

Assess the Level of Knowledge on Biomedical Waste Management among IV Year B.Sc. Nursing Students

S. Poonghuzhali

Abstract

Introduction: A study to assess the level of knowledge on Biomedical waste management among IV Year B.Sc. Nursing Students, studying in College of Nursing, Madurai Medical College, Madurai. **Objectives:** To assess the level of knowledge on Biomedical waste management among IV Year B.Sc. Nursing Students, studying in College of Nursing, Madurai Medical College, Madurai. To associate the level of knowledge on Biomedical waste management among IV Year B.Sc. nursing students with their selected demographic variables. **Conceptual framework:** The conceptual framework based on Health Belief Model, this model was created by Becker. **Research approach:** Quantitative approach. **Design:** Descriptive study design was adopted. **Setting of the study:** The study was conducted College of nursing, Madurai Medical College Madurai. **Subjects:** There were 45 subjects included in the study. **Sampling technique:** Purposive sampling technique was used. **Findings:** This study revealed that there is significant association between Residence, Education of the students, Education of the father, Education of the Mother, Occupation of the father and the level of knowledge among IV Year B.Sc. nursing students regarding biomedical waste management with their selected demographic variables. **Conclusion:** The study shows that the IV Year B.Sc. nursing students had adequate knowledge regarding Bio-medical waste management.

Keywords: Biomedical Waste Management; Conceptual Framework; Nosocomial Infection.

Introduction

Let the wastes of the sick not contaminate the lives of the health.

All human activities produce waste. We all know that such waste may be dangerous and needs safe disposal. Industrial waste, sewage and agriculture waste pollute water, soil and air. It can be dangerous to human beings and environment as well. Similarly hospitals and other health care facilities generates lots of waste which can transmit infections, particularly HIV, Hepatitis B and C and tetanus, to the people who handle it or come in contact with it.

Author's Affiliations: Professor cum Principal, College of Nursing, Madurai Medical College, Madurai – 625020 (Tamilnadu)

E-mail: kuzhaliram@gmail.com

Corresponding Author: S. Poonghuzhali, Professor cum Principal, College of Nursing, Madurai Medical College, Madurai – 625020 (Tamilnadu)

E-mail: kuzhaliram@gmail.com

Health care personnel including doctors, nurses and paramedical staffs are the guardians of the community. It is the duty of the entire health care establishment to ensure speedy recovery of their patients by maintaining clean and infection free surroundings.

The quantity of biomedical waste generated will vary depending on the hospitals, colleges and practices and the type of care being provided. According to WHO, 85 per cent of the hospital waste are actually non hazardous, 10 per cent are non infectious and the remaining 5 per cent are non infectious but hazardous consisting of chemical, pharmaceutical, radioactive materials. In India 0.5-2 kg per patient per day waste is generated and the percentage of infectious waste is much higher. This is because of improper segregation methods resulting in collection of biomedical waste in a mixed form.

The Ministry of Environment & Forests notified the Biomedical (management & handling) Rules, (BMW Mgt.) in July 1998. In accordance with the rules, every hospital generating BMW needs to set up requisite BMW treatment facilities on site or ensure requisite treatment of waste at common treatment facility. No untreated BMW shall be kept stored beyond a period of 48 hours.

Nurses are the largest occupational group in any health care agency. By virtue of their jobs responsibility they are frequently exposed to biomedical waste. The nurses' risk of exposure to health hazard is quite high. It is clear that without their active participation waste management would be a dream. Nurses at the start of their profession, that is, while they are at the level of students, should be made aware of the health hazard of biomedical waste and the scientific ways of handling it. This could be done best by a structured teaching program.

Need for the Study

Biomedical waste such as pathological waste, tissues, blood and blood products, surgical dressing, disposable gloves, cotton swabs, soiled dressings from treatment area and waste from operation theaters dumped without proper safety measures, is posing a threat not only to hospital employees but also to the general public and the surrounding environment.

The survey was carried out in a 15 private hospitals of Iran in order to determine the amount of different kinds of waste product and the present situation of waste management. The results indicate that the waste generation rate is 4.45 Kg/bed/day. Segregation of the different type of waste is not carried out perfectly.

Global figures based on statistical data of environment Protection Agency of America and Japan. Ministry of Health suggested a volume of 1 to 1.5kg/day/bed biomedical waste for hospitals. However, waste produce has been quoted up to 5.24kg/day/bed in developed countries. The average quantity of hospital solid waste produced in India ranges from 1.5 to 2.2kg/day//bed.

The waste generation rate ranges between 0.5 and 2.5kg/bed. It is estimated that annually about 0.33 million tons of wastes are generated in India. The solid waste from the hospitals consists of bandages linen and other infections waste (30-35%) plastics (7.10%), disposable syringes (0.3-0.5%), glass (3.5%) and other general waste including food (40-45%). In general, the wastes are collected in a mixed form, transported and disposed along with municipal solid wastes.

The rules for management and handling biomedical wastes summarized giving the categories of different wastes, suggested storage containers including color coding and treatment options. Existing and proposed systems of health care waste management are described. A waste management plan for health care establishment is also proposed, which includes institutional arrangements,

appropriate technologies, operational plans, financial management and the drawing up of appropriate staff training programs.

Hence, there is a need to investigate the knowledge on biomedical waste management among Nursing Students.

Statement of the Problem

A study to assess the level of knowledge on Biomedical waste management among IV Year B.Sc. Nursing Students, studying in College of Nursing, Madurai Medical College, Madurai.

Objectives of the Study

1. To assess the level of knowledge on Biomedical waste management among IV Year B.Sc. nursing students, studying in College of Nursing, Madurai Medical College, Madurai.
2. To associate the level of knowledge among IV Year B.Sc. nursing students regarding biomedical wastes management with their selected demographic variables.

Hypotheses

H₁: There will be a significant association between the levels of knowledge on biomedical waste management among IV Year B.Sc. nursing students with their selected demographic variables.

Conceptual Framework

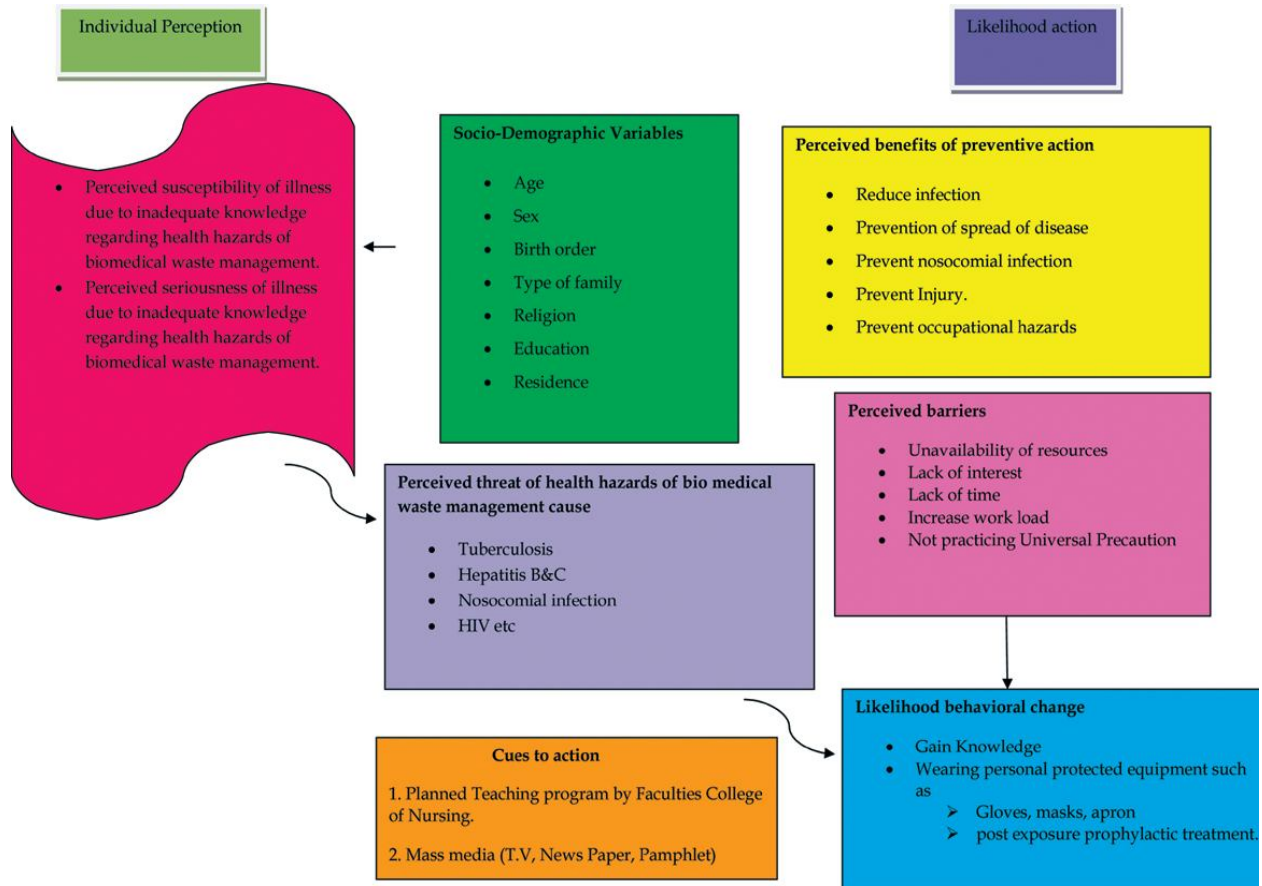
The present study is aimed at assessing the knowledge on Biomedical waste management among IV year B.Sc. nursing students in College of Nursing, Madurai Medical College Madurai. The conceptual framework selected for the study is based on the Health belief model Health awareness in modified through education as it help the individual to perceive the threat of an bio hazards practices and increased awareness towards bio-hazards practices and increased awareness towards bio hazards. This model was first developed in the early 1950 by Becker.

Research Methodology

Research Approach

A quantitative approach selected to present the study.

Conceptual Framework: Modified Health Belief Model by Becker, Drachman



Research Design

The research design selected to the present study is non-experimental descriptive study design.

Sample Size

The subject comprised of 45 IV year B.Sc. nursing students who fulfill the inclusion and exclusion criteria.

Setting of the Study

The project was conducted in the College of Nursing, Madurai Medical College, Madurai.

Sampling Technique

Subjects are selected through non-probability purposive sampling technique.

Population of the Study

The population includes IV year B.Sc. Nursing Students.

Criteria for Subject Selection

Inclusion Criteria

1. Students who were studying IV year B.Sc. nursing.
2. Students who were willing to participate in the study.

Target Population

IV year B.Sc. Nursing Students in College of Nursing.

Exclusion Criteria

1. Students who were studying I year, II year, III year.

Accessible Population

IV year B.Sc. nursing students in College of Nursing, Madurai Medical College, Madurai.

2. Students those who are not available at the time of data collection.

Data Collection Method

Self-administered -structured questionnaire method.

Description of Tool

The tool consists of two sections:

Section-A: Socio-Demographic data includes Age, Sex, Religion, Residence, Type of Family, Birth order, Education of the Students, Education of the Father, Education of the Mother, Occupation of the Father,

and Occupation of the Mother.

Section-B: Assessing the knowledge of Biomedical waste Management. It consists of 30 items. Questions were selected based on knowledge information. For this study each correct answer were given maximum of 1 mark and for wrong answer 0 mark. Thus, the total maximum score possible is 30 and the minimum is 0. The questions are objective type. It contains multiple choice questions.

Scoring Method

20-30	Adequate
10-19	Moderate
<10	Inadequate

Table 1: Frequency and percentage distribution of demographic variable

n = 45

S. No.	Socio-Demographic Variable	Description	f	%
1.	Age	18-20	36	80%
		21-22	6	13%
		Above 22	3	7%
2.	Sex	Male	4	9%
		Female	41	91%
3.	Religion	Hindu	34	75%
		Muslim	4	9%
		Christian	7	16%
		Others	0	0%
4.	Residence	Rural	30	67%
		Urban	8	17%
		Sub Urban	7	16%
5.	Type of family	Nuclear	30	67%
		Joint	9	20%
		Extended	6	13%
6.	Birth order	First	28	62%
		Second	10	22%
		Third	7	16%
7.	Education of the student	H. Secondary	40	88%
		Degree	5	12%
		Professional	0	0%
8.	Education of Father	Primary	25	55%
		Secondary	15	35%
		H. Secondary	2	4%
		Graduate	3	6%
9.	Education of Mother	Primary	34	75%
		Secondary	4	9%
		H. Secondary	7	16%
		Graduate	0	0%
10.	Occupation of Father	Professional	9	20%
		Government employee	4	9%
		Business owner	2	4%
		Farmer	30	67%
11.	Occupation of Mother	Sedentary worker	30	67%
		Moderate worker	9	20%
		Heavy worker	6	13%

Table 2: Frequency and percentage distribution of Knowledge level

S. No.	Level of Knowledge	F	(%)
1.	Adequate	30	66%
2.	Moderately Adequate	15	34%
3.	Inadequate	0	0%

The above table shows that the knowledge level among 45 samples of IV year B.Sc. (N) students majority of subjects, 30 subjects were about 66% have adequate knowledge regarding Biomedical Waste

Management, 15 subjects about 34% have moderate knowledge regarding Biomedical Waste Management, there is no inadequate knowledge regarding Biomedical Waste Management.

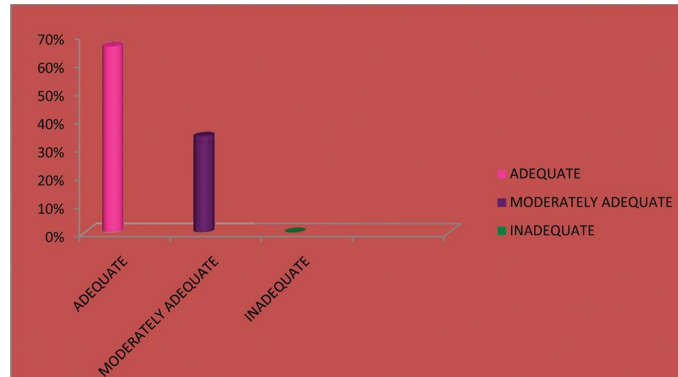


Fig.1: Distribution of knowledge level

Fig. 1 shows that the knowledge level among 45 samples of IV year B.Sc. (N) students majority of subjects, 30 subjects were about 66% have adequate knowledge regarding Biomedical Waste

Management, 15 subjects about 34% have Moderate Knowledge regarding Biomedical Waste Management, there is no Inadequate Knowledge regarding Biomedical Waste Management.

Table 3: Frequency and percentage distribution of Association of knowledge level with demographic variables

S. No.	Demographic variables	Level of knowledge						χ^2	t value
		Adequate		Moderate		Inadequate			
		f	%	f	%	f	%		
1.	Age								
	(a) 18-20 years	6	20%	7	24%	0	0	2.5123	9.49
	(b) 20-22 years	9	30%	6	20%	0	0		
	(c) Above 22 years	0	0	4	6%	0	0		
2.	Sex								
	(a) Male	2	4%	2	4%	0	0	2.9023	5.99
	(b) Female	25	56%	16	36%	0	0		
3.	Religion								
	(a) Hindu	23	52%	7	16%	0	0	3.3081	9.49
	(a) Christian	5	12%	3	7%	0	0		
	(c) Muslim	3	6%	3	7%	0	0		
	(d) Others								
4.	Residence								
	(a) Rural	26	41%	8	28%	0	0	18.062	16.92*
	(b) Urban	5	12%	5	16%	0	0		
	(c) Suburban	1	3%	0	0	0	0		
5.	Type of Family								
	(a) Nuclear	1	3%	9	30%	0	0		
	(b) Joint	24	37%	4	14%	0	0	3.4067	9.49
	(c) Extended	4	6%	3	10%	0	0		
6.	Birth order								
	(a) First	25	40%	4	14%	0	0	3.2643	9.49
	(b) Second	6	13%	9	30%	0	0		
	(c) Third	0	0	1	3%	0	0		
7.	Education of the Students								
	(a) H. Secondary	24	37%	4	14%	0	0	13.79	9.49*
	(b) Degree	6	13	9	30%	0	0		
	(c) Professional	1	3%	1	3%	0	0		
8.	Education of father								
	(a) Primary	24	36%	9	30%	0	0		
	(b) Secondary	1	3%	3	10%	0	0	10.24	9.49*
	(c) H. Secondary	0	0	3	10%	0	0		
	(d) Graduate	4	9%	1	2%	0	0		
9.	Education of Mother								
	(a) Primary	24	36%	9	30%	0	0	12.52	9.49*
	(b) Secondary	1	3%	3	10%	0	0		
	(c) H. Secondary	1	2%	3	10%	0	0		

	(d) Graduate	0	0	4	9%	0	0		
10.	Occupation of Father								
	(a) Professional	3	10%	5	17%	0	0		
	(b) Government employee	1	3%	8	19%	0	0	10.24	9.49*
	(c) Business owner	1	3%	1	3%	0	0		
	(d) Farmer	12	20%	14	25%	0	0		
11.	Occupation of mother								
	(a) Sedentary worker	1	3%	9	30%	0	0		
	(b) Moderate worker	24	37%	4	14%	0	0	3.4067	9.49
	(c) Heavy worker	4	6%	3	10%	0	0		

There is a significant association between Residence, Education of the students, Education of the father, Education of the Mother, Occupation of the father.

Discussion

The discussion deals with sample characteristic and objectives of the study. The aim of this present study was to assess the knowledge regarding biomedical waste management among IV year B.Sc. nursing students, College of Nursing, Madurai Medical College Madurai.

Totally 45 subjects were included in the study. Prior permission obtained and data were collected. Section-I deals with the demographic data assessment and Section-II deals with the Structured Questionnaire to assess the knowledge on Biomedical Waste Management among IV year B.Sc. nursing students, College of Nursing, Madurai Medical College Madurai. 10 Questions in Demographic Section and 30 Questions in Knowledge assessment question.

The Collected Data was analyzed by using descriptive and inferential statistics. The analysis of the collected data brought out many interesting and useful aspects, which were discussed below. The study findings are discussed with objectives and hypotheses.

Discussion Related to Demographic Variables

The above tables shows that, majority of the students 36 (80%) were belongs to the age group between 18-20 years, 6 (13%) were in the age group of 20-22 years and 3(7%) were belong to the age group above 22 years.

According to their sex, the majority 40 (91%) were females and 4 (9%) were males.

According to their Religion, majority of the students 34 (75%) were Hindu, 4 (9%) were Muslim and 7(16%) were Christian.

According to their Residence, majority 30 (67%) were from Rural, 8(17%) from Urban and 7(16%) from Sub-urban.

With respect to type of family, majority 30 (67%) were from nuclear family and 9(20%) were from joint family, (13%) were from Extended family.

According to Birth order, majority 28(62%) born first, 10 (22%) born second and 7 (16%) born third.

Considering the Educational status, majority of the students 40(88%) have studied up to Higher secondary, 5 (12%) have studied up to Degree, none of them were professionals.

According to the Education of the father, majority 25 (55%) have studied up to primary, 15(35%) have studied up to secondary, 2(4%) have studied up to Higher secondary, 3(6%) have studied up to graduate.

In Education of the Mother, majority 34 (75%) have studied up to primary, 4(19%) have studied up to secondary, 7(16%) have studied up to Higher secondary, and none of them were graduate.

Regarding Occupation of the Father, majority 30 (67%) were farmers. 9 (20%) were professionals, 4 (9%) were government employees and 2 (4%) were business owners.

Considering the Occupation of Mother, majority 30 (67%) were sedentary worker, 9 (20%) were moderate worker, 6 (13%) were heavy workers.

The first objective was to assess the level of knowledge regarding biomedical waste management among IV Year B.Sc. nursing students, studying in College of Nursing, Madurai Medical College, Madurai.

The knowledge of Biomedical waste Management among IV year B.Sc. (N) students at College of Nursing, Madurai Medical College, Madurai, shows that out of 45 subjects, 30 subjects were about 66% have adequate Knowledge regarding Biomedical Waste Management, 15 subjects about 34% have Moderate Knowledge regarding Biomedical Waste Management, there is no Inadequate Knowledge regarding Biomedical Waste Management.

The second objective was to associate the level of knowledge among IV Year B.Sc. nursing students regarding biomedical waste management with their selected demographic variables.

According to the Age, χ^2 value is 2.51. The table value is 9.49. So null hypothesis is accepted. There is no significance between age and level of knowledge.

Here, χ^2 value is 2.90. The table value is 5.99. So null hypothesis is accepted. There is no significance between sex and level of knowledge.

With their respect to the Religion, χ^2 value is 3.30. The table value is 9.49. So null hypothesis is accepted. There is no significance between Religion and level of knowledge.

According to the Residence, χ^2 value is 18.06. The table value is 16.92. So null hypothesis is rejected. There is significance between Residence and level of knowledge.

Here, χ^2 value is 3.40. The table value is 9.49. So null hypotheses is accepted. There is no significance between Type of Family and level of knowledge.

With their respect to the Birth order, χ^2 value is 3.26. The table value is 9.49. So null hypotheses is accepted. There is no significance between Birth order and level of knowledge.

According to the Education of the Students, χ^2 value is 13.79. The table value is 16.92. So null hypotheses is rejected. There is significance between Education of the Students and level of knowledge.

Here, χ^2 value is 10.24. The table value is 9.49. So null hypotheses is rejected. There is significance between Education of the Father and level of knowledge.

With respect to their, Education of the Mother, χ^2 value is 12.52. The table value is 9.49. So null hypotheses is rejected. There is significance between Education of the Mother and level of knowledge.

According to the Occupation of Father, χ^2 value is 10.24. The table value is 9.49. So null hypotheses is rejected. There is significance between Occupation of Father and level of knowledge.

Among the Occupation of Mother, χ^2 value is 3.40. The table value is 9.49. So null hypotheses is accepted. There is no significance between Occupation of Mother and level of knowledge.

Findings of the Study

Part A

Findings related to assessment of the level of knowledge on Biomedical Waste Management among IV Year B. Sc. Nursing Students, studying in College of Nursing, Madurai Medical College, Madurai.

The knowledge of Bio-Medical waste Management among IV year B.Sc. (N) students at College of Nursing, Madurai Medical College, Madurai, shows that out of 45 subjects, 30 subjects were about 66% have adequate Knowledge regarding Biomedical Waste Management, 15 subjects about 34% have Moderate Knowledge regarding Biomedical Waste Management, there is no Inadequate Knowledge regarding Biomedical Waste Management.

Part B

Findings related to associate the level of knowledge on Biomedical Waste Management among IV Year B. Sc. Nursing Students with their selected demographic variables.

According to the Age, χ^2 value is 2.51. The table value is 9.49. So null hypotheses is accepted. There is no significance between age and level of knowledge.

Here, χ^2 value is 2.90. The table value is 5.99. So null hypotheses is accepted. There is no significance between sex and level of knowledge.

With their respect to the Religion, χ^2 value is 3.30. The table value is 9.49. So null hypothesis is accepted. There is no significance between Religion and level of knowledge.

According to the Residence, χ^2 value is 18.06. The table value is 16.92. So null hypothesis is rejected. There is significance between Residence and level of knowledge.

Here, χ^2 value is 3.40. The table value is 9.49. So null hypothesis is accepted. There is no significance between Type of Family and level of knowledge.

With their respect to the Birth order, χ^2 value is 3.26. The table value is 9.49. So null hypothesis is accepted. There is no significance between Birth order and level of knowledge.

According to the Education of the Students, χ^2 value is 13.79. The table value is 16.92. So null hypothesis is rejected. There is significance between Education of the Students and level of knowledge.

Here, χ^2 value is 10.24. The table value is 9.49. So null hypothesis is rejected. There is significance between Education of the Father and level of knowledge.

With respect to their, Education of the Mother, χ^2 value is 12.52. The table value is 9.49. So null hypothesis is rejected. There is significance between Education of the Mother and level of knowledge.

According to the Occupation of Father, χ^2 value is 10.24. The table value is 9.49. So null hypothesis is

rejected. There is significance between Occupation of Father and level of knowledge.

Among the Occupation of Mother, χ^2 value is 3.40. The table value is 9.49. So null hypothesis is accepted. There is no significance between Occupation of Mother and level of knowledge.

Conclusion

On the basis of findings of the study below set conclusions were drawn. It also brings about the limitations of study into practice. The implications are given on the various aspects like Nursing Education, Nursing Practice, Nursing Administration and it also gives insight into the future studies.

Implications of the Study

The findings of the study can be used in the following areas of profession.

Nursing Practice

All the nurses, nursing students and all health care providers have a vital role to play in effective infection control, proper disposal and segregation of biomedical waste requires adequate knowledge on various type of biomedical waste.

Nursing Education

Biomedical waste management should be included in the nursing curriculum and must be taught about awareness of biomedical waste management, segregation, storage disposal of biomedical waste in that education period, as they are the first line person who play a vital role in awareness of biomedical waste.

Nursing Administration

Nursing administrations should take part in the Health Policy Making, developing protocols sending orders related to designing the health education program and strategies on bio medical waste management. The nurse administrators need to plan, organize and conduct health awareness program, by considering cost effectiveness and carry out successful education program.

The nurse administrator should explore their potential and encourage innovative ideas in preparation of appropriate teaching materials and usage of manpower.

Nursing Research

Further research based on this study can be performed with a larger population to assess the effectiveness of various information related to biomedical waste management.

Recommendations

- Similar study on a larger sample can be done.
- Similar study can be done in different setting.
- More demographic variables can be included.

Limitation

Better generalizations would have been possible if larger and equal number of samples were selected.

- Better generalizations would have been possible if the study assesses both knowledge and practice.

References

Books

1. Alexander. F. Margaret et al. *Nursing Practice – Hospital and Home*, Newyork, Churchill Livingstone, 1994.
2. Black. M. Joyce, *Medical Surgical Nursing – Clinical Management for Continuity Care*, Philadelphia, W. B Saunders Company, 1997.
3. Braunward, Issel, *Principles of Internal Medicine*, Newyork, Mcgrawwill Book Company, 1987.
4. Ducas, Beverly Witter et al, *Introduction To Patient Care- A Comprehensive Approach to Nursing*, Philadelphia, W. B Saunders Company, 2001.
5. Ellis. R. Jannie & Nowlis, *Nursing Human Needs Approach*, Philadelphia, Lippincott Company Publishers, 2004.
6. Hinchliff, Norman Susan et al, *Nursing Practice and Health Care- A Foundation Text*, London, Arnold publisher, 1998.
7. Philips. J.Wilma et al, *Medical Surgical Nursing- Concepts and Clinical Practice*, Newyork, Mosby publications, 1995.
8. Smelter C. Suzanne et al, *Textbook of Medical Surgical Nursing*, Philadelphia, Lippincott Company publishers, 1995.
9. Potter A. Patrica, *Basic Nursing Essential for Practice*, Newyork, Mosby publications, 2003.
10. World health organization, *A Manual on Infection Control in Health Facilities*, New Delhi, SEARCO Regional Health Papers, 1998.

Journals

1. Amar Subburaj, Quantum of Hospital Waste Indian

- Journal of Hospital Management, 2004; 17(10): 8-12. American Journal of Nursing, 2002; 102(8): 230.
2. Ashlesta, Subdividing Hazards Health Action, 2004; 17(10): 10.
 3. Boat Right Daniel, Biomedical Waste Survey Journal of Environmental Health, 1995; 10(4): 44-46.
 4. Cheirimson Paul, Medical Waste Management, Pollution Engineering, 2000; 8(4): 18-19.
 5. Danus Jacobs, Pollution Control, Page Tools, 2004; 6(900): 48-52.
 6. Hunter Amita, Nurse Practitioner, The American Journal of Primary Health Care, 2006; 32(2): 197.
 7. Needle Man, Efficient Nurses Better Prevention, The

Electronic Media Reference

1. <http://www.Seattle-bmw.com>
2. <http://www.e.source.com>
3. <http://www.california.stateuniv.co.uni>
4. <http://www.maine.gov.com>
5. <http://www.uniottawa.co.uni>
6. <http://www.onlinetool.com>
7. <http://www.pagetool-journal.co.uk>

Indian Journal of Trauma and Emergency Pediatrics

Handsome offer for subscribers!!

Subscribe **Indian Journal of Trauma and Emergency Pediatrics** and get any one book or both books absolutely free worth Rs.400/-.

Offer and Subscription detail

Individual Subscriber

One year: Rs.7650/- (select any one book to receive absolutely free)

Life membership (valid for 10 years): Rs.76500/- (get both books absolutely free)

Books free for Subscribers of **Indian Journal of Trauma and Emergency Pediatrics**. Please select as per your interest. So, don't wait and order it now.

Please note the offer is valid till stock last.

CHILD INTELLIGENCE

By Dr. Rajesh Shukla

ISBN: 81-901846-1-X, Pb, vi+141 Pages

Rs.150/-, US\$50/-

Published by **World Information Syndicate**

PEDIATRICS COMPANION

By Dr. Rajesh Shukla

ISBN: 81-901846-0-1, Hb, VIII+392 Pages

Rs.250/-, US\$50

Published by **World Information Syndicate**

Order from

Red Flower Publication Pvt. Ltd.

48/41-42, DSIDC, Pocket-II, Mayur Vihar, Phase-I

Delhi - 110 091 (India)

Tel: 91-11-22754205, 45796900, Fax: 91-11-22754205

E-mail: redflowerpppl@gmail.com, redflowerpppl@vsnl.net

Website: www.rfpppl.co.in