

Assessment of Biomedical Waste Management Knowledge Among First-Year Nursing Students at Sir Issac Newton College of Nursing, Pappakovil, Nagapattinam

S.Yogapriya¹, S. Diviyapriya², K. Gobika², C. Jayatamil², K. Kalaivani², S. Kaleeswari²,
N. Karthika²

¹M.sc Nursing, Medical Surgical Department, Lecturer, Sir Issac Newton college of nursing (Affiliated to Dr.MGR University), Pappakovil, Nagapattinam, Tamilnadu. Email: priyasivanandam1985@gmail.com

²B.Sc students, Sir Issac Newton Collage of Nursing, Nagapattinam, Tamilnadu

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Abstract

Diverse healthcare establishments and hospitals alongside industrial wastes combine into Bio Medical waste (BMW) categories. Various infections together with hazardous materials make up the components of this waste category. The safe management of BMW demands healthcare professionals to possess sufficient knowledge about this field. A study examined Bio Medical Waste understanding among the first year students of nursing at sir issac newton college of nursing. The current research used a descriptive design for these investigations. A simple random sampling method produced 100 participants who participated in the study. First year nursing students displayed either moderate knowledge levels or adequate knowledge levels based on the results of self-method questionnaire administration.

Keywords: Bio medical waste, Knowledge, Nursing standards.

1.Introduction

BMW refers to waste material produced through human or veterinary diagnosis or treatment or vaccination or research which contains dangerous pathogens capable of infecting medical facilities along with general population areas. Our country produces an enormous amount of Biomedical Waste (BMW) every day which includes dangerous infectious substances. Biomedical Waste management follows legal requirements and stands as a vital social duty together (1). Administrators with support from doctors while partnering with nurses and paramedical staffs need useful resources to guide their activities.

2.Methodology

Methodology consists of analyzing through systematic theoretical methods that appear in particular fields of research. applied to a field of study. A theoretical investigation examines all methods together with principles that belong to a particular field of knowledge.

Research Approach:

The research employed a Quantitative method for this investigation.

Research Design:

The researcher conducted this study through non-experimental descriptive research design. study.

Setting Of The Study:

A research was conducted in first-year Nursing students studying at Sir Issac Newton college of Nursing at Pappakovil, Nagapattinam.

Target Population:

All first year Nursing students made up the selected participant group within this research students (2).

Sample:

The student sample for this study includes all members of the Sir Issac Newton College of Nursing. Students at Sir Issac Newton College of Nursing in Pappakovil met the study requirements.

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Sampling Size:

A total of 100 students from Sir Issac Newton College of Nursing at Pappakovil, Nagapattinam made up the sample.
Girls:100

Sampling Technique:

The researchers selected students through Simple Random Technique for the sampling process.

Inclusion Criteria:

- All students enrolled in the Nursing program at Sir Issac Newton College of Nursing belong in the sample population used for this research.
- The study includes Nursing Students who both meet the criteria and have presence throughout data collection.

Exclusive Criteria:

- The research excluded Nursing Students who showed disinterest toward this particular Study.
- The study excludes Nursing Students who demonstrate unwillingness to take part in this research.
- Participation in data collection methods becomes challenging for students who do not appear for data collection sessions(3).

Description of the Data Collection Instrument:

The researcher developed an instrument called the self-inflicted questionnaire which contained two sections following research data.

- SECTION – A: Demographic data.
- SECTION – B: Self Instructed Questionnaire (Multiple choice question)

3.Results

Data Analysis and Interpretation Organisation of the Data

The collected data followed these different sections for organization.

Section A: Description of the demographic variables among First Year Nursing students(4).

Section B: The examination of First Year Nursing student understanding about Biomedical Waste Management takes place.

Section C: Association between the level of knowledge on Biomedical Waste Management among First Year Nursing students with demographic variables.

Section A

Description of the demographic variables among First Year Nursing students.

Table 1 Frequency and percentage wise distribution of demographic variables among First Year Nursing students (N-100)

SL.NO	SOCIO-DEMOGRAPHIC VARIABLES	FREQUENCY (N)	PERCENTAGE (%)
1	Age (in year)		
	17-18 years	64	64
	18-19 years	36	36
2.	Place		
	Rural	92	92
	Urban	8	8

3.	Religion		
	Hindu	90	90
	Muslim	2	2
	Christian	8	8
4.	Type of family		
	Joint family	16	16
	Nuclear Family	84	84
5.	Student Staying at		
	Hostel	20	20
	Own house	80	80
6.	Educational Qualification of father		
	Primary Education	52	52
	Secondary Education	36	36
	Graduate	4	4
	Illiterate	8	8
7.	Educational Qualification of mother		
	Primary Education	59	59
	Secondary Education	33	33
	Graduate	7	7
	Illiterate	4	4
8.	Father's occupation		
	Farmer	76	76
	Self Employed	10	10
	Government sector	5	5
	Private Concern	9	9
9.	Mother's occupation		
	Home Maker	94	94
	Self Employed	2	2
	Government sector	4	4
	Private Concern	0	0

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Section B

First-Year Nursing Students received evaluation for their knowledge about Biomedical Waste Management practices(5).

Table 2 The frequency and percentage of First year Nursing Students' knowledge about Biomedical Waste Management appear

(N=100)

LEVEL OF KNOWLEDGE	FREQUENCY (n)	PERCENTAGE (%)
Inadequate Knowledge	0	0
Moderate Knowledge	52	52
Adequate Knowledge	48	48
Mean±Standard deviation	20.31±3.61	

First Year Nursing Students showed their level of knowledge about Biomedical Waste Management through a distribution presented in Table 3.2- Frequency and Percentage. A total of 52(52%) Nursing students acquired Moderate Knowledge about Biomedical Waste Management while 48(48%) students had Adequate Knowledge regarding this subject.(6) First year Nursing Students registered (20.31±3.61) as their mean and standard deviation score regarding Bio-Medical Waste Management knowledge.

Section C:

Relationship between First Year Nursing Students' Biomedical Waste Management Knowledge and Demographic Factors(7).

Table 3 shows the relationship between demographic factors and first-year nursing students' degree of biomedical waste management expertise.

SL NO	DEMOGRAPHIC VARIABLES	LEVEL OF KNOWLEDGE				Chi-Square X ² and P- Value
		Moderately Adequate		Adequate		
		N	%	N	%	
1.	Age (in years)					X ² = 6.8 Df=1p = 0.009 *S
	17-18 years	27	51.9	37	77.1	
	18-19 years	25	48.1	11	22.9	
2.	Place					X ² = 0.38 Df=1p = 0.53 NS
	Rural	47	90.4	45	93.8	
	Urban	5	9.6	3	6.2	
3.	Religion					X ² = 2.55 Df=2p = 0.27 NS
	Hindu	49	94.2	41	85.4	
	Muslim	1	1.9	1	2.1	
	Christian	2	3.9	6	12.5	

4.	Type of Family					$X^2 = 8.4$ $Df=1p$ $= 0.004 *S$
	Joint Family	3	5.8	13	27.1	
	Nuclear Family	49	94.2	35	72.9	
5.	Student staying at					$X^2 = 0.64$ $Df=2p$ $= 0.42 NS$
	Hostel	12	23.1	8	16.7	
	Own house	40	76.9	40	83.3	
6.	Educational qualification of father					$X^2 = 3.36$ $Df=3p$ $= 0.33 NS$
	Primary Education	27	51.9	25	52.1	
	Secondary Education	16	30.8	20	41.7	
	Graduate	3	5.8	1	2.1	
	Illiterate	6	11.5	2	4.1	
7.	Educational qualification of mother					$X^2 = 4.3$ $Df=3p$ $= 0.22 NS$
	Primary Education	27	51.9	29	60.4	
	Secondary Education	18	34.6	15	31.3	
	Graduate	3	5.8	4	8.3	
	Illiterate	4	7.7	0	0	
8.	Father's Occupation					$X^2 = 3.04$ $Df=3p$ $= 0.38 NS$
	Farmer	38	73.1	38	79.2	
	Self employed	4	7.7	6	12.5	
	Government sector	4	7.7	1	2.1	
	Private concern	6	11.5	3	6.2	
9.	Mother's occupation					$X^2 = 0.88$ $Df=2p$ $= 0.64 NS$
		48	92.3			
	Self employed	1	1.9	1	2.1	
	Government sector	3	5.8	1	2.1	
	Private concern	0	0	0	0	
10.	Previous Knowledge regarding Biomedical Waste Management					$X^2 = 4.03$ $Df=1p$ $= 0.045 *S$
	Yes	40	76.9	44	91.7	
	No	12	23.1	4	8.3	
11.	Source of Knowledge regarding Biomedical Waste Management					

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	Electronic Media	9	17.3	2	4.2	X² = 10.2 Df=3p = 0.017 *S
	Health care workers	33	63.5	43	89.6	
	Publishing media	7	13.5	3	6.2	
	Relatives	3	5.7	0	0	
12.	Traning received on Biomedical Waste management					X² = 5.8 Df=1p = 0.016 *S

*-p<0.05 significant, NS-Non Significant

5.Conclusion and Future work

A research evaluation analyzed First Year Nursing Student understanding about Biomedical Waste significance and proper disposal practices. Most nursing students exhibited knowledge at the moderate level.

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Conflicts of interest

The authors have no conflicts of interest to declare

References

1. Patel R, Menon S. Awareness and practices regarding biomedical waste management among nursing students. *Journal of Nursing Practice*. 2021;10(2):45–51.
2. Chakraborty N, Ahmed T. Biomedical waste handling: A study among first-year health science students. *Indian Journal of Nursing Research*. 2022;7(1):33–40.
3. Desai M, Francis P. Knowledge and awareness of biomedical waste disposal among nursing trainees. *International Journal of Community Medicine and Public Health*. 2021;8(3):1278–1282.
4. Kumar S, Jain L. Evaluating knowledge of biomedical waste among undergraduate nursing students. *Nursing and Midwifery Journal*. 2020;16(4):212–218.
5. Nair V, D'Souza C. Knowledge and attitude on biomedical waste segregation among nursing undergraduates. *Asian Journal of Nursing Education and Research*. 2023;13(1):58–63.
6. Reddy A, Balan S. Assessment of awareness about biomedical waste rules among nursing students. *Journal of Health and Allied Sciences*. 2022;12(2):84–90.
7. Singh P, Rathore K. Nursing students' preparedness for biomedical waste management: An institutional study. *Clinical Nursing Studies*. 2021;9(1):23–28.