A Study to Determine the Knowledge and Practice Regarding Biomedical Waste Management Among Paramedical Workers in Selected Primary Health Center at Deoria Uttarpradesh

Ajay Sharma[1], Sudharani B Banappagoudar[2], Ambali Pancholi[3]

MSc Community Health Nursing Scholar School of Nursing Science, ITM University, Gwalior (MP)[1],

*Professor, School of Nursing Science, ITM University, Gwalior (MP)[2],

Assistant Professor, School of Nursing Science, ITM University, Gwalior (MP)[3]

Email- ajay1723500@gmail.com[1], sudharani.sons@itmuniversity.ac.in2,
ambalipancholi.sons@itmuniversity.ac.in[3]

*Corresponding Author-Prof. Dr Sudharani B Banappagoudar, Professor, School of Nursing Science, ITM University, Gwalior (MP), Email-sudharani.sons@itmuniversity.ac.in ORCiD-0000-0002-7259-769X

ABSTRACT

BACKGROUND:

The waste produced in the course of healthcare activities have higher potential for infection and injury than any injury than any other type of waste. Therefore it is essential to have safe and reliable method for its handling. Inadequate and inappropriate handling of health care waste may have serious public health consequences and a significantimpact on the environment. Appropriate management of health care wasteneeds a crucial component of environment health protection and it should become an integral feature of health care services. The quantitative research approach with descriptive design was used in this study.The purpose of the study to asses the knowledge and practice of biomedical waste management among paramedical workers. Semi structured questionnaire to assess the knowledge regarding biomedical waste management verbal response / checklist to assess the practice of biomedical waste management. The Inferential descriptive statistics was used. The convenient sampling technique was used to select 100 health personnel. Health personnel who were available at the time of data collection. Overall result shows that there is a positive relationship between knowledge and practice checked by Karl Pearson's correlation. The computed 'r' value is + 0.511 shows the positive correlation between knowledge and practice. Hence it is proved that Health Personnel who had adequate knowledge follows the satisfied level of practice. Further Findings revealed that age,sex, marital status,occupation, is found associated with knowledge. Result shows that there is association between practice and selected demographic variables such as religion and occupation.

Conclusion: From the study we would like to conclude that majority of paramedical workers have moderate level of knowledge; but none of them having adequate level of practices. It was noticed that the primary health centers were not providing adequate facilities to practice bio-medical waste management.

Keywords: Knowledge, Practice, Health personnel, Primary health center

INTRODUCTION

Bio medical waste means is any waste generated during the diagnoses, treatment or immunization of human beings or in research activity. The waste produced in the course of healthcare activities carries a higher potential for infection and injury than any other type of waste. Biomedical waste generated in the hospital falls under two major categories. Non hazardous and bio hazardous constituents of Non hazardous waste and non infected plastic card board, packaging material, paper etc.,

a) Infections waste – sharp, non sharp, plastic, plastic disposables, liquid waste etc.,

b) Non infections waste radioactive waste discarded glass, chemical waste, cytotoxic waste incinerated waste etc.,

Healthcare institutions unavoidably generate waste that may be harmful to health in order to improve the quality of care and pursue the goal of alleviating health issues. Lack of awareness and improper treatment of biological waste can have negative effects on one's health as well as the environment. The amount of biomedical waste (BMW) produced in our nation on a regular basis is enormous and comprises harmful and infectious elements.

If effective and suitable treatment of these wastes is not established, the harmful impact of biomedical waste on the general people and environment is multiplied. Since the waste produced during the course of healthcare operations poses a higher risk of infection and harm than any other sort of waste, biomedical waste management is a critical concern for all healthcare professionals and healthcare facilities (1). Biomedical waste management is now a hot topic, especially with the growing number of health-care institutions and the development of hospital trash. It is estimated that around 0.33 million tonnes of hospital garbage are generated in India each year, with trash output rates ranging from 0.5 to 2.0 kg per bed per day (2). The correct disposal of such trash is not only a legal requirement, but also a social obligation of hospitals. The hospital trash has a substantial health impact not only on the medical staff but also on the general public. Improper waste disposal not only increases the danger of infection from pathogens such as HIV, hepatitis B and C viruses, but also increases the risk of water, air, and soil pollution, which harms the environment and community at large (3).The health of patients, healthcare personnel, and the general public is all affected by hospital waste management.

Medical science advancements and advancements in healthcare facilities have made a substantial contribution to the accurate diagnosis of illnesses and subsequent treatment of patients. While such facilities have given rise to new hopes for combating the ever-increasing number of health disorders and diseases, the process of diagnosis, analysis, and treatment has resulted in the generation of wastes from various sources such as hospitals, nursing homes, clinics, pathological labs, blood banks, and so on. These wastes are referred to as hospital wastes or biomedical wastes (BMW). Though bio-medical waste is a minor component of municipal waste, it requires special handling due to its highly toxic and infectious nature, which may pose

a serious threat to human health as well as the environment if not managed properly (4). Improper biomedical waste management practises and indiscriminate hospital waste disposal contribute to the spread of sickness and a financial burden on society. Good biomedical waste disposal practises reduce medical cost, create unpleasant situations at various disposal bins and dumping locations, and eventually contribute to a healthier society. As a result, it is the responsibility of every hospital to guarantee the safe handling and treatment of biological waste. It is the responsibility of every biomedical waste generator, according to the Biomedical waste management (BMW) standards, to dispose of biomedical waste safely. As a result, it is critical that all healthcare professionals are familiar with the processes to be followed at their institutions as well as the laws established by the government for hospital waste management under the Biomedical Waste (Management & Handling) laws, 1998, as revised in June 2000 (5).

The first and most crucial stage in healthcare waste management is segregation at the point of waste creation. Biomedical waste should be separated at the source into color-coded bags or containers, and its collection and appropriate disposal should be a major priority for both medical workers and the general public(6).It is emphasized as a method of ensuring that hazardous healthcare risk waste and general healthcare waste are separated and kept in appropriate containers. The fact that only 10% to 25% of trash produced in health institutions is dangerous emphasizes the need of segregation. Failure to complete this critical step converts nonhazardous trash into hazardous waste. Segregation also enables individuals who handle containers outside of medical rooms to recognize and treat them correctly. Since the adoption of BMW guidelines (1998), all involved health employees have been expected to have adequate knowledge, practice, and capacity to advise others in trash collection and management, as well as suitable handling practices (5).However, due to laxity in enforcing the laws and a lack of understanding due to poor training of health care professionals, hospitals have become a hotspot for disease transmission rather than a hub for disease eradication.

Money saved in the management of hospital acquired infections is much greater than the money spent on treating those infections and controlling them. Biomedical waste is a unique category of waste due to the quality of its composition, source of generation, hazardous nature, and the need for appropriate protection during handling, treatment, and disposal. Mismanagement of the waste affects not only the generators and operators, but also the general public (7). Biomedical waste is defined as waste generated during the diagnosis, treatment, or immunisation of humans or animals, or during related research activities, or during the production or testing of biological, including the categories listed in Schedule I of the Biomedical Waste (Management and Handling) Rules 1998, Government of India (8). According to the most recent BMW Management Rules, 2016(3), these rules are applicable to anyone who produces, collects, receives, stores, transports, treats, disposes of, or handles BMW in any way. This

includes individuals who work in healthcare facilities like hospitals, nursing homes, clinics, dispensaries, veterinary institutions, animal houses, pathological laboratories, blood banks, Ayush hospitals, clinical establishments, research or educational institutions, health camps, medical or surgical camps, vaccination camps, blood donation camps, and research labs.

WHO estimates that 85% of hospital waste is non-hazardous, 10% is infectious, and the final 5% is non-infectious yet toxic. For hospitals, managing infectious waste is a significant challenge. Additionally, healthcare providers should be aware of the amount of waste generated in their facility and aim to reduce it in their daily operations because less biological waste implies less work to be done in terms of trash disposal and money saved. Epidemiological studies show that the chances of contracting HBV, HCV, or HIV are 30%, 1.8%, and 0.3%, respectively, for someone who experiences one needle stick injury from a syringe used on an infected source patient (9). Injections with infected syringes caused 2 million hepatitis C virus infections, 260 000 instances of human immunodeficiency virus (HIV) infections, and 21 million hepatitis B virus infections in 2000, according to the World Health Organisation (10).After a needle stick injury, cleaning employees were found to have staphylococcal bacteriemia and endocarditis (11). Healthcare personnel face occupational hazards while doing their duties at hospitals. Serious illnesses can strike health-care workers, patients, and the general population.

Teaching institutions play an important part in the health care system because they educate future health care professionals and all those involved in providing care to the community (8).Various studies have revealed that there are knowledge gaps, attitudinal gaps, and inconsistencies in practise elements that are causing concern among health care providers (12,13). Although legislative provisions [Biomedical Waste (management and handling) Rules 1998] exist to reduce the impact of hazardous and infectious hospital waste on the population, these requirements have yet to be completely implemented(14). The primary essential difficulties associated with biological waste include a lack of adequate waste management, a lack of understanding about the health concerns posed by biomedical wastes, insufficient financial and human resources, and improper waste disposal control (15).

Appropriate management of biological waste begins with waste creation, segregation at the source, storage at the site, disinfection, and transfer to the terminal disposal site all play important roles in waste disposal. Doctors, nurses, lab technicians, ward boys, and other health staff are involved in the treatment of biological waste at various points of creation in hospitals. As a result, understanding of biomedical waste management among health care staff has a stronger influence on health and the environment. Medical staff play an important part in biological waste segregation in hospitals. Their biomedical waste management knowledge, and practises are critical for preventing biomedical waste-related dangers. Despite improved global

knowledge among health professionals regarding the dangers and suitable management approaches, India's level of awareness is determined to be below par (16, 17, 18). As a result, sufficient knowledge, attitudes, and practices of health care institute workers are critical (1, 12).Medical staff are the foundation of every hospital. Medical and paramedic professionals have an important role in providing health services at all levels, including protection, prevention, promotion, and treatment. Their degree of understanding of biomedical wastes may go a long way towards ensuring the proper disposal of hazardous hospital waste and protecting the community from its varied negative impacts. As a result, the purpose of this study is to analyze paramedical staff' knowledge, practices surrounding biomedical waste management in selected primary health center at Deoria Uttar Pradesh

METHODOLOGY

The data were collected for a period of 6 weeks at the Primary health centers Before the interview the purpose of interview was explained to all the paramedical workers with self introduction to ensure confidentiality and enhance the participation anonymity of the study participants was maintained .Necessary permission was obtained. Informed consent was taken from all the personnel those were willing to participate in the study. The tool consisted of demographic profile and 25 knowledge MCQs questions and 20 practice questions the study lasted from Monday to Saturday. The time scheduled for data collection was

from 9.30 am to 4.30 p.m. The time taken for each worker was 30 minutes. Data were collected through interview scheduled by using semi structured questionnaire and checklist to assess the knowledge and practice regarding biomedical waste management. Knowledge assessment was done by questions pertaining to colored containers, segregation, and storage of various biomedical wastes, hazards of improper waste handling, and biohazard symbol. The questions on practices appraised if the study respondents had disposed the biomedical waste in specified colored bins, if disinfection of sharps were carried out at the point of generation and disposal of sharps in puncture proof containers, and reported any injuries due to improperly disposed sharps. The questionnaire was formulated according to the requirements of the study. To assess the knowledge of the respondents a scoring system was developed. Each correct response was awarded with one point and zero points were given for wrong response. To score maximum of 25 in knowledge and 20 in practice. The data was analyzed based on the objectives frequencies and percentage were computed for describing the samples characteristics. Karl pear 'r' (correlation) was computed to find out the relationship between knowledge and Practice among paramedical workers those who are working in Primary health center.

Study participants' knowledge was categorized as adequate, moderate and poor based on their percentage scores of more than 75%, 50–74%, and less than 49%, respectively. The data was entered in MS-Excel spreadsheet and was analyzed using

Statistical Package for the Social Sciences (SPSS) software. Karal Pearson was applied to find the relationship and Chi square test was applied to judge the association of discrete and continuous study variables with the knowledge and practice of paramedical , respectively

MATERIALS AND METHODS:

Descriptive design is used in this study. This study was conducted in primary health centers in Deoria district. 46 Primary health centers available in Deoria district out of these I selected 10 Block primary health centers were selected. The total population of one primary health center is 5000,Each primary health center 11 paramedical staff are present .The primary health centers is situated in 4to5 KM away from Dr. Ashish paramedical college of nursing. The target population of the study were paramedical workers working in Primary health centers. Workers those who are working in primary health centers at deoria District were selected as sample. The sample size consists of 100 paramedical workers who are working in primary health centers who full filled the inclusion criteria of sample selection. Convenience sampling techniques was used to select the sample.

Table- I : Frequency and percentage distribution of the samples according to their selected demographic variables.   n = 100

S. No	Demographic variables	Frequency	Percentage(%)
1	**Age (in yrs)**		
	a) 21 - 25	29	29
	b) 26 - 30	34	34
	c) 31& above	37	37
2	**Sex**		
	a)Male	16	16
	b) female	84	84
3	**Marital status**		
	a) Unmarried	30	30
	b) married	70	70
4	**Religion**		
	a) Hindu	76	76
	b) Christian	13	13
	c) Muslim	7	7

5	Year of experience(in yrs)		
	a) 1-5	48	48
	b) 6-10	40	40
	c) 11 & above	12	12
6	**Occupation** a) General nurse & midwives	37	37
	b) Lab technician	23	23
	c) Auxillary nurse midwives	25	25
	d) Pharmacist	15	15
7	**Income**		
	a) Below 7,000	39	39
	b) 7,001-12,000	47	47
	c) 12,001 & above	14	14
8	**Training**		
	a) Yes	100	100
	b) No	0	0

Table I –Shows frequency and percentage distribution of samples based on the demographic variables such as age, sex, education, occupation, income, years of experience, and training.

The data presented in the above table shows that 29(29%) samples were between 21-25 years, 34(34%) samples were between the age group of 26-30 years and 37(37%) samples were between the age group of above 31 years. About sex 16(16%) samples were males and 84(84%) samples were females. In marital status 30(30%) samples were unmarried and 70(70%) samples were married. Among religion Majority (76%) samples were Hindu's, 13(13%) samples were Christian's and 7(7%) samples were Muslim's. Regarding experience, 48 (48%) samples were 1-5 years of paramedical workers, 40(40%) of samples were 6-10 years and above 12(12%) of samples were above 10 years. In occupation 37(37%) samples were general nurse and midwives, 23(23%) samples were Lab technician, 25(25%) samples were Auxillary nurse midwives, 15(15%) samples were Pharmacist. About income 39(38%) samples were below 7,000, 47(48%) samples were 7001-12,000, 14 (14%) were Above 12,000. In training majority (100%) samples were attended the Biomedical waste management training.

Table 2: Distribution of samples based on level of knowledge regardingbiomedical waste management

S.No	Level of knowledge	Frequency(n)	Percentage (%)
1	Adequate level of knowledge	8	8
2	Moderate level of knowledge	58	58
3	Inadequate level ofknowledge	34	34

Table II - shows that frequency and percentage distribution ofsamples according to the knowledge score of paramedical workers regarding biomedical waste management. It reveals that 34% of paramedical workers had inadequate knowledge, 58% of paramedical worker had moderate level of knowledge, and 8% of paramedical workers had adequate knowledge.

Table 3: Percentage Distribution of samples based on thelevel of practice regarding biomedical waste management

S.No	Level of practice	Frequency(F)	Percentage (%)
1	Satisfied level of practice	0	0
2	Moderate level of practice	77	77
3	Inadequate level of practice	23	23

Table III - shows that frequency and percentage distribution of samples according to the practice score of paramedical workers regarding biomedical waste management. It reveals that of, 77% of paramedical worker had moderate level of practice, and 23 % of paramedical workers had inadequate practice, none of the paramedical workers had good level of practice.

Table 4 : Correlation co-efficient of Knowledge and practiceregarding biomedical waste management among paramedical workers

S. No	Category	Correlation co-efficient'r'
1	Knowledge	
2	Practice	0.515

Table IV- Indicate that there is a positive correlation between knowledge and practice (r= 0.515) .To find out the relationship between knowledge and practice correlation was used. The computed 'r' value is + 0.515. The positive correlation was found between knowledge and practice. Hence it was interpreted that paramedical workers who had adequate knowledge followed satisfied level of practice.

Table 5 : Association between knowledge and demographicvariables of paramedical workers

N=100

S. No	Demographic variables	Adequate level of knowledge	Moderate level of knowledge	Inadequate level of knowledge	X2
1	**Age (in yrs)** a) 21 - 25	3	26	0	
	b) 26 - 30	5	22	7	13.62*
	c) 31& above	0	27	0	

2	Sex				
	a)Male	0	12	5	33.18*
	b) female	8	61	14	
3	Marital status				
	a) Unmarried	3	27	0	9.25*
	b) Married	5	47	18	
4	Religion				
	a) Hindu	4	58	14	5.3#
	b) Christian	0	12	4	
	c) Muslim	1	5	2	
5	Year of experience(in yrs) a) 1-5	4	34	10	
	b) 6-10	4	18	18	7.76#
	c) 11 & above	0	7	5	

6	Occupation				
	• General nurse &midwives	7	30	0	
	• Lab technician	4	19	0	27.9*
	• Auxillary nurse midwives	6	18	1	
	• Pharmacist	8	7	0	
7	Income				
	a) Below 7,000	5	29	5	
	b) 7,001-12,000	3	34	10	4.64#
		3	8	3	

	8 c) 12,001 & above				
	Training	8	74	18	0#
	• Yes	0	0	0	
	• No				

* Significant

Not significant

Table IV-shows the association between knowledge and demographic variable of paramedical workers with biomedical waste management. The result shows that calculated value for knowledge and demographic variable such as age, sex, marital status, Religion, occupation of paramedical workers regarding biomedical waste management is greater than the table value. So it is concluded that there is a **significant association** between knowledge and demographic variables such as age, sex, marital status, Religion, occupation. The calculated value is less than the tabulated value for income, years of experience, and training of samples. So there is no association between knowledge and demographic variables such as income, years of experience, and training of paramedical workers regarding biomedical waste management.

Table 6 : Association between practice and demographic variablesof paramedical workers

N=100

S.No	Demographic variables	Satisfiedlevel of practice	Moderatelevel of practice	Inadequate level of practice	X2
1	**Age (in yrs)**				
	a) 21 - 25	0	28	1	
	b) 26 - 30	0	24	10	8.78#
	c) 31& above	0	25	12	

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#	Category				
2	**Sex**				
	a)Male	0	10	7	
	b) female	0	67	16	3.78#
3	**Marital status**				
	• Unmarried	0	26	4	
	• Married	0	46	24	3.6#
4	**Religion**				
	• Hindu	0	58	16	
	• Christian	0	12	4	
	• Muslim	0	6	2	11.7*
5	**Year of experience(in yrs)**				
	a) 1-5	0	38	10	
	b) 6-10	0	31	9	
	c) 11 & above	18	8	4	2.9#

#	Category				
6	**Occupation**				
	• General nurse & midwives	0	36	1	
	• Lab technician	0	18	5	15.8*
	• Auxillary nurse midwives	0	14	11	
	• Pharmacist	0	9	6	
7	**Income**				
	a) Below 7,000	0	32	7	
	b) 7,001-12,000	0	35	12	3.395#

	c) 12,001 & above	0	12	2	
8	**Training**				
	a) Yes	0	77	23	0#
	b) No	0	0	0	

* Significant

\# Not significant

Table V- shows that association between practice and demographic variable of paramedical workers regarding biomedical waste management. The result shows that the calculated value for practice and demographic variable such as religion, occupation of paramedical workers regarding biomedical waste management is greater than the table value. So it is concluded that there is a **significant association** between practice and demographic variable such as religion, occupation of paramedical workers regarding biomedical waste management. The calculated value is less than the tabulated value for age, sex, marital status, income, years of experience, and training of paramedical workers regarding biomedical waste management. So there is **no association** between practice and demographic variables such as age, sex, marital status, income, years of experience, and training of paramedical workers regarding biomedical waste management.

Discussion

1.To assess the level of knowledge regarding biomedical waste management among paramedical workers in selected PHC

Table – II shows that the majority of subjects 58(58%) had moderate level of knowledge 8 (8%) samples had adequate level of knowledge 34(34%) of subjects were having inadequate level of knowledge about Bio-medical waste management.

The findings were supported by mostafacum etal., (2009). He did a study to assess the knowledge about bio-medical waste management among doctors, nurses and housekeepers. The questionnaires were completed by 200 subjects. The result shows that only 27.4% of the nurses 32% of housekeepers and 36.8% of doctors had adequate knowledge score. The majority of doctors, nurses have in adequate knowledge.

On the view point of researcher point of view, it is ascertained that the paramedical workers have not enough knowledge regarding Bio medical waste management.

2.To assess the level of practice regarding biomedical waste management among paramedical workers in selected PHC.

Table – III shows that the majority of the subjects were having moderate level of practice 77%, 23 of them were having good practice regarding.

The study findings were supported by Habwatchs (2000) reported that about waste management and recycling practices of the urban poor and low income communities have environmentally friendly

social waste management. This study provide evidence that the urban poor and low income communities should be formulated to focous on promoting knowledge, education and the skill of the urban poor and empower them to improving their quality of life.

3.To find out the relationship between Knowledge and practice regarding biomedical waste management.

Table – IV shows that the relationship between knowledge and practice indicate that there is a positive correlation between knowledge and practice. The computed 'r' value is + 0.515. The positive correlation was found between knowledge and practice.

The findings were supported by shazly mm etal (2008) He did a study to assess the knowledge and practice regarding Bio-medical waste of health care among personnel.

The questionnaire were completed by 100 sample. The result shows that only 26% of nurse 33% of housekeepers and 26% of nurses 33% of housekeepers and 38% of the doctors had adequate knowledge but they did not implement it in practice. Nurses knowledge score had a statistically significant weak positive correlation was found.

In research point of view, the para-medical workers who are all having adequate knowledge, they follow satisfied level of the Bio- medical waste, Hence the researchers were rejected the null hypothesis and accept researcher hypothesis. The study suggest that those who have knowledge they follow adequate practices.

So it is controversy to note that those who are attending training programme or not implementing their knowledge and practice them in properly they are also had inadequate knowledge and practice the researcher found that, it is because of inadequate facility and they are not able to practice biomedical waste management. Most of the paramedical workers had not answering the twin bin system of disinfectant method because in Deoria District they are not following the twin bin system. Most of the primary health centre has not practicing the burning system. Only they are practicing the deep burial system during the time they are not segregating the waste.

The researcher found that biomedical waste plant which was situated in outer portion of Pathardeva city, the waste is collected through the vehicle and degraded.

4.To find out the association between knowledge of paramedical workers and selected demographic variables like age, sex, marital status, Religion, occupation, income, years of experience, and training.

Ho1- There is no significant association between knowledge and demographic variable of para-medical workers regarding Bio-medical waste management.

Table-IV shows the association between knowledge and demographic variables of paramedical workers regarding biomedical waste management. The result shows that the calculated value is greater than the tabulated value. So it is concluded that there is a significant association between knowledge and demographic variables such as Age, sex, Marital status , Occupation of paramedical workers regarding Bio-medical waste management.

Hence the researcher rejected the null hypothesis and accepted researcher hypothesis.

It may be due to the following reason as the respondent age, sex, religion, Occupation of workers would receive more information about Bio-medical waste management from the training, mass media experts and programmes (Govt and Non govt) etc.,

The calculated value is less than tabulated value for Religion year of experience, Income, Training of samples. So there is no association between knowledge and demographic variables such as religion year of experience income training of para-medical workers regarding biomedical waste management. Hence the researcher was unable to reject null hypothesis.

Most of the samples were Hindus and the most of the samples were 1-5 years experience. Due to low income they are unable to implement their knowledge and their experience in proper way.

The study findings were supported by Prabakarn etal August (2014) A study was done to assess the knowledge of nursing management. The researchers interviewed 200 Health care professionals. The total 78.4% of Health care professional had good knowledge 35.9% of professional had good knowledge about occupation. There is no significant different between Religion, year of experience were significant associated with para-medical workers Age, sex, occupation.

5.To find out the association between practice of demographic variables.

Ho2- There is no significant association between practice paramedical workers with Bio-medical waste management.

Table 6 shows the association between practice and demographic variables. There is no significant association between practice and demographic variable paramedical workers with Bio-medical waste management.

There is no significant association between practice and demographic variables. The result shows that the calculated value is less than tabulated value for age, sex, marital status ,year of experience income and Training of paramedical workers. So there is no association between practice and demographic variable such as age, sex, marital status, year of experience income and training of paramedical workers. Hence the research enables to reject the null hypothesis.

It may be due to in adequate facilities. Even though they like to practice their income, Religion, are this absolutely for them to practice.

The study findings were supported by pandit NB June (2017). 900 samples were aware of the risk of HIV and hepatitis. B & C, where as auxiliary staff (ward boys, anadems, sweepers) had very poor knowledge. There was no effective segregation, collection,

Conclusion

Recommendations for Further Research
♠ Based on this study, the following recommendations are made.
• Similar research can be done with large samples.
♠ A systematic curriculum of knowledge and practice, enabling experimental research.
♠ Similar surveys can be conducted in hospitals, nursing homes and clinics.
♠ A similar survey can be conducted longitudinally
♠ Similar studies can be conducted to determine the incidence of infectious diseases associated with biomedical waste disposal.
♠ Similar surveys can be conducted among health care providers.

CONFLICT OF INTERESTS

The authors declare that there is no conflict of interests regarding the publication of this paper.

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transportation and disposal system at any hospital. There is an immediate and urgent need to train & educate all doctors and the staff to adopt and follow effective waste management practices .

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