (5), 69-75, December 2012] 58.3%, 100% and 33.3% of study subjects were awareness about Biomedical Waste Management Rules, Segregation and Colour Coding respectively A study done by S. Saini et al showed that Consultants, Residents and the Scientists respectively have 85%, 81 % and 86% knowledge about the biomedical waste management rule (set-I). The knowledge component among the nurses have shown to be 60% and that of Sanitary staff, Operation theatre and Laboratory staff have

respectively 14%, 14% and 12% awareness of the subject. This shows that the people with higher education have more awareness about the environmental issues, national and international activities on Biomedical waste management and the rules prescribed therein.[17]

Regarding Attitude, the study results reveled that 28.6%, 35%, 15.4%, 51.7% and none of doctors, nursing staff, laboratory technicians, sanitations staff and auxiliary staff respectively agreed that biomedical waste management is an issue and is matter of concern.73.8%, 85%, 69.2%, 72.4% and 75% of doctors, nursing staff, laboratory technicians, sanitations staff and auxiliary staff respectively agreed that biomedical waste management is a responsibility. 35.7%, 45%, 23.1%, 44.8% and 75% of doctors, nursing staff, laboratory technicians, sanitations staff and auxiliary staff respectively agreed that biomedical waste management is costly for management. 19%, 25%, 0%, 69% and 75% of doctors, nursing staff, laboratory technicians, sanitations staff and auxiliary staff respectively agreed that biomedical waste management increases work burden.

A study conducted by Radha R; Assessment of Existing Knowledge, Attitude and Practices regarding Biomedical Waste management among the Health Care Workers in a Tertiary care Rural Hospital revealed that 24.2%, 3.4%, 31.8% and 37.5% of doctors, nursing staff, laboratory technicians and sanitations staff respectively felt that safe Biomedical Waste management is Not an issue. 29.2%, 26.9%, 22.7% and 75% of doctors, nursing staff, laboratory technicians and sanitations staff respectively felt that BMW Management is the responsibility of institution and not the individual. 18.9%, 27.8%, 18.1% and 62.5% of doctors, nursing staff, laboratory technicians and sanitations staff respectively felt that Safe management of healthcare waste is an extra burden on work.[16]

Majority 159(95.8%) of nursing staff had considered the biomedical waste as different from general wastes and 150(90.4%) of respondent were agreed for the segregation of BMW at point of generations. The study showed that 77.51% of study participants had knowledge about various diseases transmission through BMW. The overall knowledge 95.8% regarding BMW among nursing staff of hospital no.1 was significantly ($p<0.001$) higher than other hospitals. The study concluded that regular training and supervision is necessary for better healthcare waste management and implementation.

Over all 33.33%, 84.25%, 39.81%, 33.33% and 84.25% of study subjects agreed that BMW Management is an issue, responsibility, cost burden, burden on work and team work respectively. In a similar study conducted by Gupta Saurabh et al. on Environmental Education for Healthcare Professionals with reference to Biomedical Waste Management- A Case Study of a Hospital in Lucknow, India 91.6%, 25%, 16.6%, 91.6% and 25% agreed that BMW Management increases financial burden on management, is a government responsibility, is an extra burden on work, is a team work and is Not an issue at all respectively.

Regarding Practice, study reveled that none of the healthcare workers were performing Segregation and Disposal practices. Among all healthcare professionals, only 7.7 % of laboratory technicians had undergone training programme on BMW Management. In Gupta Saurabh et al. study, 58.9 % of healthcare professionals had undergone training programme on hospital waste management, which is quite high as compared to our study.[18]

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.[17]

Conclusion:

The study revealed that level of education had a direct impact on knowledge, attitude and practice of BMW management. There is a need for holding seminars, CME's for staff to increase awareness about need for proper segregation and disposal of hospital waste. More studies of such type need to be carried out to know the exact scenario of BMW management practices in healthcare facilities.

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