Research Article

Knowledge of staff nurses regarding biomedical waste management

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Abstract

Biomedical waste is a special category of waste, which needs to be handled appropriately with precautions because it carries a higher potential for infection and injury than any other type of waste. Currently it is being managed casually. The aim of the study were to study the type and quantity of Biomedical waste generated, present study is to assess knowledge regarding biomedical waste management and to find out its association with selected demographic variables. An exploratory study is done with 300 samples of staff nurses working in selected hospitals. The result of shows that 73% of sample has good knowledge regarding biomedical waste management i.e. they had a score ranging from 25-30. It also shows that 22% of the sample has average knowledge regarding biomedical waste management i.e. they has a score ranging from 13-24. It also shows that 4% of the sample has poor knowledge regarding biomedical waste management i.e. they has a score ranging from 0-12.

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Introduction

An old saying says "cleanliness is next to godliness". The essence of this was aptly captured by the Dravidians who in 5000BC gave due emphasis to immaculate town planning and safe and effective sewerage systems which got rid of all solid and liquid wastes generated by the population. They were indeed the pioneers as far as scientific waste management is concerned; which is borne out from the excavation of Mohen-jo-Daro and Harappa. As a matter of fact, all ancient civilizations took special care of cleanliness and hygiene, so as to remain free from disease [1].

As the number of hospitals went up, it gradually increased the problem of safe handling and disposal of hospital wastes. In a workshop (where was this workshop held)held in may 1997, most of the representatives of various hospital failed to appreciate their responsibility to implement the steps of waste management [2,3]. It was noted that in most of the health facilities, waste management is a non-existent problem, with no one responsible for the same and "buck passing" is the commonest excuse advanced by them.[4]

The amount of solid waste generated by hospitals has been increasing rapidly and now range from 2-5 kg / bed / day in developed economies and 0.5-0.2 kg / bed / day in developing economies [5].

2. Need of the study

A Modern hospital is a complex multidisciplinary system, which consumes thousands of items for delivery of medical care to the community and is a part of physical environment. All the products consumed in a hospital leave some unusable left over, i.e. biomedical waste.

Biomedical waste is a special category of waste, which needs to be handled appropriately with precautions because it carries a higher potential for infection and

injury than any other type of waste. Currently it is being managed casually [6].

Increased amount of bio-medical garbage has become a threat to the environment. The alarming growth of such garbage is truly forcing the world to think of it. The garbage is bio-medical wastage is increasing rapidly day by day due to improvement in numbers of health centers and hospitals in the country [7].

According to WHO (2000), almost 80% of health care waste is comparable to domestic waste, the remaining approximately 20% is considered hazardous, as it may be infectious, toxic and/or radioactive. Improper disposal of waste generated in health care establishments can have direct and indirect health impacts on those who work in the health care establishment, the general public and on the environment. Such practices may contribute to the spread of diseases, as well as pollution of water, soil and air. Untreated infectious wastes dumped on the land can contaminate surface and ground water supplies and even incomplete combustion of health care waste can lead to toxic emissions, thus exposing the entire population to the risk of diseases [8].

Estimate quantities of medical waste generated in some countries for example in Belgium 13700 tones/year. Infectious medical waste produced in total waste. 11,00,000 tones/year (14 kg/inh/year IMW). In China 8,75,000 IMW (tones / year / 70 kg / bed / day). France 10,5000 IMW (tones / year). 1.9 kg inh / year. In Japan 42000 IMW (tones / year) 0.8 kg/day/bed IMW [7].

Keeping in view inappropriate Bio-Medical waste management, the Ministry of Environment and Forests notified the "Bio-Medical Waste (management and handling) Rules, 1998" in July 1998. In accordance with these Rules (Rule 4), it is the duty of every "occupier" i.e. a person who has the control over the institution and or its premises, to take all steps to ensure that waste generated is handled without any adverse effect to human health and environment.10

Objectives:

1. To assess the knowledge of staff nurses regarding biomedical waste management.

2. To correlate knowledge with the selected Demographic Variables.

Research methodology

Research design: A exploratory Study was conducted with sample of staff nurses, the sample size was 300for the present study and non-probability convenient sampling technique was used to select the sample.

Data collection technique and too:

Data-collection techniques allow us to systematically collect information about our objects of study (people, objects, phenomena) and about the settings in which they occur.

The present study aimed to assessing the knowledge on Bio Medical Waste Management in terms of knowledge of staff nurses of selected hospitals of Pune City. Thus, a structured questionnaire was prepared and used for data collection.

Analysis and interpretation of data:

The collected data is tabulated, analyzed, organized, interpreted and presented using descriptive and inferential statistics. This represents the knowledge score of staff nurses regarding bio medical Waste Management and the correlation between knowledge and the selected demographic variables. The findings are presented under the following headings:

Section I: Demographic data of the samples

The data shows that 84% of the participants are female and 50 % of samples belong to the age group of 20-25 yrs. 50% are having 2-4 years of clinical experience & 60% are having educational qualification of ANM and 77% did not attend any in service Programme.

Frequency and percentage distribution of samples characteristics:

A) Age

From all sample shows 50% of samples belong to 20-25 yrs of age group, 20% of samples belong to 25-30 yrs of age group,9% of samples belong to 30-35 yrs of age group and 14 % of samples belong to above 40 yrs of age groups.

B) Gender

From all samples 84% of samples are Female and 16% are Male.

C) Professional qualification

From all samples 63% of samples have ANM qualification, 35% has GNM qualification and 2% has BSc N Qualification.

B) Experience in years

From all samples 51% of samples have 2-4 yrs of experience, 25% has 4-6 yrs of experience, 3% has 6-8 yrs of experience and 21% of samples have above 8 yrs of experience.

Section II: The knowledge scores of staff nurses regarding biomedical waste management

Table-1: The level of knowledge of nurses regarding biomedical waste management

Knowledge score	Frequency	Percentage
0-12	12	4
13-24	68	22.66667
25-30	220	73.33333
Total	300	100

Score key: 0-12-Poor; 13-24-Average; 25-30- Good

1. Association Of knowledge with age: The association of knowledge regarding biomedical waste management in nurses with their age using chi-square test and the "p" value (0.265) which is greater than 0.05, i.e. there is no association between the two variables. This reveals that there is no change in the level of knowledge in the nurses regarding biomedical waste management as their age increases.
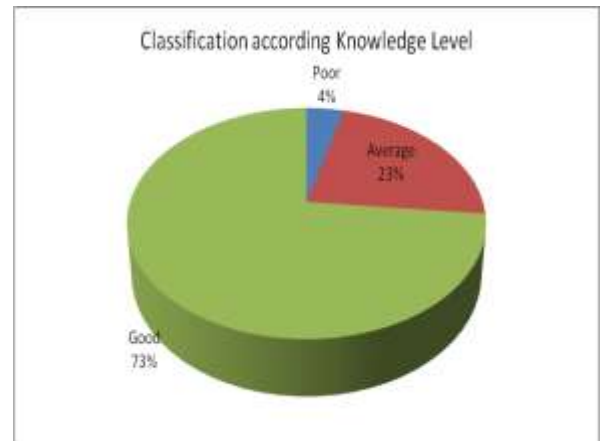

Figure I: Pie diagram showing classification according to Knowledge

Section III: correlation of knowledge score with selected demographic variables.

2. Association Of knowledge with Professional qualification

The association of knowledge regarding biomedical waste management in nurses with their professional qualification using chi-square test and the "p" value (0.89) which is greater than 0.05, i.e. there is no association between the knowledge and professional qualification of the nurses. This depicts that there is no change in the level of knowledge in the nurses regarding biomedical waste management with their professional qualification.

3. Association Of knowledge with experience

The association of knowledge regarding biomedical waste management in nurses with their experience of service in months using chi-square test and the "p" value (0.645) which is greater than 0.05, i.e. there is no association between the knowledge and their experience of service in months. This depicts that there is no change in the level of knowledge in the nurses regarding biomedical waste management as their experience of service in months increase.

After the detailed analysis, this study leads to the following conclusion:

That staff nurses have good knowledge regarding the biomedical waste management but still require further education & information because all of them need to enhance their knowledge. As newer technologies are coming up in the field of hospital waste management nurse's being

the backbone of running this industry of   also the health team members lie, therefore

Table 2 - Frequency and distribution of demographic data and knowledge score

Sr No	Sample Characteristics	Poor0-12	Average 12-24	Good24-30	Chi-square cal	P Value
1	Age in years 1. 20-25 yrs 2. 25-30 yrs 3. 30-35 yrs 4. 35-40 yrs 5. Above 40 yrs	07 04 01 00 00	33 15 05 06 09	110 31 23 14 32	5.23	0.265
2	Gender 1.Male 2.Female	01 11	15 53	31 189	3.005	0.223
3	Professional qualification 1.ANM 2.GNM 3. BSC (N). 4. PBBSC (N).	09 03 00 00	42 25 01 00	137 78 05 00	1.126	0.89
4	Experience in years 1. 2-4 yrs 2. 4-6 yrs 3. 6-8 yrs 4. Above 8 yrs	05 05 01 01	26 24 02 16	77 88 08 47	2.496	0.645
5	In service education 1.yes 2.No	03 09	13 55	52 168	0.664	0.725

health care she needs to upgrade her professional knowledge. It is in her hands that the health of not only the patients but having 100% knowledge in biomedical waste management is essential.

Discussion

The findings of this study have been discussed with reference to the objectives. The nurses' knowledge regarding Bio Medical Waste management shows that they have good knowledge about in some area of Bio Medical waste management. But still need for imparting necessary education and information regarding Bio Medical Waste Management on some aspect. A medical journals armed force India shows that Out of 500 study subjects, 201 (40.2%) were males and 299 (59.8%) were females; 237 (47.4%) were nurses, 132 (26.4%) were lab technicians and 131 (26.2%) were housekeeping staff. Totally 266 (53.2%) study subjects knew about BMW correctly, of which 138 (51.8%) were nurses, 114 (42.85%) were technicians and 14 (5.26%) were housekeepers. Only 8 (1.6%) study subjects knew about categories of BMW of which 5 (62.5%) were technicians [2]. Total 353 (70.6%) study subjects were having idea about segregation of BMW. Only 72 (14.4%) subjects had knowledge about various methods of disposal of BMW. Majority of the study subjects i.e. 479 (95.8%) had knowledge about various health problems caused by BMW, of which 234 (48.8%) were nurses [2].

In this study maximum 84% of the nurses are females & 16% are males. The 51 % of have experience 24-48 months majority of 63 % are having ANM qualification and 77% have not taken in service education.

Conclusions

After the detailed analysis, this study leads to the following conclusion: The data shows that the nurses' knowledge was good in relation to biomedical waste management. This data shows that73% of sample has good knowledge regarding biomedical waste management i.e. they had a score ranging from 25-30.It also shows that 22% of the sample has average knowledge regarding biomedical waste management i.e. they has a score ranging from 13-24. It also shows that 4% of the sample has poor knowledge regarding biomedical waste management i.e. they has a score ranging from 0-12.

That staff nurses did not have 100% knowledge regarding biomedical waste management. They require further education & information as in-service education to enhance their knowledge about biomedical waste management. Demographic variables do not show a major role in knowledge score.

Implications

The present study was undertaken to assess the knowledge of staff nurses regarding bio medical waste management. The findings of this study have implications for nursing practice, nursing administration, nursing education and nursing research.

Nursing practice

Nurses working in different hospitals and community setting can be benefited from such researches,
A-It will help to improve their knowledge regarding different categories and color coding for proper disposal and collection of biomedical waste.
B-IT will provide more insight regarding the prevention of occupational hazards, nosocomial infection, and blunt injuries needle stick injuries.
C-It will make aware the workers from Bio – Medical waste management and handling rules.

Through health education and counseling Nurses may be able to assume responsibility & accountability for their patients & eventually help to their practice.

Nursing administration

Nursing administrator play vital role in bio medical waste management so such researches will benefit them through their findings

A-The nursing administrator may use the in service Programme improve their knowledge regarding biomedical waste management.

B-The nurse administrator can enhance the knowledge of students and staff nurses.

C-The nurse administrator can facilitate monitoring Performa for biomedical waste management.

D- The findings of the study should be used for making health policies and awareness program and serve as a basis of in-service education program. This will ensure better professional standards of nursing.\

Nursing education

These types of researches will facilitate better learning opportunity for nurse educator and enhance in student interest and learning regarding bio medical waste management.

A-It Will Facilitate Health care personal to update their knowledge periodically.

B-The educators need to remember that more emphasis is to be given about current research finding when educating the student about biomedical waste management.

Now a day much importance is given to awareness and promotion of health than the curative aspects. As the needs of society are continuously changing newer components must be incorporated in the nursing curriculum. Nursing education must emphasize on preventive aspects. This will enhance the Professional standards of nursing care & education.

Nursing research

Nursing research is a wide area of implication for any research this study is undertaken for assessing only the knowledge aspect of staff nurses regarding biomedical waste management. It may undertake for practice skills and attitude towards biomedical waste management.

A-A comparative study also can be done among various health personals.

There is a need for extended and intensive nursing research in the area of biomedical waste management. Especially in India where till now the nurses were sidelined because they were not accepting professional responsibility of the client under their care. Extensive research is needed in this area so that nurse can more aware regarding biomedical waste management & contribute to hospital waste management.

Recommendations

- A similar study can be done on a larger sample.
- A study may be conducted to evaluate the effectiveness of planned health teaching on same study.
- A similar study can be done in more depth or all component of biomedical waste management.
- A similar study can be replicated in different setting to strengthen the findings.
- A study can be done on knowledge and practice related to Bio –Medical Waste Management among para medical staff.
- A study can be done on knowledge, practice & attitude related to Bio –Medical Waste Management among staff Nurses.
- A study can be done on knowledge, practice & attitude related to Bio –Medical Waste Management among student Nurses.

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