KNOWLEDGE AND PRACTICES REGARDING BIOMEDICAL WASTE MANAGEMENT AMONG NURSES OF HAYATABAD MEDICAL COMPLEX (MTI) PESHAWAR KPK PAKISTAN.

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Abstract
This cross-sectional study aimed to evaluate the knowledge and practices of nurses regarding biomedical waste management at Hayatabad Medical Complex, Peshawar.
Methodology: A total of 104 nurses were selected using simple random sampling, and data were collected through an adoptive questionnaire.
Result: The analysis, conducted using SPSS, revealed that 71.7% of the participants possessed good knowledge of biomedical waste management, while 69.61% practiced it safely. Nurses with more than six years of experience and those working in ICU wards displayed higher levels of knowledge and safer practices.
Conclusion: The overall practice level of biomedical waste management did not meet the desired safety standards. These findings highlight the need for continuous education and training programs to enhance the safe handling of biomedical waste.

INTRODUCTION

Biomedical waste (BMW) as referred to Unwanted things produced during diagnosis, treatment, surgery, immunization, or research operations, including the creation of biologicals. It covers all

tools and supplies needed to treat patients as well as anything tainted with potentially harmful bodily fluids including blood, urine, faeces, and other bodily fluids. In low-income nations, the level of infectious risk connected with trash is significant. Each year, it is estimated that between 15 and 20 percent of the infectious risk for professionals and people is caused by hospital trash or infectious healthcare waste across Africa, Asia, and South America. (Woromogo, S. H., et.al.,2020). The second-most harmful type of waste in the world, inappropriate management of healthcare waste poses a serious threat to the entire planet. qualified medical personnel. The pathogenic waste hospital waste includes wasted needles, Bandages, bottles, blood bags, intravenous drips, organ waste is biological trash. medical equipment. It can be harmful since it's infected or sharp include harm as well. WHO reports that there was In India, it has been stated that 50% of syringes are re-use intended to be used just once. Medical waste handlers are essential to the handling of waste. Proper technique and the usage of personal protection equipment are dependent on their understanding of the handling of biomedical waste. This includes separation, gathering, and storing waste treatment, disposal, and transportation. The setting in which medical waste handlers operate is really dangerous. This careless biomedical waste dumping Trash causes contamination of the environment and becomes a cause of potentially fatal illnesses including HIV, TB, cholera, and hepatitis. In developing nations like Pakistan, China, and Bangladesh, inappropriate treatment of infectious trash presents problems for the workplace and public health. In Pakistan, 75–90% of garbage is risk-free, whereas 10–25% of it has to be disposed of carefully. Approximately 4–2000 kg of garbage is produced daily by various outlets. Around 1.35 kg of trash, made up of solid, liquid, and semi-fluid waste, is created in each ward. Because of the high risk of infection and harm posed by this waste, improper disposal and lack of information about disposal can have detrimental effects on both human health and the environment. (Ali, R., Sadiq, et.al.,2019). Health dangers and environmental harm result from improper handling of hospital trash. The waste management team was formed. planning a waste management strategy, trash. segregation, trash handling, garbage collecting, and transferring, storing, and removing garbage may be efficient actions. (Alvi, A. S., et.al.,2021). Hospitals, pharmacies, clinics, blood banks, and labs are all covered by the hospital waste management regulations. To reduce the dangers associated with hospital wastes, a comprehensive method must be created. (Alvi, A. S., et.al.,2021). All those who support and fund healthcare operations have a social and legal obligation to handle biological waste (BMW) in a safe and sustainable manner. Waste minimization and source segregation are two pillars of BMW management. For medical experts, BMW management is just as crucial as a treatment plan. Biomedical waste treatment eliminates dangers and prepares it for further processing and disposal. Sterilization methods include incineration, autoclaving, bleach, sodium hydroxide, hypochlorite, alkaline digesters, heat, and microwave. (Mehra, A. (2020). their training should involve of real-world situation and drills. (Verma, V., et.al.,2020).

3.Methodology:

The study aimed to assess the knowledge and practices of biomedical waste management among 104 nurses at Hayatabad Medical Complex, Peshawar. A cross-sectional design was employed, and data were collected from various hospital wards. Using a random sampling technique, an adoptive questionnaire assessed participants' socio-demographic characteristics, knowledge, and practices. Knowledge and practice scores were classified as good or poor, based on a mean score. Data analysis involved descriptive and inferential statistics using SPSS, with a significance level of p=0.05. Ethical considerations ensured confidentiality and voluntary participation.

Table 1: Distribution by knowledge and practice of nursing staff.

Characteristic	Frequency	Total
Total no sample size	N=104	N=104
Knowledge	Good knowledge = 74.56 (71.7%) Poor knowledge = 29.39 (28.26%)	104 (100%)
Practice	Good practice =72.39 (69.61%) Poor practice = 31 (29.8%)	104 (100%)

Table 2: Socio-demographics characteristics of complex Hospital (MTI), Peshawar Nurses, Hayatabad medical.

arameter	Categories	Frequency	Percentage
Age (in year).	20 - 25	28	26.9 %
	26 – 30	48	46.2 %
	31 – 35	17	16.3 %
	36 or Above	11	10.6 %
Educational status.	Nursing Diploma	49	47.1 %
	BSN Degree/Above	54	51.9 %
Gender.	Male	40	38.5 %
	Female	64	61.5 %
Working experience.	2 - 5 years	72	71.5 %
	6 - 15years	28	28 %
	16-25years	3	2.9 %
Current working unit.	Medical ICU	25	24.0 %

	Surgical ICU	21	20.2 %
	Pead's ICU	5	4.8 %
	Neonatal ICU	2	1.9 %
	Medical A	6	5.8 %
	Medical B	4	3.8 %
	Medical C	5	4.8 %
	Surgical A	3	2.9 %
	Surgical B	4	3.8 %
	Pead's A	2	1.9%
	ER	27	26.0%

Table :3. Knowledge questions about biomedical waste management in Hayatabad Medical Complex MTI.

S.no	Knowledge Questions	Category	Frequency	Percentage %
1	The benefits of good biomedical waste management is to prevent the spread of infections.	YES	100	96.2
		NO	4	3.8
2	Can non-biomedical general garbage be combined with biomedical waste?	YES	29	27.9
		NO	75	72.1
3	Should empty food containers fall under the category of biomedical waste?	YES	41	39.4
		NO	63	60.6

4	Sharp objects like needles and scalpels to be disposed of discarded in the regular trash.	YES	64	61.5
		NO	40	38.5
5	Do you think that sharp container should be filled with ¾ full of container?	YES	92	88.5
		NO	12	11.5
6	Are you familiar with the rules and regulations governing the handling of biomedical waste at your healthcare facility?	YES	93	89.4
		NO	11	10.6
7	Biomedical waste at the source should be separated in color-coded bins or bags?	YES	91	87.5
		NO	13	12.5
8	Do you think that safety measures need to be followed while managing biomedical waste?	YES	101	97.1
		NO	3	2.9
9	Biomedical waste should be recycled. When it has taken from the hospital?	YES	49	47.1
		NO	55	52.9
10	Have you received instruction on the correct handling of biomedical waste?	YES	86	82.7
		NO	18	17.3

Table :4. Practice questions about biomedical waste management in Hayatabad Medical Complex MTI.

S. no	Practice Questions	Category	Freque ncy	Percentag e %
1	DO you practice according to the labeling guidelines for biomedical waste containers?	Always	77	74%
		Sometime	25	24%

		Never	02	1.9%
2	Are you wearing personal protective equipment (PPE)? when handling biological waste?	Always	66	63.5%
		Sometime	31	29.8%
		Never	07	6.7%
3	Are you using the proper color-coded containers, for the disposal of biomedical waste?	Always	87	83.7%
		Sometime	15	14.4%
		Never	02	1.9%
4	Do you washing hands immediately after removing gloves?	Always	81	77.9%
		Sometime	21	20.2%
		Never	02	1.9%
5	Do you re-cap /bend used needles?	Always	52	50%
		Sometime	24	23.1%
		Never	28	26.9%
6	Do you help new employees to learn about the management of biomedical waste?	Always	80	76.9%
		Sometime	18	17.3%
		Never	06	5.8%
7	Do you report any incidences or problems with biomedical waste managing?	Always	66	63.5%
		Sometime	32	30.8%
		Never	06	5.8%
8	Do you understand the environmental consequences of inappropriate biomedical waste disposal?	Always	73	70.2%
		Sometime	21	20.2%
		Never	10	9.6%
9	I have received training and instructions about biomedical waste management procedures.	Always	61	58.7%
		Sometime	28	26.9%

		Never	15	14.4%
10	Have you vaccinated against Hepatitis B virus?	Always	81	77.9%
		Sometime	14	13.5%
		Never	09	8.7%

Discussion.

Hospital-acquired infections are a global concern, and proper biomedical waste management is crucial in reducing risks. This study assessed the knowledge and practices of nurses at Hayatabad Medical

Complex, Peshawar. Results showed 72% had good knowledge, and 69.6% followed safe practices. These findings are consistent with other studies, though variations exist, such as Rawalpindi, where 61.39% had good knowledge and 89.69% followed good practices. There was no significant association between knowledge and factors like age, education, or experience in the current study.

Conclusion.

Based on the findings of this study, it can be concluded that nurses in the current study have good Knowledge level regarding biomedical waste management. However, in spite of having practice about biomedical waste management, their overall practice didn't reach the good level.

Limitations:

Study was conducted for very short period of time. Only one tertiary care hospital was included in the study

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