ACTA SCIENTIFIC MEDICAL SCIENCES

Volume 3 Issue 1 January 2019

Research Article

A Study to Access the Knowledge Level on Bio-Medical Waste Management among the Nurses in Tamilnadu

Dhasarathi Kumar*

Junior Research Fellow, School of Public Health, SRM Institute of Science and Technology, Chennai, Tamil Nadu

***Corresponding Author:** Dhasarathi Kumar, Junior Research Fellow, School of Public Health, SRM Institute of Science and Technology, Chennai, Tamil Nadu.

Received: December 05, 2018; **Published:** December 24, 2018

Abstract

Objectives: To assess the knowledge on biomedical waste management among the staff nurses. To associate the level of knowledge on waste management among staff nurses with selected demographic variables.

Methodology: The quantitative approach is used to access the biomedical waste management and the sample was taken from the hospital among the nurses of the total no is 100 by the non-probability sampling technique.

Result: The analysis depicted that the p-value corresponding to the demographic variable "Attended in Service Education Program" is significant at 5% level and hence we can say that there is a significant association between "Attended in Service Education Program" and "Level of Knowledge". All other demographic variables do not influence the level of knowledge.

Conclusion: The result of the study concluded that 75% of staff nurses were having inadequate knowledge 25% of the staff nurses having moderate knowledge and none of the staff nurses having adequate knowledge on biomedical waste management.

Keywords: Bio-Medical; Waste Management; Nurses

Introduction

Today the problem is intensified because of liability issues, land-fill laws, public concern and a tremendous increase in the cost of handling, transport, and disposal of medical waste. All activities of living thing on earth produce waste in some form or other. The fast decade witnessed a significant increase in public concern regarding medical waste disposal. The concern regarding medical waste is mainly due to the preparation of pathogenic organism and organic substances in hospital solid waste is significantly high concentration. Poor waste management practices may lead to a negative risk on the health of the public.

Patients, professionals and contribute to environmental degradation. Improper handling of solid waste in the hospital may increase the airborne pathogenic bacteria, which could adversely affect the hospital environment and community at large improper hospital waste management has serious impact on our environment apart from risk of water, air and soil pollution, it has considerable impact on human health due to aesthetic effects. It is separated that the first time the biomedical waste management issue was discussed at a meeting convened by the world health organization regional office for Europe at berg on, Norway in 1983 [1].

In the present study the attempt in order to determine awareness about biomedical waste management policy, practices among staff nurses in a selected hospital.

Background of the study

Manyele., *et al.* conducted a study on the management of medical-waste in Tanzanian hospitals. A questionnaire was circulated to collect their information. Their analysis revealed that the main disposal methods comprised of open pit burning (50%), burying (30%) of waste and 71% of hospital used drugs. The transporting waste from generation points to increase without plastic bags and they concluded that hospital waste management by a hospital is poor. So they arranged for proper training and management regarding awareness and practices of hospital waste management to all cadres of health-workers [2].

Nemathaga., *et al.* conducted a study on hospital solid-waste management practices in Limpopo province, South-Africa, a case study of hospitals. Field survey methodology was used on their study results that there is to proper separation of waste according to their classification as demanded by the national government. The mean percentage composition of the waste was found in the following decreasing order [3].

Significance needs for the study

Health care provides being the important professional who works collaborators with health care team have lots of responsibility in knowing the categories of hospital waste, segregation and practices management correct disposal on hospital waste helps in the reduction on nosocomial infection.

Hassan MM., *et al.* conducted a study on pattern medical waste management, existing scenario Dhaka city, Bangladesh. They used methodology on empirical field observation and field level data collection through inventory questionnaire survey and journal informal interview for their study revealed that the hospitals generate a total of 5,542 kg/of the waste of about 77.4% are nonhazardous and 22.4 are hazards and there is no proper systematic segregation of infectious waste [4].

Objectives

- To assess the knowledge on biomedical waste manage ment among the staff nurses.
- To associate the level of knowledge on waste manage ment among staff nurses with selected demo graphic variables.

Operational definition

- **Knowledge:** It refers to the ability of staff nurse to understand biomedical waste management by responding to the structured questionnaire as devised by investigators.
- **Biomedical:** Relating to the activities and application on science to clinical medicine, biomedical research laboratory.
- **Waste**: In general, medical waste is the waste which is generated or produced as a result on diagnosis, treatment or immunizations on human beings or animals.
- **Waste management:** Managing waste by multiple techniques to achieve are solid waste and resource conservation goals. The techniques may include waste reduction, reuse, recycling, composting, transformation, disposal to landfills and other means.
- **Medical waste management**: Waste which is generated or produced as a result on diagnosis, treatment or immunization on human beings or animals or research activity performing in the production or testing of biological waste.

Assumptions

Staff nurse may have some knowledge of biomedical waste management.

Adequate knowledge of biomedical waste management will prevent infection and ensure appropriate management of biomedical waste management among staff nurses.

Delimitations

- The study is limited only to staff nurses working in a selected hospital.
- The study is limited to staff nurses who are present at the time of data collection.
- The study is limited to staff nurses who know to read and write English.

Review of Literature

This chapter deals with an extensive survey of related literature an extensive review of the literature was done by the investigator to carry a broad foundation for this study. For better conceptualization the chapter is classified as part I and part II.

- **Part-I: Theoretical literature:** Literature related to the knowledge of biomedical waste management.
- **Part-II: Empirical literature:** Study related to knowl edge of biomedical waste management.
- **Part-I: Theoretical literature**

Section A

Literature related to biomedical waste management.

Definition to biomedical waste (management and handling) rules 1998 of India biomedical

According to waste means any waste which is generated during the diagnosis, treatment or immunization of human beings or animals or in research activities pertaining there or in the production of testing of biological waste.

Basics of waste management

The basis of waste management is whether addressing hospital waste. Radioactive wastewater requires management from generation through disposal.

Generation, segregation, collection storage, transport, treatment, disposal.

We use the slogan: "Reduce, reuse, and recycle,"

Classification of waste

The WHO has given the classification for developing countries non-hazardous hospital waste.

- Sharps
- Infectious waste
- Chemical and pharmaceutical waste
- Other hazardous hospital waste.

Classification of waste

Category 1	Human anatomical waste
Category 2	Animal waste
Category 3	Microbiology and bio technology waste
Category 4	Waste sharps
Category 5	Discarded medicine and cytotoxic drugs
Category 6	Soiled waste
Category 7	Solid waste
Category 8	Liquid waste
Category 9	Incineration ash
Category 10	Chemical waste

Table a

Colour coding of bags for segregation of bio medical waste

Colour	Types of container	Category of waste	Waste treatment
Yellow	Plastic bag	1,2,3,6	Incineration/deep burial
Red	Plastic bag or disinfected container	3,6,7	Autoclaving/microwaving/chemical treatment
Blue/white	Plastic bag/ puncture	4,7	Autoclaving/ microwaving
Translucent	Proof container		Chemical treatment and destruction/ shredding
Black	Plastic bag	5,9,10 (solid)	Land filling

Table b

Part-II Empirical literature

Joshi S., *et al.* (2015-May) conducted a research study on staff perception on biomedical or health care waste management: a qualitative study in a rural tertiary care hospital in India. The studies conclude that a gap between knowledge and actual practice regarding HCWM was highlighted in the perception of the hospital staff. The participants suggested organizational changes, training, and monitoring to address this problem. The information generated is relevant not merely to the micro system studied but to other institutions in similar settings [5].

Manarm K., *et al.* (2014-Oct) conducted the study on hospital waste management in nonteaching hospitals of luck now city, India. There is a need for appropriate training of staffs, strict implementation of rules, and continuous surveillance of the hospitals of luck now to improve the BMW management and handling practices [6].

Gautam V., *et al.* (2014 - Sep) conducted the study on biomedical waste management: incineration vs. Environmental safety. The public concerns about incinerator emissions, as well as the creation of federal regulations for medical waste incinerators, are causing many health care facilities to rethink their choices in medical waste treatment. As stated by health care without harm, non-incineration treatment technologies are a growing and developing field. Most medical waste is incinerated, a practice that is short-lived because of environmental considerations. The burning of solid and regulated medical waste generated by health care creates many problems. Medical waste incinerators emit toxic air pollutants and toxic ash residues that are the major source of dioxins in the environment. The international agency for research on cancer, an arm of who, acknowledged dioxins cancer-causing potential and classified it as a human carcinogen. Development of waste management policies, careful waste segregation, and training programs, as well as attention to materials purchased, are essential in minimizing the environmental and health impacts of any technology [7,8].

Methodology

- **Research approach:** Descriptive survey approach.
- **Research design:** Descriptive research design was used to assess the knowledge on bio medical waste management among staff nurses working in selected hospital.
- **Variables:** Independent variables are knowledge on bio medical waste management.

- Dependent variables are age, sex, years of experience, education, attended in-service education on bio medical waste management and the monthly income.
- **Setting of the study**: The study was conducted in the selected hospital.
- **Population:** The population includes the staff nurses in a selected hospital, during the data collection period.
- **Sample:** The staff nurses who fulfilled the inclusion criteria constituted the study sample and sample size calculated based on the study population. With 95% confidence level, 1800 population, 10% of margin of error, and 92 is calculated as an ideal sample.

Criteria for the study selection of sample

Inclusive criteria

- Staff nurses who are willing to participate in the study.
- Staff nurses who are able to read and write English.
- Staff nurse who are present at the present at the time of conducting the study.

Exclusive criteria

Staff nurses who have selected for pilot study.

Sample size

Sample size consists of 100 staff nurses working in selected hospital (8 samples are over sampled).

Sampling techniques

Non probability convenient sampling method.

Development and description of the tools

With an extensive review of literature, discussion with professional experts and with investigation's personal experience, a structure questionnaire to assess the knowledge on bio- medical waste management is structured.

The tools structure questionnaire to assess the knowledge of the staff nurses on bio- medical waste had 2 sections A and B.

- **Section A:** Deal with demographic variables such as age, sex, and years of experience, attendance of any in-service education programme, education, and income. This contained 6 items.
- **Section B:** Deals with the information on knowledge on bio-medical waste management. It has 3 sub sections. Part 1, 2, 3.
  - **Part I:** Deals with 10 MCQ have to elicit general knowledge of bio medical waste management.
  - **Part II:** Deals with 8 MCQ have to elicit knowledge in bio medical waste segregation.
  - **Part III:** Deals with MCQ's on waste disposal.

Scoring key

The scoring was designed as follows with regard to a structured questionnaire. Each question had 4 response for which one mark is allotted for a right response, no mark [0] was awarded for the wrong response thus to fill to a maximum of 25 points.

To interpret the level of knowledge the score classified as inadequate knowledge [<50%] moderate knowledge [51-75%], adequate knowledge [>75%].

Content validity of the tool

The content validity of the tool was established on the basis of the opinion of nursing, experts of SRM college of nursing, minor suggestions in the structure in the questionnaire such as changes is the opinion if items and alteration in questions were in corporate in the tools and the tools was finalized for the main study.

Reliability of the tool

Reliability of the tool was established by test-retest method the 'r' value was i.e. R= 0.9 and it was found a positive correlation. Hence the tool was reliable and feasible for the main study.

Pilot study

A written permission was obtained from selected hospital on 07/01/15. The investigators conducted the pilot study on 09/01/2015 for a period of 3 days at the selected hospital which was chosen by non-probability convenient sampling technique. Many staff nurses from the same hospital who fulfilled the selection criteria were selected by convenient sampling technique. A brief introduction about the investigators and the study was given and data was collected from staff nurses. The data was collected by distributing the questionnaire to staff nurses the subject was asked to respond to the questionnaire and in case of doubts, the investigator clarified the doubt. In an average, it took 15-20 min for each individual to hand over the filled tool.

The statistical analysis of the pilot study revealed that [100%] of the population belong to inadequate knowledge category. There was no ambiguity in the language in the tool was found feasible.

Procedure for data collection

A formal written permission was obtained from the selected hospital to carry on with the main study from 07-01-2015 to 09-01-2015. Investigators selected hospital, which was chosen by non-probability convenient sampling techniques, 100 samples are respectively were selected from the same hospital through convenient technique. The data collection was from [07/01/2015 to 09/01/2015] the investigator collected the data in a hospital, I

which the investigator spends 2 days and collected the data in the same hospital.

On selection of the study subject, a self-introduction was given; consent was obtained and confidentially of the responses was assured. The investigator assessed the knowledge of the study by distributing the tools to study subject after assembling all the study subjects in common room and general instruction were given. The investigator asked the staff nurses to respond to the tools. In case of doubt the investigator clarified the doubt. On an average it tool < 15-20 min for each individual to hand over the filled tools. However, the data was collected within a stipulated time of 2 week.

Plan for data analysis

Both descriptive and inferential statistic will be used to analyses the collected data.

1. Frequency and percentage distribution will be used to assess the knowledge of staff nurses on bio medical waste management.
2. Chi-square [x2] will be used to associate the knowledge on bio medical waste management with demographical variables.

Result

Data Analysis and Interpretations

The data findings have been analyzed and are interpreted under the following headings.

Organization of data

- **Section A:** assessing the knowledge on biomedical waste management.
- **Section B:** assessment of knowledge on segregation.
- **Section C:** assessment of knowledge on waste disposal.

Section A

Description of the demographic values of 100 staff nurses working in the selected hospital.

The frequency distribution

The frequency of percentage distribution of nurses by age in year, sex, year of experiences, education and attended in-service education programme on biomedical waste management and income.

Table 1 shows the frequency and percentage distribution of demographic variables of the general population. According to age, the nurses are selected by the criteria and the males were 4% and females were 96% of the age group of 20-35(99%) and 36-40(1%) years. With regard to gender, 4(4%) are males and 96(96%) are females. Considering the experience, 88(88%) are 1-5 years, 10(10%) are 6-10years, 2(2%) are 11-15years. With respect to qualification 9 (9%) are ANM, 3(3%) are diploma in nursing, 88(88%) B.Sc. nursing.

S. No.	Demographic variable	Classification	No. Of persons	Percentage
1	Age	20 - 35 years	99	99%
		36 - 40 years	1	1%
2	Gender	Male	4	4%
		Female	96	96%
3	Experience	1 - 5 years	88	88%
		6 - 10 years	10	10%
		11 - 15 years	2	2%
4	Qualification	ANM	9	9%
		Diploma in nursing	3	3%
		B. Sc. Nursing	88	88%
5	Attended in-service education programme	Yes	71	71%
		No	29	29%
6	Monthly income	< 5000	53	53%
		5000 – 10000	47	47%
		> 10000		

Table 1: Demographic data (n = 100).

Considering attended in-service education programme 71(71%) are says yes, 29(29%) says no. Considering their monthly income 53(53%) are get <5000, 47(47%) are get 5000-10000, no one get >10000.

Section A

This table 2 reveals that the general knowledge on bio medical waste management.

The first question illustrated that out of 100 staff nurses, they have chosen the respective answers like the infectious waste were (54%), glass (5%), rags (4%), general waste (37%).

S. No.	General knowledge on BMW management	Options	No. Of persons	Percentage
1	In India the highest composition of hospital waste is	Infectious waste	54	54%
		Glass	5	5%
		Rags	4	4%
		General waste	37	37%
2	The leading hazards from infectious waste and sharps are	Injuries and burns	36	36%
		Headache and vomiting	12	12%
		HIV and hepatitis	52	52%
3	The first element of hazardous waste management plan is	Waste identification	25	25%
		Treatment	12	12%
		Waste minimization	25	25%
		Disposal	38	38%
4	In bio medical waste management today, we have the slogans	Reduce and reuse	14	14%
		Reuse and recycle	12	12%
		Reduce, reuse and recycle	56	56%
		Recycle	18	18%
5	In international biohazards symbol is marked for the following waste except	Infectious waste	13	13%
		Liquid waste	52	52%
		Pathological waste	24	24%
		Sharp waste	11	11%
6	Waste handling deals with	Collection, transport, measurement and storage	50	50%
		Collection	10	10%
		Disposal	23	23%
		Segregation	17	17%
7	Minimum contact of articles with sodium hypo chlorite is	1 hour	21	21%
		2 hours	6	6%
		15 minutes	44	44%
		30 minutes	29	29%
8	The untreated BMW should not keep stored beyond a period of	24 hours	51	51%
		24 hours	30	30%
		72 hours	10	10%
		5 days	9	9%
9	The importance of proper disposal of waste is	Easy of work	11	11%
		Following of hospital rules	7	7%
		Prevention of infection	68	68%
		Waste identification	14	14%
10	Who is the chair person for hospital waste management committee	Hospital supervisor	13	13%
		Waste management officer	8	8%
		Infection control officer	71	71%
		Hospital directors	8	8%

Table 2: General knowledge on biomedical waste management (n = 100).

This table infers that out 100 staff nurse's injuries and burns (36%), headache and vomiting (12%), HIV and hepatitis (52%) is leading hazards from infectious waste and sharps.

This table infers that out 100 staff nurses' waste identification treatment (25% 0 waste (12%) minimization (25%) disposal (38%) the first element of hazardous waste management plan.

Section B

Table 3 reveals that knowledge on waste segregation.

S. No.	Knowledge on waste segregation	Options	No. Of persons	Percentage
1	Human waste should be disposed in colour bag	Yellow	72	72%
		Blue	9	9%
		Black	13	13%
		Red	6	6%
2	The sharp waste must be disposed in	Yellow	11	11%
		Black	23	23%
		Red	8	8%
		Blue puncture proof container	58	58%
3	The chemical waste, discarded medicines should be disposed in	Black	55	55%
		Yellow	14	14%
		Red	15	15%
		Blue	16	16%
4	Laboratory waste must be discarded in	Yellow	23	23%
		Blue	23	23%
		Black	22	22%
		Red	32	32%
5	The turbine and catheters must be discarded in	Yellow	12	12%
		Red	68	68%
		Black	12	12%
		Blue	8	8%
6	The general waste must be discarded in	Yellow	7	7%
		Red	15	15%
		Blue	13	13%
		None	65	65%
7	The ash from incineration of any biomedical waste to be discarded in which colour bag	Red	17	17%
		Yellow	22	22%
		Black	30	30%
		Blue	31	31%
8	The colour coding for disposal of BMW comprises which of the following	Yellow, red, blue /white translucent and green	52	52%
		Yellow, red, blue /white translucent and orange	14	14%
		Yellow, red, blue /white translucent and brown	1	1%
		Yellow, red, blue /white translucent and black	33	33%

Table 3: Knowledge on waste segregation (n = 100).

Section C

S. No.	Knowledge on waste disposal	Options	No. of persons	Percentage
1	The sharp waste can be disinfected by using	Sodium hypo chloride	79	79%
		Sodium chloride	9	9%
		Sodium citrate	5	5%
		Sodium sulphide	7	7%
2	The widely used method to treat hazardous health care waste is	Chemical disinfection	37	37%
		Thermal treatment	33	33%
		Land disposal	9	9%
		Incineration	21	21%
3	The process of adding waste with cement to minimize the risk of toxic substances before disposal is	Inertization	20	20%
		Incineration	24	24%
		Microwave irradiation	12	12%
		Chemical disinfection	44	44%
4	The following can be incinerator excepts	Human tissue	20	20%
		Halogenated plastics	42	42%
		Animal tissue	10	10%
		Linen and bedding	28	28%
5	The waste which is burned in hospital is	Plastics	16	16%
		Human tissues	22	22%
		Medications	12	12%
		Sharps	50	50%
6	Collection, transport, measurement and storage of waste are the step in	Waste identification	23	23%
		Waste treatment	11	11%
		Waste handling	25	25%
		Waste disposal	41	41%
7	Lockout and tag out are a procedure which describes	Electric power is kept off and shut off	26	26%
		Electric power is kept on	12	12%
		Electric power is kept off and on	21	21%
		No idea	41	41%

Table 4: knowledge on waste disposal (n = 100).

S. No.	Demographic variable	Classification	Level of knowledge		Chi-square	Degrees of freedom	P-value
			Inadequate	Moderate			
1	Age	20 - 35 years	74	25	0.337	1	0.562
		36 - 40 years	1	0			
2	Gender	Male	3	1	0.000	1	1.000
		Female	72	24			
3	Year of experience	1 - 5 years	68	20	4.242	2	0.120
		6 - 10 years	5	5			
		11 - 15 years	2	0			
4	Qualification	ANM	8	1	1.098	2	0.578
		Diploma in nursing	2	1			
		B. Sc. Nursing	65	23			
5	Attended in service education program	Yes	49	22	4.679	1	0.031*
		No	26	3			
6	Monthly income	< 5000	40	13	0.013	1	0.908
		5000 - 10000	35	12			

Table 5: Level of knowledge (n = 100).

* Pvalue (0.031)

From the above table, the p-value corresponding to the demographic variable "attended in-service education program" is significant and the p value is 0.031levels and hence we can say that there is a significant association between "attended in-service education program" and "level of knowledge". All other demographic variables do not influence the level of knowledge.

Table 6 reveals that knowledge distribution, 75 (75%) are inadequate, 25 (25%) are Moderate.

S. No	Level of knowledge	No. of respondents	Percentage
1	Inadequate	75	75%
2	Moderate	25	25%
3	Adequate	0 %	0%
	Total	**100**	**100%**

Table 6: Frequency and percentage distribution of knowledge score (n = 100).

Discussion

The first objective of the study was "assessing the knowledge on bio-medical waste management among staff nurses". Table 5 depicts the frequency and percentage distribution of overall knowledge of biomedical waste management among staff nurses. With respect to the overall knowledge status of health providers, it is evident that 75% of the nurses had inadequate knowledge and 25% of the subjects had a moderate level of knowledge. A similar study conducted by Divya Rao., *et al*. shows the ample knowledge amongst the health care employees about the biomedical waste management but in our present study evident that none of the nurses have adequate knowledge regarding the biomedical waste management. A study conducted by Joshi., *et al* states that the staff was aware of the health care waste of various categories in the hospital such as human anatomical waste, waste sharps, pharmaceutical waste, blood and body fluids waste, infectious waste and in our study 25% of the nurses has moderate knowledge level [5]. The second objective was to associate the level of knowledge on bio-medical waste management among the staff nurses with their selected demographic variables Table 1 debits the association of staff nurses with age in years, sex, years of experience, education, attended in-service education programme on biomedical waste management, income and with regard to the association; it is observed that there is no association is established with the demographic variables. Hence the null hypothesis stated that there will be no associations on the level of knowledge on biomedical waste management among staff nurses with the demographic variables are accepted. Worldwide it is stated that, 18 to 64 per cent of healthcare institutions are have inadequate Bio-Medical Waste Management facilities; due to lack of awareness, insufficient resources and poor disposal mechanisms, in our current study states that there is a significant association between "attended in-service education program" and "level of knowledge" (P value-0.031) [9].

Summary

The present study was conducted in the hospital. The descriptive survey approach was used to achieve the objective of the study. The objective of the study is to assess the level of knowledge regarding bio-medical waste management. The samples were the nurses who are working in a selected hospital. The sample selected by non-probability convenience sampling technique the data was collected with the help of a structured self-administered questionnaire. The knowledge of the nurse regarding biomedical waste management with descriptive and inferential statistics, it was found that most of the nurses have inadequate knowledge regarding biomedical waste management.

- **Major findings of the study:** The major findings of the study were; with the respect to the overall status of the staff nurses, it's evident that majority 75% of the subject had inadequate 25% had moderate knowledge and none of the nurses have adequate knowledge.

  With regards to the association of knowledge of the staff nurses with age in year, sex, years of experience, education, attended in-service education could be established with the demographic variables.

Conclusion

The study concludes that 75% of nurses have inadequate knowledge, 25% have moderate knowledge 0% have adequate knowledge on biomedical waste management. This implies that knowledge of biomedical waste management is inadequate. As "nurses" it is our responsibility to conduct short-term courses and in-service education programmes to uplift their knowledge on biomedical waste management which will help inappropriate management of waste which will ultimately lead to a healthy society.

Implications

- **Implication for nursing service:** From the study, we come to know that the conduction of in-service education programme has improved knowledge among staff nurses regarding biomedical waste management. This can be further improved by conducting more in-service education programme and orientation programmes.

- **Implication for nursing education:** The present study has implicated on nursing education that all the student nurses can be enlightened with the knowledge on biomedical waste management conference, workshop, seminars, containing nursing education programmes can be conducted periodically on various aspect of biomedical waste management (waste collection, segregation, disposal) among the student nurses. Research material, theses, project, journals, magazine, newspaper articles regarding biomedical waste management in various setting can be discussed in conference and workshop.
- **Implication for nursing administration:** The findings of the study imply that nursing administration has the greater responsibilities to increase the knowledge of nurses working in various health care setting to know about the proper collection, segregation, handling, treatment and disposal of hospital waste. So orientation programmes, workshop, and conferences can be arranged for the nurses to update their knowledge and practice of hospital waste.
- **Implication for nursing research:** The importance of research is to build up the body of knowledge in nursing, as it is an evolving profession. Generalization of the study result can be made by further replication on large samples from various departments of the health team. Publication of this research will bring awareness to the professional and public regarding hospital waste treatment and disposal.
    - Recommendations for further study: A replication of the present study can be conducted with large subjects.
    - A study can be done by observing the practice of hospital waste disposal among health care provider.
    - A similar study can be conducted in various health care settings.
    - A comparative study can be done between private and public health care centers.

Availability of data and materials

The datasets used and/or analyzed during the current study are available with the corresponding author.

Conflict of Interest

None.

Source of Funding

None.

Bibliography

1. Yadav M. "Hospital waste-a major problem". *JK PRACTITIONER* 8.4 (2001): 276-282.
2. Manyele SV and Anicetus H. "Management of medical waste in Tanzania hospitals". *Tanzania Journal of Health Research* 8.3 (2006).
3. Nemathaga F., *et al*. "Hospital solid waste management practices in Limpopo Province, South Africa: A case study of two hospitals". *Waste Management* 28.7 (2008): 1236-1245.
4. Hassan MM., *et al*. "Pattern of medical waste management: existing scenario in Dhaka City, Bangladesh". *BMC Public Health* 8.1 (2008): 36.
5. Joshi SC., *et al*. "Staff perception on biomedical or health care waste management: A qualitative study in a rural tertiary care hospital in India". *PloS One* 10.5 (2015): e0128383.
6. Manar MK., *et al*. "Hospital waste management in nonteaching hospitals of lucknow city, India". *Journal of Family Medicine and Primary Care* 3.4 (2014): 393.
7. Gautam V., *et al*. "Biomedical waste management: Incineration vs. environmental safety". *Indian Journal of Medical Microbiology* 28.3 (2010): 191.
8. Rao D., *et al*. "Biomedical Waste Management: A Study on Assessment of Knowledge, Attitude and Practices Among Health Care Professionals in a Tertiary Care Teaching Hospital". *Biomed Pharmacology* 11.3 (2018).
9. INCLEN PE, New D. "Bio-medical waste management: situational analysis & predictors of performances in 25 districts across 20 Indian States". *The Indian Journal of Medical Research* 139.1 (2014): 141.

Volume 3 Issue 1 January 2019