



Anesthesiology

KNOWLEDGE, ATTITUDE AND PRACTICE OF BIOMEDICAL WASTE MANAGEMENT AMONG CRITICAL CARE NURSES IN RURAL TERTIARY CARE HOSPITAL

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ABSTRACT

Human excreta and the wastes produced in the hospital are dangerous. This requires a proper technique for disposal. Wastes which are not disposed of in a safely can pollute the surrounding environment. The Ministry of Environment and Forest (MOEF) regarding biomedical waste rules in 1998 issued guidelines to all medical centre and institute to ensure safety measure in managing biomedical waste produced. A regular assessment and updating of rules and regulation of biomedical waste disposal as per the government body is ideal. Thus we studied the knowledge, attitude and practice of biomedical waste management among critical care nurses in rural tertiary care hospital. **Materials And Methods:** After obtaining institutional ethical clearance a set of questions were circulated among critical care nurses who were willing to be the part of study. **Results:** A total of 77 critical care nurses out of 80 agreed to be the part of the study. Most of the nurses i.e, 52 (67.5%) nurses are having Revised General Nursing and Midwifery (RGNM) degree. All participants in the study agreed that they know the guidelines of biomedical waste management. 68 (88.3%) nurses feel that the hospital where the study is conducted sends the biomedical waste to some other center. 73 (94.8%) critical care nurses feel closed mouth dustbin should be preferred in hospitals. When the knowledge is tested, 54 (70.1%) nurses feel amputated lower limb should be discarded in yellow colored dustbin, 74 (96.1%) feel the used intravenous set should be discarded in red dustbin and 74 (96.1%) nurses feel blood soaked gauge should be discarded in yellow colored dustbin. 64 (83.1%) nurses feel the biomedical waste management should be taught on regular basis and 67 (87%) nurses are interested to undergo re training of biomedical waste management. 32(41.6%) nurses update their knowledge by reading books. **Conclusion:** The managing biomedical waste is an important aspect in the hospital and cannot be neglected. A periodic check should be made among critical care nurse to improve the knowledge, awareness and attitude.

KEYWORDS : biomedical waste, critical care, management, knowledge, attitude, nursing staff.

INTRODUCTION:

Biomedical waste management is one of the key techniques in any hospital.^[1] Though it is simple to discard the waste a proper and scientific technique should be adopted to prevent complications related to waste disposal.^[2] Regularly the government of India kept upgrading the rules for waste disposal in India.^[3] It is important to note that, as a healthcare worker be it nurse or a doctor the biomedical waste management is very important.^[4] The sanitary staffs of the hospital are the one who will get exposed to biomedical waste at higher level. The nurses are the one who deal with proper disposal of the biomedical waste when compared to the doctors.^[5] Among the nurses the highest amount of biomedical waste is handled is by critical care nurses. Certain admissions, especially in emergency situation the management of patient is challenging as the infective status of the patient is not at all studied or tested.^[6] Thus we conducted a study to assess the knowledge, attitude and awareness of biomedical waste management among the critical care nurses.

MATERIALS AND METHODS:

This is a descriptive cross sectional study done at rural tertiary care hospital after the approval from the ethical clearance. A set questionnaire (as in Table 1) was circulated among the critical care nurses who were willing to be the part of the study. The questionnaire was cross examined by 2 independent experts of other university. A total time of 15 minutes were given to each candidate to fill the form. Sample size: A total of 80 nurses are working in the critical care and 70 agreed to be the part of the study.

Table 1: Questioner

Demographic information
Age:
Sex:
Which degree you have?
<ul style="list-style-type: none"> • BSc • MSc • P B BSc • R G N M
Since how long you are working in critical care unit?
<ul style="list-style-type: none"> • <1 month • 1- 3 months

<ul style="list-style-type: none"> • 3 months to 1 year • 1 year to 3 years
In which critical care unit you are practicing?
<ul style="list-style-type: none"> • Surgical • Medical • Cardiac • Respiratory
Questions to assess the knowledge of biomedical waste management.
Is biomedical waste management a part of your syllabus in nursing?
<ul style="list-style-type: none"> • Yes • No • I do not remember
Have you undergone any training for biomedical waste disposal before joining critical care unit?
<ul style="list-style-type: none"> • Yes • No • I do not remember
Are you aware of biomedical waste management?
<ul style="list-style-type: none"> • Yes • No
Choose the answer in our hospital
<ul style="list-style-type: none"> • We collect biomedical waste and burn • We collect biomedical waste and send it to some other center for disposal • I don't know
Questions to assess the practice of biomedical waste management.
The amputated lower limb should be discarded in?
<ul style="list-style-type: none"> • Red • Yellow • Blue • Black • White • I don't know
Which is better?
<ul style="list-style-type: none"> • Closed mouth dustbin • Open mouth dustbin • Doesn't make difference

Used intravenous set should be discarded in	<ul style="list-style-type: none"> • Red container • Yellow container • Green container • I don't know
After the procedure doctor discard the gloves in dustbin?	<ul style="list-style-type: none"> • Yes • No • Some people dispose and some do not
Blood soaked gauge should be discarded in	<ul style="list-style-type: none"> • Red container • Yellow container • Green container • I don't know
Questions to assess attitude towards biomedical waste management.	
Do you feel person handling biomedical waste should be trained?	<ul style="list-style-type: none"> • Yes • No • Maybe
Do you think management of biomedical waste management is useless concept?	<ul style="list-style-type: none"> • Yes • No
Do you think biomedical waste management should be taught regularly?	<ul style="list-style-type: none"> • Yes • No • May be consider but not compulsory
Would you like to undergo training for biomedical waste management?	<ul style="list-style-type: none"> • Yes • No • May be
How do you update your knowledge on biomedical waste management?	<ul style="list-style-type: none"> • Reading journal • Reading book • Attending continued nursing education • Other than above mentioned • Not interested to update

RESULTS (Table 2):

A total of 77 critical care nurses out of 80 agreed to be the part of the study.

Demographic information	
Age:	
20-30 years	53(69%)
30-40 years	20(26%)
Above 40 years	4 (5.0%)
Sex:	
Male	54(70%)
Female	23(30%)
Which degree you have?	
BSc (Bachelor of science)	17(22%)
MSc (Master of science)	2(2.5%)
P B BSc (Post Basic Bachelor of Science)	6(8.0%)
R G N M (Revised General Nursing and Midwifery)	52(67.5%)
Since how long you are working in critical care unit?	
• <1 month	-
• 1- 3 months	9(12%)
• 3 months to 1 year	9(12%)
• 1 year to 3 years	14(18%)
• More than 3 years	45(58%)
In which critical care unit you are practicing?	
• Surgical	29(38%)
• Medical	30(39%)
• Cardiac	13(17%)
• Respiratory	5 (6.0%)
Questions to assess the knowledge of biomedical waste management.	
Is biomedical waste management a part of your syllabus in nursing?	
• Yes	77(100%)
• No	0
• I do not remember	0

Have you undergone any training for biomedical waste disposal before joining critical care unit?	
• Yes	51(66.5%)
• No	23(29.5%)
• I do not remember	3(4.0%)
Are you aware of biomedical waste management?	
• Yes	77(100%)
• No	-
Choose the answer in our hospital	
• We collect biomedical waste and burn	7(9.0%)
• We collect biomedical waste and send it to some other center for disposal	68(88%)
• I don't know	2(3.0%)
Questions to assess the practice of biomedical waste management.	
The amputated lower limb should be discarded in?	
• Red	14(18%)
• Yellow	54(70%)
• Blue	-
• Black	8(10%)
• White	
• I don't know	1(2.0%)
Which is better?	
• Closed mouth dustbin	73(95%)
• Open mouth dustbin	3(4%)
• Doesn't make difference	1(1.0%)
Used intravenous set should be discarded in	
• Red container	74(96%)
• Yellow container	1(1.0%)
• Green container	2(3.0%)
• I don't know	-
After the procedure doctor discard the gloves in dustbin?	
• Yes	56(73%)
• No	2(2.5%)
• Some people dispose and some do not	19(24.5%)
Blood soaked gauge should be discarded in	
• Red container	1(1.0%)
• Yellow container	74(97%)
• Green container	1(1.0%)
• I don't know	1(1.0%)
Questions to assess attitude towards biomedical waste management.	
Do you feel person handling biomedical waste should be trained?	
• Yes	67(87%)
• No	-
• Maybe	10(13%)
Do you think management of biomedical waste management is useless concept?	
• Yes	8(10%)
• No	69(90%)
Do you think biomedical waste management should be taught regularly?	
• Yes	64(83%)
• No	6(8.0%)
• May be consider but not compulsory	7(9.0%)
Would you like to undergo training for biomedical waste management?	
• Yes	67(87%)
• No	3(4.0%)
• May be	7(9.0%)
How do you update your knowledge on biomedical waste management?	
• Reading journal	2(2.5%)
• Reading book	32(41.5%)
• Attending continued nursing education	27(35%)
• Other than above mentioned	16(21%)
• Not interested to update	0

Among 77 nurses 54 (70.1%) were male and 23 (29.9%) are female staffs. Most of the nurses i.e, 52 (67.5%) nurses are having Revised General Nursing and Midwifery (RGNM) degree. Out of 77 critical

care nurses 45 (58.4%) nurses are working in the respective critical care units more than 3 years. Maximum number of nurses i.e 34(44.2%) of the study participants are presently working in surgical critical care unit. All 77 (100%) nurses feel having biomedical waste management as a part of the syllabus is must. 51 (66.2%) critical care nurses have undergone training in biomedical waste management whereas 23 (29.9%) nurses have not undergone any training; rest of the nurses do not remember whether they have undergone training or not. All participants in the study agreed that they know the guidelines of biomedical waste management. 68 (88.3%) nurses feel that the hospital where the study is conducted sends the biomedical waste to some other center. 73 (94.8%) critical care nurses feel closed mouth dustbin should be preferred in hospitals. When the knowledge is tested, 54 (70.1%) nurses feel amputated lower limb should be discarded in yellow colored dustbin, 74 (96.1%) feel the used intravenous set should be discarded in red dustbin and 74 (96.1%) nurses feel blood soaked gauge should be discarded in yellow colored dustbin. 56 (72.7%) nurses experienced that doctors after using the gloves discard it in dustbin. 67 (87%) of nurses feel the person handling biomedical waste should get training while 10 (13%) nurses feel it may be considered. Out of 77 nurses participated, 67 (89.6%) feel biomedical waste management as a useless concept. 64 (83.1%) nurses feel the biomedical waste management should be taught on regular basis and 67 (87%) nurses are interested to undergo re training of biomedical waste management. 32(41.6%) nurses update their knowledge by reading books while others by attending continued nursing education and reading journals.

DISCUSSION:

Biomedical waste management is one of the key factors in proper functioning of any hospital. This cannot be neglected at any cost as the cross infection or healthcare people getting infected are common.^[7] The root level workers like nursing staff and auxiliary nurses and ward boys play a key role in biomedical waste disposal.^[8] In our study a total of 77 out of 80 critical care nurses responded. Most of the nurses were at the age group of 20 to 30 years and were male candidates with experience of more than 3 years. Majority nurses had RGNM type of the degree which is satisfactory for understanding of biomedical waste disposal. The survey was conducted in a rural tertiary care where the nurses from various ICUs viz, medical, surgical, cardiac and respiratory were participated. The majority nurses participated in the survey were from surgical ICU.

This study has undertaken mainly to assess the awareness of nurses about various aspects of biomedical waste management like knowledge, attitude and practices of disposal in critical care. Majority of doctors, residents, staff nurses are aware of bio medical waste management and its dire consequences resulted by improper disposal.^[9] Nursing staff manages the most work of the activities related with biomedical waste management. Nurses are working heavily in various high pressure departments such as operation theatres, in emergency and critical care and is the backbone for biomedical waste management, they have to give advice, scrutinize the work done by sanitary staff related to bio medical waste segregation, collection and transport.^[8] The success of a study depends on questionnaire which is self-administered and essentially depends on the manner in which the questions are formatted, in their content, the analysis and the response rate. In order to avoid any recall bias, most of the questions were of closed-end type.^[10] Such questions are easy to analyses and may achieve a quicker response from participants. A further advantage of the study is that all the participants are based at the same workplace, so all are following similar guidelines .from a waste management protocol.^[11] In comparison to a study conducted by Monika Sekar et al, only 21% of their participants have received training on BMW management^[12], while in ours study 66.5% have undergone Biomedical waste management training prior joining to critical care unit. In our study respondent answered correctly in knowledge based question averaging 87.6% which is better than knowledge based study done by Sharma et al, found extremely poor knowledge in 36% among health care personnel in Jaipur, India.^[11] In our study revealed that nursing staff have a good knowledge ,practice and awareness regarding Biomedical waste management. But scopes of improvement are still there. Training programs need to focus on empowering nurses on biomedical waste management with broad scope and practical knowledge in all aspects. Ethical as well as institutional level policies form the directional pathway for practical component in the institution, which is being followed in our institution. The right knowledge and awareness of Biomedical waste management and its practice like discarding and segregating wastage

properly can be adequately achieved by proper information, education and communication strategies like handouts, stickers, charts ,celebration of various days like hygiene days helped our staff to have a good practical knowledge with awareness of biomedical waste management.^[13]

Limitation Of The Study:

This study represents only a small sized critical nurses hence cannot be generalize the results obtained. There is a need of multicentric study on a larger population to get the exact knowledge, awareness and attitude of critical care nurses for the biomedical waste management.

CONCLUSION:

Based on the study results, the nurses are aware that biomedical waste management is an important and cannot be neglected. Lack of knowledge and awareness may lead harmful hazardous contamination leading to various infections spreading condition. A regular auditing of the critical care nurses and updating the knowledge is very important.

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