A Study To Assess The Knowledge Regarding Bio-Medical Waste Management Among The Staff Nurses Working In Selected Hospital Nalbari, Assam.

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Abstract

The management of biomedical waste (BMW) has grown to be a major concern for healthcare practitioners due to the increased risk of infection and harm. Handling medical waste improperly can have detrimental effects on one's health. The hospital personnel in every healthcare setting urgently need to be made more aware of BMWM. It is not only legally required but also socially responsible to handle biological waste effectively. Assessing staff nurses' knowledge of biomedical waste management and determining the relationship between chosen demographic characteristics and staff nurses' degree of knowledge about BMW management were the goals. The nursing staff members who interact with BMW were the participants in a descriptive cross-sectional study. A semi-structured survey was used to gather the data. Findings reveal that 20% of staff nurses had inadequate knowledge, whereas 50% had high knowledge. Knowledge of qualified biomedical waste management and the length of their clinical practice were shown to be significantly correlated ($p<0.05$). Results show that twenty percent of staff nurses lacked expertise, whereas fifty percent had strong knowledge. Knowledge of qualified biomedical waste management and the duration of their clinical practice were shown to be significantly correlated ($p < 0.05$). Conclusions: Because staff nurses handle biomedical waste directly, they should receive regular training and supervision are essential for better healthcare waste management and implementation.

Introduction

All healthcare professionals and facilities should be very concerned about managing biomedical waste (BMW), as waste generated during medical procedures has a higher risk of infection and harm than any other kind of waste. 1. Health care workers are more likely to get an infection from their job, but this risk may be progressively decreased by giving them the right knowledge about biomedical waste. A safe environment is essential for a healthy life. Humans, animals, or even the environment might be harmed by the 10–25% of biomedical waste that is toxic. An estimated 0.33 million tons of medical waste are produced in India each year.

Methodology

A cross-sectional descriptive research was conducted. The chosen hospital in Nalbari, Assam, served as the study's site. Evaluation of the staff nurses' degree of BMW management expertise was one of the study's goals. Data was gathered using a semi-structured questionnaire on knowledge of biomedical waste management and the non-probability sampling approach. To determine the relationship between certain demographic factors and research variables, the gathered data was analyzed using descriptive statistics expressed as frequency percentage and inferential statistics using the Chi-square test at a 0.05% level of significance. The Cronbach's alpha formula was used to determine the tool II's dependability. The instrument was both practical and dependable, as indicated by its dependability score of alpha = 0.74.

Findings of the study

Findings related to sample characteristics

Descriptive statistics, such as frequency and percentages, were used to analyze the gathered data and were then visually shown. A Chi-square test and other inferential statistics were used to determine the relationship between the various demographic factors and their familiarity with Bio Medical Waste.

Section 1: Distribution table of frequency and percentage of the demographic characteristics

Age (years)		
20-29	14	28
30-39	21	42
40-49	10	20
>50	05	10
Gender		
Female	50	100
Male	00	00
Others	00	00
Preferred language		
English	34	68
Hindi	02	04
Bengali	07	14
Nepali	07	14
Qualification		
General nursing and midwifery	20	40
Bachelor of science in nursing	12	24
Post basic B Sc in nursing	12	24
Master of science in nursing	06	12
Duration of clinical practice (years)		
10	28	56
10-20	18	36
≥10	04	08
Number of trainings attended on infection control		
≤5	37	74
6-10	11	22
≥10	02	04
Experience of working area		
Intensive care unit	07	14
Critical care unit	07	14
High dependency unit	06	12
General ward	30	60
Provided service in		
Government hospital	50	100
Non-government hospital	00	00
Others	00	00

When it came to getting medical information, the majority of participants (68%) favored English. The percentage of participants with a nursing diploma was higher at 40% than that of those with undergraduate degrees (12%) and postgraduate degrees (12%), respectively. Of them, 28 (56%) had fewer than 10 years of clinical experience, according to the report. Infection control training was given less than five times to 74% of staff nurses. Twelve percent of them worked in high dependency units, while the majority (60%) were employed on normal wards. Every participant (100%) had a permanent position as a staff member of the government hospital.

Section 2: Distribution of study participants according to correct response of questionnaires

Variable	Frequency Correct response	Percent Correct response
Answers regarding knowledge on BMW		
Biomedical waste management	40	80
Element of hazardous waste management is plan solid waste	22	44
Waste handling plan	27	54
The following is not a bio-medical waste	29	58
The lowest chance of producing bio-medical waste	40	80
The primary source of bio-medical waste	42	84
Incineration ash categorized as an incinerator waste	32	64
Answers regarding proper disposal of BMW		
Disposal of general waste	40	
Disposal of glass items	42	84
Disposal of rubber items	44	88
Disposal of human anatomical waste	45	90
Disposal of expired medicine	30	60
Disposal of plastic syringes	22	44
Disposal of sharp waste	48	96
Incineration is done for sharp instrument	31	62
Disposal mechanism of black colour bio-medical waste bag	22	44
Disposal of infectious non-biodegradable	39	78
Incineration	25	50
Answers regarding storage of BMW		
Storage of Bio-medical waste	42	84
Duration of storage of bio-medical waste in a hospital	27	54
Hazardous waste transportation regulations	25	50
The symbol of bio-medical waste vehicle	40	80

Eighty percent of participants understood the concept of biomedical waste management, forty-four percent were familiar with waste handling plans, eighty-four percent knew where biomedical waste came from, eighty percent appeared to know how to dispose of general waste, sixty-two percent were found to know how incineration works, forty-four percent knew how to dispose of bags of biomedical waste that were black in color, and sixty percent correctly answered the question about how to dispose of expired medications. About storage, 84% of participants said they knew about it, 50% knew about the rules for carrying hazardous waste, and 80% knew about the biomedical waste sign.

Section 3: The level of knowledge of staff nurse related to biomedical waste management

With an overall mean score of 12.5 ± 8.5, the study showed that the majority of staff nurses (50%) had good knowledge, 20% had bad knowledge, 18% had fair knowledge, and the remaining 12% had exceptional knowledge. In addition to the correlation between BMW knowledge and several key demographic traits, there was a noteworthy correlation between the length of their

With qualification and in clinical settings ($p<0.05$). Thus, it demonstrates that staff nurses' knowledge of BMW was unaffected by demographic characteristics such as age, preferred language, number of trainings completed, and job experience. 77.4% of respondents had great knowledge, 21.1% had good knowledge, and 1.5% had poor understanding of medical waste segregation, according to a study. 44.9% of respondents to a study done in Nalbari, Assam, had outstanding knowledge, 35.3% had moderate knowledge, and 19.8% had low understanding. Our current study found a substantial ($p<0.05$) correlation between knowledge level and many demographic characteristics, including job experience and academic background (qualification).

Discussion

Globally, 18 to 64% of healthcare institutions struggle with biomedical waste management (BMWM) due to low awareness and resources. Only 54% of nurses in Bhopal were aware of the 1998 BMW Rules. In our study, 80% knew about biomedical waste, but just 60% understood proper disposal of expired medications.

Among 50 staff nurses surveyed, half demonstrated good knowledge of BMWM. A study conducted in Srinagar revealed that only 11% had attended training on BMW. A significant relationship ($p<0.05$) existed between knowledge and factors such as academic background and work experience, aligning with

findings from Nalbari and Pakistan.

Conclusion

Staff nurses must be made aware of the potential of infection since they come into close touch with biomedical waste. They should be taught how to use personal protective equipment to avoid contracting these illnesses. The study found that for improved healthcare waste management, implementation, and vaccination, frequent training and oversight are required. Managing biomedical waste safely and effectively is both a social obligation and a regulatory requirement. The management should regularly hold training workshops on how to separate, store, transport, and dispose of Bio Medical Waste.

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