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Assessment of Nurses Practices Related to Aseptic Techniques in Managing Burn Patients

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Abstract: Globally there is an alarming situation where incidences of burn injury are very high. Every year approximately 265000 deaths are reported globally due to fire and burn related injuries and low income countries are affected the most. Worldwide statistics are such that in south East Asia (57%) deaths are reported due to burn injury, followed by Africa about 12%. The rate is lower in Eastern Mediterranean region which is about 11%. The main purpose of this study was, to assess the nurse's practices related to aseptic techniques in management of burn patients at Jinnah Hospital and Mayo Hospital Lahore. A cross sectional descriptive survey was performed. A convenient sample of n=75 was used to collect the information. A structured questionnaire with demographic variables and causes variables was applied. The data was analyzed on SPSS version 21. 60% said that there appropriate adequate sink-be available, 92% said that there is water and soap supply in the ward while 98.7% said that there are adequate surface disinfectant, 52% said that adequate shoe cover before procedure and 98.67% answers are adequate nurse preparation before procedure. The purpose of this study was to assess the nurses practices related to aseptic techniques in burn patients, where very satisfactory practices were found.

Keywords: Practices, Aseptic techniques, Nursing Care.

INTRODUCTION

Infection associated with health care providers' negligence is one of the high rated factors of burn sepsis in the world which causes so many deaths globally [1]. Along with so many deaths and disability, burn complication may lead to some other consequences such as severe pain, high discomfort and care inconveniences etcetera [2].

There are certain characteristics responsible for so much susceptibility among burn patients. As skin is known to be a very critical physical defense mechanism which protects from so many pathogens, its damage can improve the pathogens entry into the body. Second reason is long stay of patients at hospitals where the risk of nosocomial infections is increased. Another factor is the uses of invasive procedures such as drawing blood and culture samples and insertion of central line and finally the immunosuppressive property of skin burn injury [3].

Such burn wound complication management may also increase the cost of treatment at the individual, national and international level. The reason of such high morbidity and mortality is the non-adherence to aseptic techniques among health care professionals during burn wound care [4].

To have an optimal burn care management, there is a need of multidisciplinary approach at each and every burn unit. Every burn unit requires a strong composition of team and strong collaboration among the team members [5].

Nurses in burn care units have a major responsibility. Nurses play a vital role in burn units and coordinate all the patients' activities with other team members. Thus there is need that the nurses must possess knowledge of multisystem affected from burn, critical care aseptic techniques, and proper diagnostic and psychosocial skills [5]. Along with so many coordinative roles, the burn nurse is supposed to be a specialist wound care nurse. Nurses are responsible to care for wound, notice any unusual changes, during the burn wound healing whether spontaneous or through grafting and excision. In this way the nurses can prevent the burn infection and can manage pain [6].

Nurse professionals especially in burn areas, are the most affected group who are get stressed and

pained due to the seriousness of burn injury among patients. Therefore burn care nurses need to follow all the advanced required skills in burn care as well as to implement such skills at burn units' practices on daily basis [7].

When the wound includes weeping blisters and involve both epidermis and papillary dermis, is termed as 2nd degree burn. Management for 2nd degree burn is fluid infusion, cleaning and dressing. If the burn involves up to the reticular dermis, this means 3rd degree burn and needs topical antibiotics, early excision. 4th degree burn and may involve all layers of skin, muscles, bones and viscera. Furthermore mild burn injury= 1-14% TBSA, moderate burn injury 15-25% and severe more than 25% total body surface area [8].

Among the burn wound management, there is an important role of first aid provided immediately to the clients after burn injury. Quality assessment of burn patients and effective management are considered as the effective tools to minimize or eliminate the post burn infections. The first aid care starts as the initial care and treatment of burn at the point or site of burn. The initial 48 hours are very crucial because if the burn is kept untreated, the inflammation will progress and the wound will become deeper, therefore the first aid has a very important role in the prevention of secondary burn injuries [9].

Furthermore, the provision of effective cooling soon after burn within three hours has a very significant role to reduce pain and edema at the wound site; slow down the cell metabolism thus decrease cell damage at the hypoxic tissues, slow down the inflammatory responses, helps in stabilizing vasculature to improve healing of wound. Cooling with cool running water is preferred over the cold compress because the cold compress may lead to vasoconstriction. Prolonged cooling is contraindicated in some conditions and it is suggested that in case of hypothermia cooling should be suspended, because cooling during extensive burn wound can cause hypothermia [10].

Another important consideration is the age of burn patients. The type of intervention varies among adult and children. Demographics of clients also have some effects on the nature of treatment to burn patients based on some guidelines [4].

Burn wound can lead to so many complications such as burn shock, acute tubular necrosis, acute renal failure, cardiac arrest, arrhythmias and the most important burn infections. Therefore nursing care is needed to identify the factors needed for and provide the effective self-care quick wound healing and enhance quality of life [11].

Nursing practices and system explains how to meet the needs of burn patients, family and nurses' needs also. According to Orem the needs of the burns patient are compensatory either fully or partially. There must be supportive-education system according to the degree and percentage of wounds caused by the burn. Proper standard practices must be performed according to the other factors such as age of client, presence of systemic infections and malnutrition etcetera [12]. The burn unit nurses need to practice appropriate interventions to minimize the complications such as post burn infection. They are supposed to have an accurate assessment, appropriate diagnosis, effective treatment plan, implementation of specific proper aseptic procedures and to evaluate the effectiveness of overall nursing care in the prevention of burn site wound infect ions. The nurses can attain their goals with burn patients with the help of therapeutic relationship through appropriate and respected communication with the patients and their families. Good communication among nurses will help to have a high coordination and can lead to successful treatment and minimum complications or failure of treatment.

It is said that nurses assist the burn patients in their whole activities. Nurses are responsible to maintain a high-quality care practices and promote patients' health conditions at burn units. Aseptic infection procedure is one such role of the burn unit nurses to perform for the regulation of improved physiological activities. This will help the clients to have minimum level of infection and quick recovery. Theory of nursing can be implemented into practice by the application of accurate nursing process. According to this theory four main nursing practices are responsible for management of burn patients. The four pillars are Aseptic Dressing Preparation, proper need based Assessment, accurate and early Diagnosis and suitable nursing intervention [13].

AIMS OF THE STUDY

- To assess the aseptic technique practices in relation to burns wound management among nurses in at Jinnah Hospital Lahore
- To assess the factors that influence the practice of aseptic technique among nurses during the burns management at Jinnah hospital Lahore

SIGNIFICANCE OF THE STUDY

Adherence of aseptic technique among nurses will help to reduce the rate of hospital acquired infection among the burn patients. At the organizational level this will help in development of preventive interventions among nurses at burn units.

METHODS

SETTING

The study was conducted in Jinnah burn center and burn center of mayo hospital Lahore. Jinnah burn center is a first burn and plastic surgery center in Pakistan and offers specialized services including Intensive Care services, renal services and burns reconstructive care services. Similarly burn center of Mayo hospital covers a large number of patients from all over the Punjab. These hospitals serve people from across Punjab and o all over parts of the country patients. The burn unit provides in-patient care and ICU services to the burns patients. Burn unit have well qualified nurses, medical and trained paramedical staff.

RESEARCH DESIGN

A cross sectional study design was used to assess the practices of burn unit nurses. Cross-sectional is that study that collects information from a population at specific time of period. (*Lisa B 2014).*

POPULATION

Staff nurses working in burns ward and burn ICU at the time of data collection within the period of March to May2018. The population was from burn ward and burn ICU as most of the burns patients that are admitted with burns are nursed over there and nurses are closely responsible for management of burn injuries

SAMPLING

A convenient non probability sampling method was used to recruit the required sample size. A sample of n=75 was recruited

RESEARCH INSTRUMENT

A well- structured questionnaire with closed ended scale was adopted from the previous studies (assessment of aseptic techniques among nurses in management of burn patients). The structured Observation checklist was used to assess how the participants applied the knowledge on aseptic technique during burns wound management in infection prevention during wound management. This questionnaire was distributed among nurses in Jinnah Burn Center.

DATA GATHERING PROCEDURE

The questionnaire was distributed to the participants in printed form where they answered all the questions according to their own understanding. A time of about 25-30 minutes was given to fill the questionnaires. Then the filled questionnaires were collected.

METHODS USED TO ANALYZE DATA

The data was analysis on SPSS version 21. Cross sectional descriptive study was done on frequencies, proportion tables, charts, graphs and tables. T test was applied on my study to assess the difference between different categories based on demographic.

STUDY TIMELINE

The data was collected from February, 2018 to April, 2018.

ETHICAL CONSIDERATION

Ethical principle was implemented during research study. Approval was taken from the Ethical committee of National College of Nursing Lahore. Permission was taken from the MS of Burn Center Jinnah hospital.

Complete information was given to the participant related to research. Informed consent was signed by nurses. Before signing consent nurses were informed about purpose, methodology, risk and benefits of investigation. No one was enforced to participate in research. It makes sure that no harm was given to the participant. All participants had open opportunity to contribute in research.

The information or data remained to the first researcher. This study is expected help the nurses to improve the practices related to aseptic techniques in management of burn patients.

RESULTS

PROFILE OF THE RESPONDENTS

Respondents were taken from different selected groups of Mayo and Jinnah Hospital Lahore.

The above table shows represents in response to a question related to participant's age. 30.67% of the participants were aged 20-25years, 64.0% were 26-31years, and 5.35% of the participants aged between 31-35years. The Graph also shows that in response to participant's education level that 2.67% of the participants are certified, 8.67% are qualified in general nursing, and 10.67% of the participants are qualified in Post RN BScN. It was also found that 62.67% of the participants having experience of less than 5 years and 37.33% are experienced of 6-10 years. Furthermore, it was found that in response to a question that are there barriers to adherence techniques in burns management, 2.67% of the participants said yes and 97.33% said no. Findings show that in response to a question that have you been trained in standard Operating procedures on aseptic technique, 1.33% of the participants said YES, 98.67% said NO. In response to a question that how many days did the patients stays in hospital during wound management, 4.00% responses are 0-7 days, 17.33% peoples said 8-15 days, 44% nurses said 16-22days while 34.67% said 23-29days. Of the participants, 54.67% participants

said direct contact wound can get infected, 32% said air born while 13.33% said self-contamination.

Table-1: Frequency and percentage of demographics data

Variables	**Number (n)**	**Per cent**
Age:		
20-25 years	23	30.7
26-30 years	48	64.0
31-35 years	4	5.3
Above 35 years	00	00
Education:		
Certificate	2	2.7
Nursing Diploma	65	86.7
BSN/PRN BSN	8	10.7
MSN/MPH	00	00
Experience		
1-5 years	47	62.7
6-10 years	28	37.3
Trained on aseptic technique		
Yes	01	1.3
No	74	98.3
Stay of wound healing management		
0-7 days		
8-17 days	03	4.0
16-22 days	13	17.3
23-29 days	33	44.0
More than 29 days	26	34.7
	00	00

The above table-2 shows that in response to a question that how easily available the alcohol-based rub in ward, 1.33% said not at all, 6.67% said not adequate and 92% said Adequate. In response to adequate water and soap supply in the ward, 8% participants said not adequate and 92% said adequate. The finding also shows that in response to a question that is there appropriate sink-be ratio, 30.67% participants said not at all, 9.33% said not adequate while 60% said adequate. It was found that in response to a question related to availability of gown, 1.33% participants said not adequate and 98.67% said that availability of gown is adequate. They were asked use of mask before procedure, 1.33% participant's answers are not adequate, 98.67% said adequate. Findings also reveals that in response to a question related to use of cap before procedure, 1.33% participant's answers are not adequate, 98.67% said adequate. Findings of this study suggest that 1.33% participant's answers not adequate about disinfectant, while majority 98.67% said it is adequate. Result shows that in response to a question related to use of shoe cover before procedure, 32.00% participant's answers are not at all, 16% said not adequate and 52% said adequate. It was also found in response to a question that did the nurse introduce him or herself to the patient, 1.33% participant's answers are note adequate and 98.67% answers are adequate. The above table and Graph also presents that in response to a question that did the nurse explain the procedure to the patient, 1.33% participant's answers are note adequate and 98.67% answers are adequate. The above table and Graph shows that in response to a question that did the nurse wash his or her hands before, during and after the dressing, answer of 5.33% participants are not adequate and 94.67% answers are adequate. The above table and Graph shows that in response to a question that was the integrity of patient maintained by the nurse during dressing, 1.33% participant's answers are not adequate, and 98.67% answers are adequate.

The above table and Graph shows that in response to a question It was found that 100% of participants answered that was proper assessment is performed with respect to the wound. In response to a question that was the location of wound mentioned, described or considered, 6.67% participants answer not properly done while 93.33% participants said properly done. The findings suggest that in response to a question that was the appearance of the wound described using time, 48% answers are not properly done and 53% participants said properly done. The above table and Graph shows that in response to a question that Did the nurse wash his or her hand before starting the procedure, 2.67% answers are not properly done while 97.33% participants said properly done.

Table-2: Frequency and percentage of the Practices

S. NO	Availability of Infra structure	Not at all		Not Adequate		Adequate	
		N	%	N	%	N	%
1.	How easily available is the alcohol- based rub in the ward?	1	1.3	5	6.7	69	92
2.	Are there adequate supplies for dressing burn wound eg. Gauze, crepe bandage etc?	1	1.3	4	5.3	70	93
3.	Is there adequate water and soap supply in the ward?	00	00	6	8.0	69	92
4.	Is there appropriate Sink-be ratio?	23	30	7	9.3	45	60
	Aseptic technique during procedure of burns dressing						
5.	Wear Gown	0	0	1	1.3	74	98.7
6.	Wear Mask before Procedure	0	0	1	1.3	74	98.7
7.	Use of a cape	0	0	1	1.3	74	98.7
8.	Surface disinfection	0	0	1	1.3	74	98.7
9.	Shoe Cover	24	32.0	12	16.0	39	52.0
	Dressing Burn Wound Preparation checklist						
10.	Did the nurse introduce him- or herself to the patient?	0	0	1	1.3	74	98.7
11.	Did the nurse explain the proposed procedure to the patient?	0	0	1	1.3	74	98.7
12.	Did the nurse prepare the material for the dressing beforehand?	0	0	1	1.3	74	98.7
13.	Did the nurse warm the cleaning solution?	13	17.3	17	22.7	45	60.0
14.	Did the nurse wash his or her hands before during and after the dressing procedure?	0	0	4	5.3	71	94.7
15.	Was the integrity of the patient maintained by the nurse during the dressing procedure?	0	0	1	1.3	74	98.7
	Assessing and Diagnosing						
16.	Was an assessment performed with respect to the wound?	0	0	0	0	75	100
17.	Was it a cardex (written report) or verbal description?	0	0	1	1.3	74	98.7
18.	Did the nurse classify the wound? What was the type of burn and the burn depth described?	0	0	8	10.7	67	89.3
19.	Was the location of the wound mentioned, described or considered?	0	0	5	6.7	70	93.3
20.	Was the appearance of the wound described using TIME?	0	0	36	48.0	37	52.0
21.	Did the nurse wash his or her hands before starting the dressing procedure?	0	0	2	2.7	73	97.3
22.	Were the TIME elements identified and managed?	1	1.3	6	8.0	68	90.7
23.	Was the size of the wound described in terms of the TBSA?	0	0	2	2.7	73	97.3
	Precision in dressing execution and procedure						
24.	Did the nurse prepare the environment?	0	0	2	2.7	73	97.3
25.	Did the nurse open the packaging aseptically?	0	0	0	0	75	100
26.	Did the nurse check the expiry dates of the products used?	0	0	0	0	75	100
27.	Was the "dirty" material kept separately from the clean field?	0	0	0	0	75	100
28.	Did the nurse use the prescribed solution?	0	0	0	0	75	100
29.	Did the nurse follow a logical sequence throughout the procedure?	0	0	1	1.3	74	98.7
30.	Did the nurse maintain the aseptic technique throughout the procedure?	0	0	0	0	75	100
31.	Did the nurse take complaints of pain by the patient into consideration?	0	0	0	0	75	100
	Nursing Outcomes						
32.	Did the cardex (documentation) reflect the nursing process with regard to wound management?	0	0	0	0	75	100
33.	Was the management based on the identification, recording and treatment of TIME- related problems?	0	0	22	29.3	53	70.7
34.	Were referrals pathways followed (i.e. referrals made to a physiotherapist, surgeon or counsellor, if needed)?	0	0	1	1.3	74	98.7

Results presented reveals that in response to a question that were the time elements identified and managed, 1.33% participants answer are not done, 8.00% are not properly done while 90.67% participants said properly done. The above table and Graph shows that in response to a question that Did the nurse

prepare the environment, 2.67% answers are not properly done while 97.33% participants said properly done. The above table and Graph shows that in response to a question that Did the nurse open the packing aseptically, 100% of participants said properly done. The above table and Graph shows that in response to a question that Did the nurse open the packing aseptically, 100% of participants said properly done. In response to a question that was the dirty material kept separately from clean field, 100% of participants answers are properly done.

The above table and Graph shows that in response to a question that did the nurse use the prescribed solution, 100% of participants answers are properly done. The above table and Graph shows that in response to a question that did the nurse follow a logical sequence throughout the procedure, 1.33% of participants answers are not properly while 98.67% answers are propely done. The above table and Graph shows that in response to a question that were referrals pathways followed (referrals made to physiotherapist, surgeons or counsellor, if needed. 1.33% answers are not properly done while 98.67% participants said properly done.

DISCUSSION

According to this study about 98.7% of the study participants were able to maintain aseptic techniques, which is a very good indicator. A previous study shows results in contrast where aseptic techniques practice was poor. 42.9% participants were not washing their hands during all over the dressing procedure. The knowledge of aseptic was found good among 88% of the study participants but the practice of following aseptic techniques was among 14.6% whereas 85.4% participants were not practicing [14].

On average, the availability of alcohol rubs in this study was adequate among 93% of the participants and water and soap availability was above 92% which indicates very good aseptic practices among the burn patients. Some similar thoughts are being discussed that there is significant relation between aseptic techniques and proper water and soap supply [14].

This study found that the practices were very much satisfactory over all because almost all items scored on average above 90% adequate availability. In contrast a previous study found poor unsatisfactory practices regarding infection control measures. No any significant relation was found between the practices and knowledge of aseptic techniques among the study participants [5].

It was also found in response to a question that 98.67% answered that they adequately introduce themselves to the patients while 98.67% responded that they adequately explain the dressing procedure to their clients. The above table and Graph shows that in response to a question that was the integrity of patient maintained by the nurse during dressing, 98.67% answered that they adequately practice it.

A previous study found ineffective communication between patients and nurses, where only 18% nurses were found to introduce themselves to their patients. Only 14% were able to give explanation to their clients regarding the aseptic techniques during dressing [15].

100% of the participants replied that there is adequate assessment and diagnosing is performed in response to wound care. 93.33% participants said that the location of wound mentioned, described or considered properly done. While 53% participants said that the appearance of the wound described using time was properly done. 97.33% participants' nurses wash his or her hand before starting the procedure. Results presented reveals that in response to a question that were the time elements identified and managed, 1.33% participants answer are not done, 8.00% are not properly done while 90.67% participants said properly done.

A previous study found that nurses score of diagnosis was less than 70% for quality assessment. Satisfactory scores were obtained for certain elements of the Dressing execution, namely the aseptic field being maintained, a logical sequence being followed throughout the procedure, and consideration being given to complaints by the patients about their pain. However, the way in which the environment was not adequately prepared prior to dressing execution, the way in which packages were not opened asceptically, the failure of the nurses to check the expiry dates of the cleaning materials, and the cleaning technique used were identified as gaps in competence [15].

LIMITATIONS

- Less sample size 75 due to which, the findings cannot be generalized.
- Time was too short, to see any prospective events or detailed associations of awareness and practices
- Convenient sampling technique was used which may have some biasness

CONCLUSION

Nurses have an important role in infection control and sepsis prevention in managing burn patient. There is such a need of competent and experienced staff nurses for adherence of aseptic techniques. The years of experience in the burns department observed that most of the staff nurses have less than five years' experience, which upholds the rotations of nurses across other wards allowed inadequate time to attain

precise knowledge and services in areas of subject. It is also detected that most of competent staff are also not adhere to aseptic techniques on accounts of lack of facilities available required for burn departments. Therefore, proper knowledge, trainings and adequate facilities required for management of burn patients with aseptic techniques to reduce the mortality and morbidity rate as well.

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