CODEN (USA)-IJPRUR, e-ISSN: 2348-6465

Original article

Knowledge, Attitude and Practice Regarding Bio Medical Waste Amongst Nursing Professionals - A Cross Sectional Survey Study

Akshay M Patel[1,*], Jalpa D Patel[2]

[1]BHMS, Master in Public Health, AYUSH Medical Officer, Vadodara, Gujarat, India.

[2]PhD Scholar, Department of Prasutitantra & Streeroga, ITRA, Jamnagar, Gujarat, India

ARTICLE INFO:

Received: 15 Feb 2023

Accepted: 14 Mar 2023

Published: 30 Apr 2023

Corresponding author *

Dr Akshay M Patel,

Master in Public Health, AYUSH Medical Officer, Vadodara, Gujarat, India.

E-mail: ap9304028@gmail.com

ABSTRACT:

In India approximately 3 million tons of Bio-Medical Waste is generated annually and is expected to grow at 8-10% annually. Inadequate knowledge or less awareness level among different categories of staff in the health care facilities has led to the failure of Bio-Medical Waste management. Aims and Objectives: a) To assess of Knowledge, Attitude and Practice (KAP) regarding Bio-Medical Waste amongst nursing professionals. b) To assess factor affecting KAP regarding Bio-Medical Waste amongst nursing professionals. Methodology: A cross sectional survey was carried out at BAPS Shastrji Maharaj Hospital of Ataldara, Vadodara among 66 nursing staff. Knowledge and attitude was assessed through structured, pre-designed, pretested, questionnaire. Practice was assessed by observation of their work during duty time. In the present study, each correct answer was given 1 mark and total score of knowledge, attitude and practice was calculated. It was categorized in Excellent (>90%), Good (80% to 90%), Average (50% to 80%) and Poor (<50%). Result: Majority of nursing staff were qualified in GNM (36.4%) followed by ANM (28.9%) and B.Sc. Nursing (34.8%). Forty nurses had adequate knowledge (Excellent – 13, 19.7% and Good – 27. 40.9%). Positive attitude was found in 29 nurses (Excellent – 28, 42.4%, Good – 1, 1.5%). However, very many nurses (46, 69.7%) had good practice regarding BMW management (Excellent – 38, 57.5%; Good – 8, 12.2%). Good Knowledge and practice was found in BSc nursing staff as compared to GNM and ANM staff; and those nurses had experience more than 10 years as compared to nurses with 0 to 5 year experience. Conclusion: Knowledge and practice was affected by qualification of staff, work experience. Various demographic factors were not associated with attitude of staff nurses. There is a need of conducting or organizing refresher course or orientation programme for nursing professionals at regular intervals.

Keywords: Bio-Medical Waste, Nursing Professionals, Tertiary Care Hospital.

1. INTRODUCTION

All activities of living thing on earth produce waste in some form or the other. Normally, aerobic and anaerobic process in the environment degrades 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 last decade witnessed a significant increase of public concern regarding Medical Waste disposal. This was fuelled by reports of "beach washing" of medical waste on the coasts of Florida and Gulf, and the "recycling" of disposable articles in developing countries [1].

A hospital is an institution visited by people of any age, sex, race and religion when they are medically unfit. In addition to patients, hospitals also consist of doctors and medical staff personals [2]. Any human activity produces waste that is dangerous requiring proper disposal techniques. If these wastes are not disposed of in a safe manner they may pollute the surrounding air, water and soil [3]. Hospital waste (Biomedical waste) is a kind of waste that is dangerous due to its hazardous and infectious nature in comparison to the other wastes.

Bio Medical Waste means any waste, which is generated during the diagnosis, treatment or immunization of human beings or animals, or in research activities pertaining thereto or in the production or testing of biological. It is the duty of every person working in a health care institution to take all steps to ensure segregation, safe handling & disposal of biomedical waste (BMW), without causing any adverse effect to human health and the environment. It is estimated that 10-25% of the healthcare waste generated is hazardous & causes serious health problems [4].

Bio-medical waste management (BMWM) is a serious and vital issue to hospitals authority, environment, law enforcement agency, media and to the general public also.

BMWM issue was first time discussed at a meeting convened by the WHO regional office in 1983. In our country, Hon'ble Supreme Court of India, thought on this crucial issue and guidelines has been led down as Biomedical Waste (Management and handling) Rules 1988. This rule directed clear methods for disposal of biomedical waste [5].

Recently, the pandemic COVID-19 has presented all together a very challenging scenario, where not only human health but the overall ecosystem is at stake and facing new challenges

A careful analysis of CPCB's January and May 2021 reports suggests that 22 of the 35 states and Union Territories generate more biomedical waste than they can handle. The capacity of facilities to treat biomedical waste is nearly saturated in Maharashtra, Goa, Manipur, Andhra Pradesh, Meghalaya, Rajasthan and others. A back-of-the-envelope calculation of the data collected by CPCB using the BWM App shows that the country has generated some 45,954 tonnes of COVID-19 waste in the past one year till May 10, 2021. Meaning, since the pandemic's first wave, it has generated 126 tonnes of COVID-19 waste a day — this is about 20 per cent of the 614 tonnes of biomedical waste that the country generates on any given day. At places where COVID-19 waste finds its way to treatment facilities, lax regulation defeats the purpose. Consider this. The BMW Management Rules, 2016, require healthcare facilities to follow a colour-coded segregation system for waste disposal and hand it over to treatment facilities within 48 hours. At treatment facilities, a considerable part of the waste, which comes in red and blue bags or in white containers, is channelized for recycling after sterilisation [6].

The improper practice of segregation at the site of origin has also been observed, which causes the mixing of infectious and non-infectious waste [7]. Colour-coding schemes to segregate BMW should be strictly followed. Furthermore, wastes originating from COVID-19 wards should be collected, stored in separate records; and transported directly to treatment plants to avoid any cross-contamination [8, 9]. In Europe; there is a trend among waste management sectors to provide separate collection services from households infected with COVID-19 and quarantine facilities [10].

Considering all these statistics, it is evident that a strategic guideline should be produced, which should be focusing on the current waste management knowledge, practice, and attitude (KPA) whilst handling, treating; and removing BMW produced during the identification, isolation; and management of COVID-19 patients. Additionally, the KPA should be updated from the regular processes of waste management by standardizing policy and organize awareness tracing programs on the BMW management system. Therefore, the objectives of this study were to assess the knowledge, practice; and attitude regarding BMW management among nursing professionals during COVID-19 crises at BAPS Shastrji Maharaj Hospital, Atladara, Vadodara healthcare sectors and to associate the knowledge level with the selected demographic variables.

Aims and objectives:

1. To assess of Knowledge, Attitude and Practice (KAP) regarding Bio-Medical Waste amongst nursing professionals.
2. To assess factor affecting KAP regarding Bio-Medical Waste amongst nursing professionals.

2. MATERIALS AND METHODS

Study design: A cross sectional study

Study area and duration: This study was carried out among 66 nursing staff for 4 month time period at BAPS Shastrji Maharaj Hospital, Atladara, Vadodara, Gujarat,

Inclusion criteria: All nursing staff (GNM, ANM and B.Sc. Nursing).

Exclusion criteria:

1. Recently joined nursing staff(less than 1 month).
2. Nursing staff who were absent during knowledge and practice assessment day.

Sample size: All nursing staff who were fit in inclusion criteria enrolled in the study.

Sampling technique: Purposive sampling method

Method: A cross sectional survey was carried out in 2020 at BAPS Shastrji Maharaj Hospital, Atladara on 66 nursing staff. Structured, pre-designed, pretested, questionnaire were administered on 66nursing staff of hospital. Organizational permission was granted for this study from Medical Superintendent of the hospital. All nursing staff were appealed to take part in study through hospital administrative support. Questionnaire was prepared with the help of through literature review. Questionnaires were translated into local language and were administered to all nursing staff of hospital. They have to filled the questionnaire and return them to investigator. Those who returned the questionnaire were considered as they were willing to participate. Questionnaires were divided in four parts as below:

1. Part I, comprised of demographic data such as age, sex, designation, education (ANM, GNM, B.Sc.) professional qualification, years of experience.
2. Part II, included questions of BMWM knowledge (aware BMWM Rules, know segregation principle, listen color coding system of bags and ascertain in which bag is for which waste?)
3. Part III, contain questions of attitude (BMWM Rules should be followed strictly, Color coding system is an simple mode of segregation of hospital waste, BMWM is helpful in reducing spread of infections and BMWM system is beneficial to HCWs).
4. Part IV, comprises four practices of BMWM such as (Do you wear gloves while handling bio- medical waste? Do you put non-infectious waste in black container; do you sort out bio-medical waste at source? and do you disposed sharp waste in blue bag?)

Data Analysis: Collected data compiled and enter into Microsoft 2010 excel sheet. Data was analyzed with the help of SPSS 2019. Quantitative data was expressed in mean and standard deviation; qualitative data was expressed in frequency and percentage. Qualitative data was compared using Microsoft Excel Sheet Equation. P value less than 0.05 was considered as significant.

Ethical issues: Written permission was taken from the institutional ethical committee. Data was kept confidential and findings were shared only with the concerned authorities.

Statistical Analysis: Collected data compiled and enter into Microsoft 2010 excel sheet. Data was analyzed with the help of SPSS 2019. Quantitative data was expressed in mean and standard deviation; qualitative data was expressed in frequency and percentage. Qualitative data was compared using Microsoft Excel Sheet Equation. P value less than 0.05 was considered as significant.

3. RESULTS

Table 1: Demographic Characteristics of nursing professional

Demographic variable	Frequency	Percentage (%)
Age (yr)		
21 to 25	24	36.4
26 to 30	20	30.3
31 to 35	8	12.1
>35	14	21.2
Gender		
Male	11	16.7
Female	55	83.6
Qualification		
ANM	19	28.9
GNM	24	36.4
B.Sc. Nursing	23	34.8
Work Experience (yrs)		
0 to 5	38	57.6
6 to 10	16	24.2
>10	12	18.1

Demographic detail of nursing professionals has been given in table 1.Total of 66 nursing staff working in BAPS SHASTRJI MAHARAJ HOSPITAL, ATLADARA were filled up the KAP questionnaire. Table no.1. reveals demographic characteristics of nursing staff. Out of 66, majority were in 21 to 25 years age group (24, 36.4%) and 55 (83.6%) were female. Majority of nursing

Staff were qualified in GNM (24, 36.4%) followed by ANM (19, 28.9%) and B.Sc. Nursing (23, 34.8%). Total 38 staffs (57.6%) had work experience of 0 to 5 years, 16 staffs (24.2%) had 6 to 10 years and only 12staffs (18.1%) had > 10 years work experience.

Table 2: KAP regarding BMW amongst nursing professionals

Knowledge	No	%
What is biomedical waste?	58	87.9
Which is the most important part of BMW management?	41	62.1
What is the maximum time limit of BMW storage?	47	71.2
Human anatomical waste, microbiological waste is to be collected in which bin?	48	72.7
Catheter, ryles tube is to be collected in which bag?	46	69.7
The sharp waste must be disposed in which container?	42	63.6
The general waste must be dis-carded in which bag?	53	80.3
Is Incineration appropriate for dressing material and human waste	43	65.1
Is Micro wave appropriate treatment for microbiological lab, human blood, body fluid waste, human blood, waste sharp?	14	21.1
Are Shredder used to destroy plastic material and paper waste materials to prevent its resume?	25	37.9
Do you know that mixing of biomedical waste with municipal waste is prohibited?	40	60.6
How to Discarded PPE KIT? (DOFFING PROCESS)	48	72.1
Attitude		
Do you feel that BMW goes through step of collection , segregation and transportation before final treatment	47	71.2
Do you feel that BMW management should be compulsory part of their curriculum	36	54.5
Do you feel that separate and dedicated vehicle is required for transportation of BMW	36	54.5
Do you feel that Color coding system is simple method of segregation of BMW management	34	51.5
Do you feel that BMW management system is beneficial to HCWs	39	59.0
Practice		
Does he/she segregate the waste at the point of generation?	60	90.9
Does he/she ensure tying up the waste bag when its 3/4th filled?	44	66.7
Does he/she maintain the register for BMW at the location of generation	57	86.3
Does he/she know the method to prepare the disinfection solutions with prescribed dilutions?	53	80.3
Does he/she wear gloves while handling biomedical waste	55	83.3

In the present study, knowledge, attitude and practice regarding BMW amongst nursing professionals was given in table no. 2. Forty nurses had adequate knowledge (Excellent – 13, 19.7% and Good – 27. 40.9%). Positive attitude was found in 29 nurses (Excellent – 28, 42.4%, Good – 1, 1.5%). However, very many nurses (46, 69.7%) had good practice regarding BMW management. (Excellent – 38, 57.5%; Good – 8, 12.1%).

Table 3: KAP score regarding BMW amongst nursing professionals

	Knowledge	Attitude	Practice
Excellent (>90%)	13(19.7)	28(42.4)	38(57.5)
Good (80% to 90%)	27(40.9)	1(1.5)	8(12.1)
Average (50% to80%)	5(7.6)	8(12.1)	8(12.1)
Poor (<50%)	21(31.8)	29(43.9)	12(18.2)

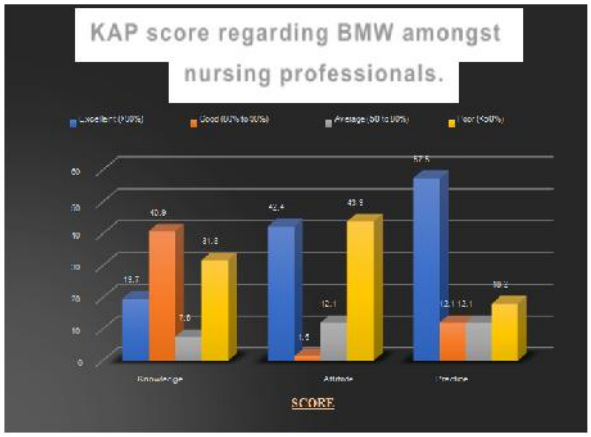

Fig 1: KAP score regarding BMW amongst nursing professionals

In the present study, each correct answer was given 1 mark and total score of knowledge, attitude and practice was calculated as per table no. 3 and better shown as per figure no.1. It was categorized in Excellent (>90%), Good (80% to 90%), Average (50% to 80%) and Poor (<50%). About 13 (19.7%) and 27 nurses (40.9%) had excellent and good knowledge respectively. Attitude of staff was also good (Excellent – 28, 42.4%; Good– 1, 1.5%). However, 12 nurses (18.2%) had poor practice.

Table 4: Factors affecting knowledge regarding BMW amongst nursing professionals

Factors	Knowledge				Total	p value
	Excellent	Good	Average	Poor		
Qualification						
ANM	1 (5.3)	8 (42.1)	5 (26.3)	5 (26.3)	19 (100)	0.07
GNM	3 (12.5)	11 (45.8)	0 (0.0)	10 (41.7)	24 (100)	
B.Sc. Nursing	9 (39.1)	8 (34.8)	0 (0.0)	6 (26.0)	23 (100)	
Work experience (yr.)						
0 to 5	8 (21.0)	14 (36.8)	1 (2.6)	15 (39.5)	38 (100)	0.5
6 to 10	3 (18.7)	10 (62.5)	1 (6.2)	2 (12.5)	16 (100)	
>10	2 (16.7)	3 (25.0)	3 (25.0)	4 (33.3)	12 (100)	

In the present study, as per table no. 4, knowledge was good in BSc nursing staff as compared to GNM and ANM staff. Those nurses had experience more than 10 years had good knowledge as compared to nurses with 0 to 5 year experience.

Table 5: Factors affecting attitude regarding BMW amongst nursing professionals

Factors	Attitude				Total	p value
	Excellent	Good	Average	Poor		
Qualification						
ANM	6 (31.6)	1 (5.3)	1 (5.3)	11(57.9)	19 (100)	0.017
GNM	10 (41.7)	0 (0.0)	2 (8. 3)	12(50.0)	24 (100)	
B.Sc. Nursing	12 (52.2)	0 (0.0)	5 (21.7)	6 (26.0)	23 (100)	
Work experience (yr.)						
0 to 5	15 (39.5)	0(0.0)	7 (18.2)	16(42.1)	38 (100)	0.03
6 to 10	9 (56.2)	1(6.2)	1 (6.2)	5 (31.3)	16 (100)	
>10	4 (33.3)	0(0.0)	0 (0.0)	8 (66.7)	12 (100)	

In the present study, qualification, work experience has no effect on attitude of nurses regarding BMW management as per table no.5.

Table 6: Factors affecting practice regarding BMW amongst nursing professionals

Factors	Practice				Total	p value
	Excellent	Good	Average	Poor		
Qualification						
ANM	8 (42.1)	1 (5.3)	2(10.5)	8(42.1)	19 (100)	0.06
GNM	13 (54.2)	4 (16.7)	4 (16.7)	3 (12.5)	24 (100)	
B.Sc. Nursing	17 (73.9)	3(13.0)	2(8.7)	1 (4.3)	23 (100)	
Work experience (yr.)						
0 to 5	21 (55.3)	6 (15.8)	5 (13.2)	6(15.8)	38 (100)	0.10
6 to 10	11(68.7)	2 (12.5)	1 (6.2)	2 (12.5)	16 (100)	
>10	6 (50.0)	0(0.0)	2 (16.7)	4 (33.3)	12 (100)	

As mentioned in Table no.6, Practice was poor in ANM and GNM as compared to BSc nurses. Poor practice was found in nurse with less work experience as compared to nurses with >10 year experience

4. DISCUSSION

In the present study, Demographic detail of nursing professionals has been given in table 1.Total of 66 nursing staff working in BAPS SHASTRJI MAHARAJ HOSPITAL, ATLADARA were filled up the KAP questionnaire. Table no. 1 reveal demographic characteristics of nursing staff. Out of 66, majority were in 21 to 25 years age group (24, 36.4%) and 55 (83.6%) were female. Majority of nursing staff were qualified in GNM (24, 36.4%) followed by ANM (19, 28.9%) and B.Sc. Nursing (23, 34.8%). Total 38 staffs (57.6%) had work experience of 0 to 5 years, 16 staffs (24.2%) had 6 to 10 years and only 12staffs (18.1%) had > 10 years work experience.

In the present study, forty nurses had adequate knowledge (Excellent – 13, 19.7% and Good – 27, 40.9%). Positive attitude was found in 29 nurses (Excellent –28, 42.4%Good –1,1.5%). However, very many nurses (46,69.7%) had good practice regarding BMW management. (Excellent – 38,57.5% Good –8,12.1%). Attitude of staff was also good (Excellent –28,42.4% ; Good –1,1.5%). A cross-sectional study conducted among healthcare personnel working at primary health centers; in Gujrat showed that the highest overall scores for attitudes to waste disposal were observed

among housekeepers compared to physicians or LTs [11]. Mostafa GMA et al who in their study on waste management in Egypt reported that majority of the doctors, nurses, and housekeepers have unsatisfactory knowledge [12]. Kaur M et al. reported that 79.0% nurses had good knowledge, 17.0% had Average knowledge, 4% had poor knowledge.

It is also stated that Qualification, work experience has no effect on attitude of nurses regarding BMW management. A study in India, a tatertiary level health care institution, where doctors (100%) were found to be more positive towards the need for actions for safe biomedical waste management than nurses (60%) and other healthcare workers [13]. Research on attitude regarding BMW awareness proved that many of healthcare workers (93.3%–98.9%) were aware of improper waste management which was causing various health hazards; (79.8% to 97.9%), the importance of regular educational programs on BMW management; (75.7% to 82%), the amount of generated BMW in hospitals or clinics and (52.8% to 87.6%) that maintaining BMW records is mandatory in hospitals or clinics [14].

Practice was poor in ANM and GNM as compared to BSc nurses. Poor practice was found in nurse with less work experience as compared to nurses with >10 year experience.

Knowledge and practice was affected by qualification of staff, work experience. Various demographic factors were not associated with attitude of staff nurses. Saini S et al observed that nurses with higher education level were more aware regarding the issue of BWM [15]. Kumar D et al reported that only services education programmed had impact on staff nurses KAP of BMW. Other factors such as age in years, sex, years of experience, education and income were not associated with KAP [16].

Descriptive research was performed on the knowledge, attitude; and practices of healthcare staff regarding infectious waste handling at tertiary care health facilities in the metropolitan city of Pakistan, in which the sociodemographic information such as age, gender, level of education; and experience, when compared with the practices, was found to be statistically significant ($p < 0.05$). [17]

5. CONCLUSION

Nursing Professionals are frontline workers in the COVID-19 crisis; they face a greater risk of contamination due to their direct contact with patients and specimens. In this situation, BMW must be considered a serious health concern. Accordingly, Nursing Professionals must have adequate knowledge regarding the proper handling of BMW,prevention of infection; and prevention of transmission of diseases. This study was intended to assess the KPA of Nursing Professionals on BMW management in this pandemic crisis. It was concluded that More than half the nurses had adequate knowledge (60.6%) and appropriate attitude (43.9%) but good practice regarding BMW was found in many nurses (69.6%). Knowledge and practice was affected by qualification of staff, work experience. Various demographic factors were not associated with attitude of staff nurses. The lower level of awareness about hospital waste handling may have direct impact on overall process of safe disposal of biomedical waste. To avoid this, Strict supervision and surveillance should be adopted to follow the golden rule/ thumb rule i.e. segregation at the point of generation. There is a need of conducting or organizing refresher course or orientation programmed for nursing professionals at regular intervals.

RECOMMENDATIONS:

The lower level of awareness about hospital waste handling may have direct impact on overall process of safe disposal of biomedical waste. To avoid this, Strict supervision and surveillance should be adopted to follow the golden rule/ thumb rule i.e. segregation at the point of generation. There is a need of conducting or organizing refresher course or orientation programmed for nursing professionals at regular intervals.

LIMITATIONS OF STUDY: This is tertiary care hospital based study with small sample size. Therefore, result of the present study could not be generalized to nursing staff of primary and secondary care hospital (Sub center, primary health center, and community health center). Further, study with adequate sample size should be conducted to evaluate knowledge attitude and practice of nursing staff.

6. REFERENCES

1. Ruff Jr GG. Environmental laws in health care. Hospital Materiel Management Quarterly. 1992 Nov 1;14(2):28-39.
2. Rao SK, Ranyal RK, Bhatia SS, Sharma VR. Biomedical waste management: an infrastructural survey of hospitals. Medical Journal Armed Forces India. 2004 Oct 1;60(4):379-82.
3. Prachi Vasistha RG, Gupta AK. Questionnaire Method for Assessing Biomedical Waste Management in Shimla City-Case Studies of Public and Private Hospitals.
4. Shalini S, Harsh M, Mathur BP. Evaluation of bio-medical waste management practices in a government medical college and hospital. National Journal of Community Medicine. 2012 Mar 31;3(01):80-4.
5. Kishore J, Goel P, Sagar B, Joshi TK. Awareness about biomedical waste management and infection control among dentists of a teaching hospital in New Delhi, India. Indian journal of dental research: official publication of Indian Society for Dental Research. 2000 Oct 1;11(4):157-61.
6. https://www.downtoearth.org.in/news/waste/covid-19-revised-guidelines-show-how-biomedical-waste-must-be-handled-71934.
7. Shaheen T, Ghani M, Kausar S. Gauging the effectiveness of training sessions among nurses regarding biomedical waste management: A quasi-

experimental study from a developing country. Cureus. 2020 Dec 21;12(12).
8. Rashidian A, Alinia C, Majdzadeh R. Cost-effectiveness analysis of health care waste treatment facilities in Iran hospitals; a provider perspective. Iranian journal of public health. 2015 Mar;44(3):352.
9. Singh S, Dhillon BS, Shrivastava AK, Kumar B, Bhattacharya S. Effectiveness of a training program about bio-medical waste management on the knowledge and practices of health-care professionals at a tertiary care teaching institute of North India. Journal of Education and Health Promotion. 2020; 9: 127.
10. Nghiem LD, Morgan B, Donner E, Short MD. The COVID-19 pandemic: considerations for the waste and wastewater services sector. Case studies in chemical and environmental engineering. 2020 May 1;1:100006.
11. Sunmeet GA, Gangawane A. Knowledge attitude and practices of healthcare personnel towards bio-medical waste disposal management at Arbor Biotech Limited Mumbai. Int. J. Innov. Res. Sci. Eng. 2017;3:307-16.
12. Soyam GC, Hiwarkar PA, Kawalkar UG, Soyam VC, Gupta VK. KAP study of bio-medical waste management among health care workers in Delhi. Int J Community Med Public Health. 2017 Aug 23;4(9):3332-7.
13. Sachan R, Patel ML, Nischal A. Assessment of the knowledge, attitude and practices regarding biomedical waste management amongst the medical and paramedical staff in tertiary health care centre. International Journal of Scientific and Research Publications. 2012 Jul;2(7):1-6.
14. Singh T, Ghimire TR, Agrawal SK. Awareness of biomedical waste management in dental students in different dental colleges in Nepal. BioMed research international. 2018 Dec 9;2018.
15. Kaur M. To assess the knowledge, attitude and practice of nursing students regarding biomedical waste management in selected hospital, Punjab. International Journal of Science & Healthcare Research. 2018;3(4):1-5.
16. Saini S, Nagarajan SS, Sarma RK. Knowledge, attitude and practices of bio-medical waste management amongst staff of a tertiary level hospital in India. J Acad Hosp Adm. 2005 Jan 12;17(2).
17. Kumar R, Samrongthong R, Shaikh BT. Knowledge, attitude and practices of health staff regarding infectious waste handling of tertiary care health facilities at metropolitan city of Pakistan. Journal of Ayub Medical College Abbottabad. 2013 Jun 1;25(1-2):109-12.

ACKNOWLEDGEMENT: None

CONFLICT OF INTEREST: The authors declare no conflict of interest, financial or otherwise.

SOURCE OF FUNDING: None.

AVAILABILITY OF DATA AND MATERIALS: Not applicable.

CONSENT FOR PUBLICATION: Not applicable.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE: The final full board approval was obtained from the institutional ethics committee for the project.