

# IMPROVING COMPETENCY LEVEL AMONG NURSES IN EMERGENCY BURN UNIT

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### Abstract

**Background:** Burns are one of the common causes of injury with which patients present to emergency units. Much of the damage caused by burns can be prevented or reversed with appropriate emergency management in the emergency unit. **Aim:** This study aimed to evaluate the program about improving competency level among nurses in emergency burn units. **Research Design:** A quasi – experimental research design was used in this study. **Setting:** The study was conducted at two settings, in Emergency burn units of Hehya hospital at Sharkia governate, and El Ahrar hospital at Sharkia. **Subjects:** The subjects for the study included all available nurses working in the previous mentioned two settings and their number were (50) nurses in Hehya hospital and (30) nurses in El Ahrar hospital. The convenient sample design was utilized in conducting of this study. **Tools:** Data were collected by using two tools: (I) interview questionnaire aimed to assess nurses' knowledge regarding in emergency burn units, (II) observatioal check list aimed to assess nurse's practices in burn units. **Results:** clarify that, nurses knowledge about burn characters were improved at the post-intervention phase, Where, the percent of improvement of knowledge about sign of burn infection was 14.9% the percent of improvement of knowledge about burn severity was 39.02%. , the percent of improvement of knowledge about burn complication was 40.13%. The percent of improvement of knowledge about prevention of burn 33.25 %, In generally the improvements were highly statistically significant ( $p < 0.001$ ). Moreover, the percent of improvement of competent skill score was 58.3%. These improvements were highly statistically significant ( $p < 0.001$ ). **Conclusion:** there was statistically significant correlation between nurses' knowledge score and nurses' competence skill score at pre & Post intervention phase. **Recommendations:** provision of in-service training on regular basis in order to improve competency level of nurses related to nursing care of burned patients should be conducted in all burn services units

**Keywords:** Competency, Burn, Nurses, Emergency.

### INTRODUCTION

A burn is refers to an any injury to the skin or other organic, tissue, primarily caused by other tissues are destroyed by hot liquids (scalds), hot solids (contact burns from hot surface such as stoves, heaters), or flames (flame burns). Injures to the skin or other organic tissues due to radiation, radioactivity, electricity, friction or contact with chemicals are also identified as burns. A burn, irrespective of etiology, is clearly an acute wound, as opposed to a chronic wound (Ping et al., 2022).

The worldwide incidence of burn-related injuries in 2018 was estimated to be in children 30% total body surface area led to 50% mortality in the era between the World, and 40% in adults' burns resulting in 90% mortality. The incidence of burn in low and moderate income countries is 1.3 per 100,000 population compared with an incidence of 0.14 per 100.000 population in high income countries **(WHO, 2020)**

Burns are one of the common causes of injury with which patients present to emergency units. Much of the damage caused by burns can be prevented or reversed with appropriate emergency management in the emergency unit. During the emergency phase, treatment should be directed towards three focus area; Initial assessment and resuscitation (primary and secondary survey), Fluid resuscitation and Wound care **(Yakup1 et al., 2022)**.

There are three primary types of burns: first-, second-, and third-degree. Each degree is based on the severity of damage to the skin, with first-degree being the most minor and third-degree being the most severe. Damage includes first-degree burns( red, non-blistered skin), second-degree burns( blisters and some thickening of the skin), Third-degree burns(widespread thickness with a white, leathery appearance), and fourth-degree burns( extends beyond the skin into tendons and bones)**( Ritter,2022)**.

Compared with first- and second-degree burns, third-degree burns carry the most risk for complications, such as infections, blood loss, and shock, which is often what could lead to death. At the same time, all burns carry the risk of infections because bacteria can enter broken skin. Tetanus is another possible complication with burns of all levels. Like sepsis, tetanus is a bacterial infection. It affects the nervous system, eventually leading to problems with muscle contractions. As a rule of thumb, every member of your household should receive updated tetanus shots every 10 years to prevent this type of infection **(Liu etal., 2019)**.

The medical intervention has dramatically improved the prospects of patients following severe burn injuries over the second half of the 20th century. Major areas of advancement in burn care include fluid resuscitation protocols, early burn wound excision and closure with grafts or skin substitutes, nutritional support regimens, topical antimicrobials and infection control, treatment of sepsis, thermally-neutral environments, and pharmacological modulation of the hyper metabolic response. These factors have contributed to improved wound healing, reduced inflammation and energy demands, and consequently decreased morbidity and mortality following severe burns **(Mehta etal., 2021)**.

Nursing competency includes core abilities that are required for fulfilling one's role as a nurse. Therefore, nursing competency is important for improving nursing quality. Thus, competency levels necessary for nursing professionals, training methods and so on .Burn care nurses require a range of skills from management of acutely unwell emergencies care patients on mechanical ventilation and renal support, sophisticated wound dressing techniques, to emotional support for patients and their families. Due to the nature of the

injury, burn patients often require a prolonged period of recovery both in the acute and rehabilitative phases. Continuity of community nursing staff for patients allows trusting relationships and bonds to develop, improving satisfaction for both patients and staff **(Hebron et al., 2022)**.

Community nurses' work as a team in emergency burn unit staff forms the largest section of the multidisciplinary burn team, responsible for implementing the daily continuous care of the burn patient. Severely burned patients can be very challenging to care for, requiring intensive support physically as well as emotionally **(Coffee, 2016)**. The role of community nurse has an important role in Emergency burn units. Also, expanded over recent decades to include specialist nurse practitioners as well as research nurses in some burn centers. Experience and knowledge of burn injury can be applied in more varied roles including nurse-led clinics and patient case-management, operating-room practitioners, performing research studies and procedures, and developing wider teaching roles such as burn management courses for non-specialists. Greater autonomy for specialist nurses promotes retention of experienced and senior staff, and enhances the efficiency of the burn team overall **(Perrin, 2019)**.

## **SIGNIFICANCE OF THE STUDY**

Burn services at Hospitals Foundation did not meet all the recommendations regarding training for improving competency level among nursing staff. The practice development team had already completed training needs across pediatrics and adult care, which highlighted a theory-practice gap. This provided further confirmation of the need for a program to meet the specific training needs of staff, while also satisfying the educational standards set out. Without full competence with these standards, burn centre status would not be granted **(The Egyptian authority for general mobilization and statics, 2016)**

Burn injuries in Egypt represent a major problem as compared with heart diseases, malignancy and road accidents. Studies reveal that about 0.1% of the total populations are affected by major burns. Death rate from burn injuries is still high, about 30%. Of the saved; 36% need later reconstruction. Domestic causes are responsible for 75% of the injuries, the rest are caused by industrial and road a report was presented **(Ministry of Public Health and population in 2019)**.

Also, 100,000 people get burned yearly in Egypt, and only a few manage to afford the care needed to survive. The numbers are harrowing; the mortality rate of burn victims in Egypt is as high as 37%, compared to the average of 5% in other countries in the region. Moreover, the majority who do survive find it hard to carry on with their daily activities due to their physical disfigurement and physiological trauma **(Hemeda et al., 2019)**.

## **SUBJECTS AND METHODS**

### **Aim of the Study**

This study was aimed to evaluate the program about improving competency level among nurses in emergency burn units.

### **Research Hypothesis**

The training program will improve competence level for nurses in emergency burn unit.

### **Research Design**

A quasi – experimental research design was used in this study.

### **Setting**

The study was conducted at two settings in emergency burn units Hehya hospital at Sharkia, and El Ahrar hospital at Sharkia governate these settings selected because they had biggest services for burn patients in rural area. Also, this place considered the biggest famous governmental burn hospital had emergency burn unit at sharkya.

### **Subjects**

The subjects for the study included all available nurses working in the previous mentioned two settings and their number were (50) nurses in Hehya hospital and (30) nurses in El Ahrar hospital. The convenient sample design was utilized in conducting of this study.

### **Data Collection Tools**

#### **He Tools were designed after Reviewing the Literature**

\* **First Tool: A-Structured Interviewing Questionnaire:** This tool was adopted from (Brunner, et al., 2010) and was modified by the researcher after reviewing the related literature in English language and it was consisted of:

**First Part: to Assess Socio-Demographic Characteristics of the Nurses which Consisted of 5 Questions** (sex, age, qualifications, years of experience, training program related to burn care).

**Second Part: to Assess Nurse's Knowledge about Burn.** It was consisted of 7 dimensions such as (definition, causes, source, degree, calculation of burn surface area, complications, management).

### **Scoring System**

Each question had a score ranged from 0 - 1 grades, whereas, correct and complete answer scored 1 grades, correct but incomplete answer scored 0 grade. These scores were summed- up and converted into a percent score: Knowledge was considered satisfactory if the percent score was 60% or more and unsatisfactory if less than 60%.

**Third Part: to Assess Barriers Affecting Nurses Competence:** It was consisted of 15 items such as the nature of emergencies burn unit, performance weakness of nurses, and deficiency in clinical management that affecting the competence level among nurses in emergency burn units.

### **Scoring System**

Each question had a score ranged from 0 - 1 grades, whereas, the found was scored one, and that not found was scored zero. These scores were summed- up and converted into a percent score:

**Second Tool: An Observational Checklist:** This tool was adopted from (**Berman, & Snyder, 2012**) and modified by the researcher for assessment of nurse's practices in burn units. It was consisted of six skills dimensions. The observational check list was covered (a safe environment, initial care of burn, changing burn dressing, starting I.V infusion.....etc)

### **Scoring System**

The done was scored one, and that not done was scored zero. These scores were summed-up and converted into a percent score: from  $0 < 75$  referred to incompetence practice, while  $75 \leq 100$  referred to competent practice.

### **The Validity and Reliability**

The Validity: A panel of 5 experts; two professors of community health nursing, two professors of medical surgical nursing and one plastic surgeon was reviewed the tools for its validity.

The reliability was done by Cronbach's Alpha coefficient test (Measurement of reliability ranged from 0.00 to 1.00.) which revealed that the tools consisted of relatively homogenous items as indicated by the moderate to high reliability of each tool by using coefficient equation, it was .89.

### **Preparatory Phase**

This phase covers 3 months started from June 2021 till September 2021. In this phase, the researcher reviewed the recent national and international literature related to various aspects of the study using textbooks, internet thesis & scientific journals on the review in various aspects of the problems to design the study tools, then assessment will be done by using pretest based on the collecting data on the youth knowledge and their practices.

### **Pilot Study**

A pilot study was conducted at the beginning of May 2021. It was done on "8" nurses selected randomly which representing approximately 10% of the main study subjects. A pilot study was done for testing the clarity and applicability of tools, and their relevance to study. It also helped to estimate the time needed to complete the data collection forms.

Since there wasn't any change done in the tools, the pilot samples were included in the main study sample.

### **Field Work**

The actual field work of the study continued for six months from beginning of September, 2021 to January, 2022. The study was conducted through the following five phases:

**First, Preparatory Phase:** The researcher selected some factors to assess study sample which related intervention program to nurses as following: This program may be useful for improve nursing competence in emergencies burn unit, particularly regarding to acquire basic knowledge regarding emergency burn units, acquire practice for caring of patients in emergency burn units, identify barriers affecting the competence level among nurses in emergency burn units, and evaluating the effect of improving competence level among nurses in emergency burn units. The nursing intervention program was designed by the researcher based on data obtained from pre assessment tools. It started at the beginning of September, 2021 and took about two weeks (3 days/week).

The investigator was present during this process to explain how to answer the questionnaires then sought their cooperation and give the necessary instructions. The filled forms were handed back to the investigator to check each one to ensure its completeness. Studied subjects were observed three time at different time by used observation check list. Two tools were collected two times throughout the study (pre, post of the program implementation).

**Phase II (planning):** The planning phase involved revision of the designed program. The content of the program was developed based on review of the current and past literature, using textbooks, articles, magazines, internet search, in addition to an assessment of the knowledge and practice of the study subjects before construction of program. By applying the training program to improve nurse's knowledge, practices and competence. Media used posters, laptop, guidance flyers which includes instruction and information for youth as a reference during and after program implementation.

**Phase III (program implementation):** The program was implemented to the nurses working in the study setting. The implementation of the program composed of 7 separate main sessions (3 educational, 3 practice sessions and 1 revision for all contents & posttest) for the study group. Subjects were arranged into groups, each contained 8-10 participants according to the available time of the nurses attending the emergency burn unit and the teaching methods will be Group discussion or illustrated lectures, brain storming, demonstration and re-demonstration and teaching aids (media) will be poster, booklet, power point, and role play. The theory program sessions were included definition of burn, causes of burn, risk factors for burn, degree of burn, complications of burn, and nursing management. The practice sessions included nurse's practice toward burn prevention about safe environment, initial care of burn, changing burn dressing, and starting I.V infusion.

**Phase IV (post program evaluation):**The pre-posttest format was used two times; the first was before the program implementation for the control group during data collection period which extend to two months for ethical concern, the second time was for the study group immediately after the implementation of the program (Posttest I) during their to evaluate the effectiveness of the intervention program on nursing competence, this phase was evaluated the effect of the training program on the nurse's knowledge, practices and their competence in emergency burn unit through the post tests by using the same pretest tool. A post-test was done immediately after program implementation during the end of January 2022 by using the same data collection tools.

### **Administrative Design**

An official permission was obtained from Dean of faculty of nursing Ain Shams university directed to manager of the two previous mentioned setting using proper channels of communications. Before the initial interview, formal consent was obtained from every subject to be recruited in the study sample. The researcher was start by explaining the purpose of the study briefly to the participants. They were reassessed about the confidentiality of any obtained information. They were also be informed about their right to refuse to participate or withdrawal at any time. The study maneuvers do not entail any harm to participants.

### **Ethical Consideration**

Prior to the actual work of research study, ethical approval was obtained from Scientific Research Ethical Committee of the Faculty of Nursing at Ain Shams University. The aim of the study and benefits were explained to all study participants to obtain their written consent and oral permission and cooperation for collecting data.

The subjects were informed about their right to withdraw at any time and they were reassured that any obtained information would be confidential, and used for the purpose of research.

### **Statistical Design**

All data were collected, tabulated and statistically analyzed using SPSS version 20.0 for windows (SPSS Inc., Chicago, IL, USA 2011). Quantitative data were expressed as the mean  $\pm$  SD & (range), and qualitative data were expressed as absolute frequencies (number) & relative frequencies (percentage)... Percent of categorical variables were compared using Chi-square test or Fisher's exact test when appropriate. Wilcoxon sign rank test was used to compare between two dependent not normally distributed variables. Mc Nemar test was used to compare between two dependent categorical variables.

Pearson' correlation coefficient was calculated to assess relationship between various study variables, (+) sign indicate direct correlation & (-) sign indicate inverse correlation, also values near to 1 indicate strong correlation & values near 0 indicate weak correlation..

All tests were two sided. P-value < 0.05 was considered statistically significant p-value < 0.001 was considered statistically highly significant and p-value ≥ 0.05 was considered statistically insignificant.

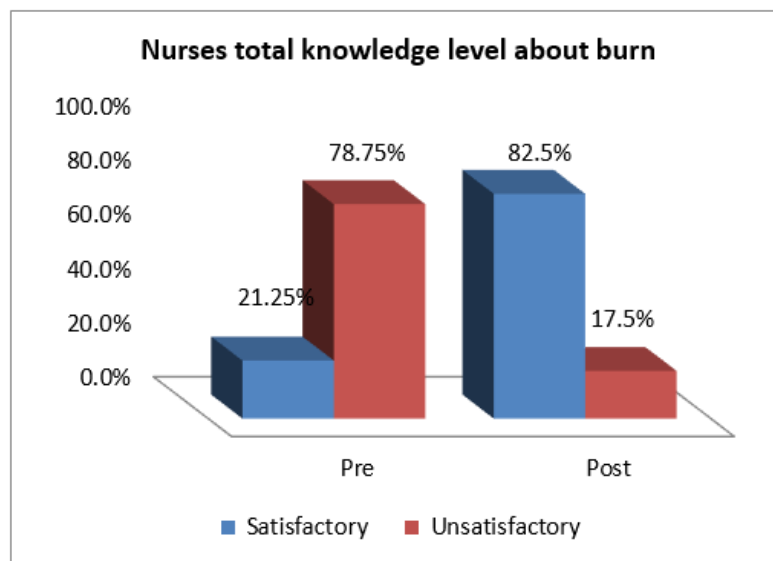
## RESULTS

**Table 1: Socio- Demographic Characteristics and Qualification of Study Sample of Nurses in Emergency Unit of Burn (n=80)**

Socio- demographic parameters	n.	%
Age per years	.	.
20-30	43	53.75
30-40	27	73.75
40-60	10	12.50
Mean ±SD	27.7±4.7	
Range	21-42	
Sex	.	.
Males	10	12.5
Females	70	87.5
Social status	.	.
Single	46	57.5
Married	27	33.75
divorced	5	6.25
Widow	2	2.5
Residence	.	.
Urban	36	45.0
Rural	44	55.0
Qualification	.	.
Diploma	19	23.75
Nursing institute	27	33.75
Bachelors	34	42.5
Experience	.	.
<3years	28	35.0
3-5 years	34	42.5
>5 years	18	22.5
Attended training course	80	100.0
First aid	.	.
Had training	33	41.25
No	47	58.75
Wound dressing	.	.
Had training	40	50.0
No	40	50.0
Infection control	.	.
Had training	58	72.5
No	22	27.5

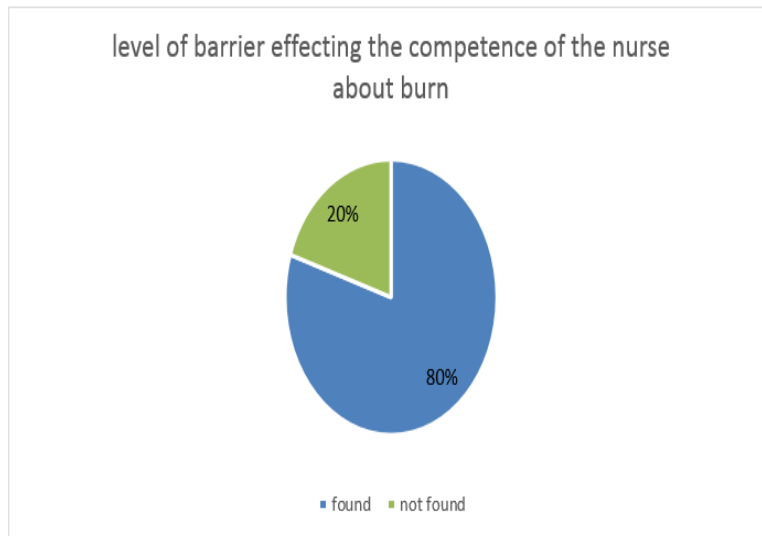


**Studied nurses:** Included 80 nurses, their ages ranged from 21- 42 with a mean of  $27.7 \pm 4.7$  years, sex distribution was 70(87.5%) females and 10(12.5%) males). Regards marital status, more than one half (57.5%) of studied nurses were single, regards residence, approximately more than one half of study sample of nurses in emergency unit of burn lived in rural areas (55 %). Regards education more than two fifths of study sample of nurses in emergency unit of burn in study had bachelor degree (42.5%). Regards experience more than one fifth of nurses had more than 5 years (22.5%). The main training course was infection control 72.5%, followed by wound dressing 50 %, first aids among 41.25 % of nurses.



**Figure 1: Comparison total nurses ' knowledge level about burn among studied nurses pre and post intervention Program (n=80)**

Figure (1): shows that (21.25%) of studied nurses had satisfactory total knowledge about burn at the pre-intervention phase, these were upturned at the post-intervention phase, where majority (82.5%) of studied nurses had satisfactory total knowledge level about burn. Moreover, there is a significant relation between nurse's total knowledge level about burn among studied nurses pre and post intervention program



**Figure 2: Comparison level of barrier effecting the competence of the nurse about burn pre intervention program (n=80)**

Figure (2): Percent of barriers that effect the competence of study sample of nurses in emergency unit of burn at pre intervention program was (80%).

**Table 2: Comparison total nurses' competence skill about burn among studied nurses pre and post intervention program (n=80).**

Variables	Nurses' Competence Skill About Burn				W	P value	% of improvement
	pre		Post				
	No.	%	No.	%			
Competence skill about burn							
Competent	12	15.0	59	73.75			
In Competent	68	85.0	21	26.25			
Mean± SD Range	38.85±129 (21-69)		61.5±6.7 (27-69)		6.9	.0001	58.3

**() \* maximum score W= Wilcoxon Signed Ranks Test highly significant =p<0.001**

**% of improvement= percent of improvement score post intervention**

Table 6 clarifies that (15%) of studied nurses had competence skill about burn at the pre-intervention phase, these were upturned at the post-intervention phase, where majority (73.75%) of studied nurses had competent level about burn. Moreover, the percent of improvement of competent skill score was 58.3%. These improvements were highly statistically significant (p<0.001).

**Table 3: Relation between Nurses' Competence Skill Level about Burn among Studied Nurses and Their Demographic Characteristics at Post Intervention Phase (n=80)**

Demographic Parameters	Nurses ' competence skill level at post intervention phase				n.	$\chi^2$	p-value
	Competent n.59		Incompetent n.21				
	No.	%	No.	%			
Age per years							
20-30	29	67.4	14	32.6	43	1.9	0.17
30-40	20	61.1	6	12.5	27		
40-60	10	20.1	1	6.4	10		
Sex	0	.0	.	.			
Males	8	80.0	2	20.0	10	f	0.99
Females	51	72.9	19	27.1	70		
Social status							
Single	38	82.6	8	17.4	46		
Married	18	66.7	9	33.3	27	6.1	0.11
divorced	2	40.0	3	60.0	5		
widow	1	50.0	1	50.0	2		
residence							
Urban	26	72.2	10	27.8	36	0.088	0.88
Rural	33	75.0	11	25.0	44		
Qualification							
Diploma	15	78.9	4	21.1	19		
Nursing institute	20	74.1	7	25.9	27	0.44	0.8
Bachelors	24	70.6	10	29.4	34		
Experience							
<3 years	20	71.4	8	28.6	28	1.1	0.58
3-5 years	24	70.6	10	29.4	34		
>5 years	15	83.3	3	16.7	18		
First aid							
Yes	26	78.8	7	21.2	33	0.74	0.36
No	33	70.2	14	29.8	47		
Wound dressing							
Yes	30	75.0	10	25.0	40	0.07	0.8
No	29	72.5	11	27.5	40		
Infection control							
Yes	41	70.7	17	29.3	58	1.02	0.31
No	18	81.8	4	18.2	22		

**$\chi^2$  = Chi square test    \*significant  $p < 0.05$     non-significant  $p > 0.05$**

Table demonstrated that there was statistically insignificant relation between nurses' competence skill level about burn among studied nurses and their demographic characteristics at post intervention phase ( $p > 0.05$ )

**Table 4: Relation between Barrier that Affect the Nurse Competence at pre Intervention among Studied Nurses and their Demographic Characteristics (n=80)**

Demographic Parameters	Barrier that affect the nurse competence at pre intervention				n.	X <sup>2</sup>	p-value
	Absent n.16		Present n.64				
	No.	%	No.	%			
Age per years							
20-30	12	27.9	31	72.1	43	3.6	.057
30-40	3	8	23	69	27		
40-60	1	2.8	10	20.2	10		
Sex							
Males	2	20.0	8	80.0	10	f	0.99
Females	14	20.0	56	80.0	70		
Social status	.	.	.	.			
Single	5	26.1	41	73.9	46	2.9	0.41
Married	3	11.1	24	88.9	27		
Divorced	1	20.0	4	80.0	5		
Widow	0	0.0	2	100.0	2		
residence							
Urban	8	22.2	28	77.8	36	.202	0.65
Rural	8	18.2	36	81.8	44		
Qualification							
Diploma	2	10.5	17	89.5	19		
Nursing institute	7	25.9	20	74.1	27	1.7	0.43
Bachelors	7	20.6	27	79.4	34		
Experience							
<3 years	6	21.4	22	78.6	28	0.17	0.92
3-5 years	7	20.6	27	79.4	34		
>5 years	3	16.7	15	83.3	18		
First aid	.	.	.	.			
Yes	7	21.2	26	78.8	33	0.05	0.89
No	9	19.1	38	80.9	47		
Wound dressing							
Yes	10	25.0	30	75.0	40	1.3	0.26
No	6	15.0	34	85.0	40		
Infection control							
Yes	8	13.8	50	86.2	58	5.1	0.024*
No	8	36.4	14	63.6	22		

**X<sup>2</sup> = Chi square test    f=Fisher exact test    \*significant p<0.05    non-significant p>0.05**

Table 8 demonstrated that there was statistically insignificant relation between barrier that affect the nurse competence at pre intervention among studied nurses and their demographic characteristics (p>0.05) except, there was statistically significant relation between barrier that affect the nurse competence at post intervention and nurses attain infection control course p=0.024.

**Table 5: Correlation matrix between nurses' knowledge score, Competence skill score and barrier score pre and post intervention program (n=80)**

Parameters		knowledge score		Competence skill score	
		(r)	P	(r)	P
Pre	knowledge score	1			
	Competence skill score	0.59	0.0001	1	
	barrier score	0.18	0.11	0.014	0.903
Post	knowledge score	1			
	Competence skill score	0.78	0.0001		

**(r) Correlation coefficient** **p<0.05 significant**

Table 9 indicated that there was statistically significant correlation between nurses' knowledge score and nurses' competence skill score at pre & Post intervention phase (p=0.0001).

## DISCUSSION

Professional competence is the combination of knowledge, judgment, skills, experience, and attitude required to respond adequately to the demands of one's occupational responsibilities. Models for competence in health care have been used to improve practice standards, accommodate new knowledge, promote professional development, and improve effectiveness of training and education programs (**Ou et al, 2021**).

Most research in the management of burn wounds focuses on the surgical management of the burn with no study focusing on the management of burn wounds by nurses. Burns are currently being managed by nurses; however their clinical practices differ extensively. There are no standards or guidelines in place to inform nursing practice and consequently not all patients benefit from evidence informed burn wound management techniques". (**McCrory et al, 2021**). Therefore, This Study Aimed to Assess of Competency Levels of staff nurses providing care for burned patients. The present study was carried out to evaluate improving competence level among nurses in emergency burn units.

Regarding Comparison level of nurses' knowledge about burn definition, causes of burn, and degree of burn pre and post intervention program the current study revealed that there was highly statistical significant improvement of nurses' knowledge about burn definition, causes of burn, degree of burn. The improvements were highly statistically significant.

This could be due to the content of the nursing curriculum regarding these competencies was not enough and wasn't adequately delivered to the nurses. Moreover, this improvement could be attributed to the ability of nurse to gain knowledge easily and they were interested in the research topics, resulting from lack of training about competency and lack of experience among nurses.

On the same line, **(Utsunomiya et al , 2020)** who study core competencies for patients with burn injury in critical care found that most of the study sample had highly statistical significant improvement of nurses' knowledge about burn definition, causes of burn, degree of burn, also this result consistent with those result of **(Carol , 2019)** who conducted a study entitled nursing core competencies of staff nurses providing care for burned patients who conducted a study and found that the majority of study sample had chronic illness. Conversely, this study was disagreement with **Carrougner, et al., (2018)** who conducted study entitled "Burn nurse competencies: developing consensus using E-Delphi Methodology" and found that majority of nurses had satisfactory knowledge regarding burn, and found some changes in studied sample characteristics the majority of studied sample were females.

Regarding Comparison level of nurses knowledge about burn characters pre and post intervention program, the current study revealed that nurses knowledge about burn characters were improved at the post-intervention phase, where, mostly improved of knowledge about burn complication .In generally the improvements were highly statistically significant. This result due to nurses more interested during sessions about complication due to most of patient exposed to that during hospitalization and try to find new ways to minimize this complication to maintain patients safety goals and standard of care. On the same line, the result of **ping et al., and (2022)** who studied a cross-sectional survey on nurses in burn departments: core competencies and influencing factors to burns: found that nurse had improvements were highly statistically significant.

Regarding comparison level of nurse's knowledge about burn management pre and post intervention program, the current study revealed that highly statistical significant improvement in satisfactory knowledge about burn management post intervention. For all items of nutritional needs, and medications of burn. This might be due to found sessions in this program involved specific topics related to proper feeding to burned patients and important medication must be used and their side effect and nurses have a basic knowledge related this items from their experience in handling burn patients.This result is inconsistent with those of **Klingberg et al, (2020)** who studied Burn Injury Consultations in a Low-resource setting: An acceptability study among health care providers. Telemedicine and e health,found that the majority of studied sample are had satisfactory performance regarding specific competencies (nutritional needs).

Concerning Comparison total nurses ' knowledge level about burn among studied nurses pre and post intervention program , the finding of the current study revealed that concerning total knowledge score about burn , more than three quarters of studied nurses had unsatisfactory knowledge level at the pre-intervention phase. These were upturned at the post-intervention phase, where majority of studied nurses had satisfactory knowledge level about burn. These improvements were highly statistically significant.

This might be due to lack of training about burn and newly employed nurses need a lot of training program related to urgent intervention to patient with burn according to severity level, self-care, treatment, etc.) to improve patient health and help regaining own abilities,

using learning opportunities as continuing studies, and educational workshops to improve personal and professional progress, employing practical skills. These results was agreed with **Mohamed et al., (2021)** who studied Nurses' Knowledge, Practice, and Attitude Regarding Burn Injury Management found unsatisfactory knowledge level at the pre-intervention phase. These were upturned at the post-intervention phase. Also, **ping et al., (2022)** who studied a cross-sectional survey on nurses in burn departments: core competencies and influencing factors to burns: found that had the improvements were highly statistically significant. Regarding the comparison level of barrier affecting the competence of the nurse about burn pre intervention program, there was reveals that majority of nurses consider is there a barriers that effect the competence in emergency unit of burn at pre intervention program such as Double the capabilities and consumables.

From researcher point of view , the barriers affect on nurses competency such as nursing shortage nurse work with double effort to cover this shortage and its effect on their competency to provide care to patient with burn and nurses' lack of time, low value of their professional activities and low motivation have always been a significant barrier for nurses. Regarding comparison total nurses' competence skill about burn among studied nurses pre and post intervention program, The result of the current study revealed one fifth of studied nurses had competence skill about burn at the pre-intervention phase, . These were upturned at the post-intervention phase, where majority of studied nurses had competent level about burn. These improvements were highly statistically significant. . This finding may be might due to training need assessment for staff nurses which done by quality department wasn't carried out resulting in absence of orientation training program for new staff and continuous training regarding nursing care for burned patients.

On the same line with, the result reported by **Ritter, (2022)** who conducted his studied improving the quality of burn care through implementation of the American burn association competencies. Found that highly statistical significant improvement of total nurses' competence skill about burn. Also, on agreement with **El-Sayed, (2019)** who revealed that the nurses knowledge were moderately adequate at hospital in compare to adequate knowledge at western hospital.

There was statistically insignificant relation between nurses' competence skill level about burn among studied nurses and their demographic characteristics at pre phase , there was statistically significant relation between nurses' competence level and wound dressing training course. From researcher point of view wound dressing are the most important cause can lead to major complication if not treated well especially in emergency unit. These results was disagreement with **Lam et al., (2018)** who the study Nurse knowledge of emergency management for burn and mass burn injuries. . Also, this finding is incongruent with this study was disagreement with **Mamashli, et al., (2019)** who conducted entitled "The effect of self-care compact disk-based instruction program on physical performance and quality of life of patients with burn at-dismissal" and found that there is a statistically significant relation between nurse's knowledge and their gender, qualifications, and marital status.

Regarding Correlation matrix between nurses' knowledge score, Competence skill score and barrier score pre and post intervention program, the current study revealed that there statistically significant correlation between nurses' knowledge score and nurses' competence skill score at pre & Post intervention phase. This might be due to nursing staff seeking for improvement their performance with patients that suffering from burn injury and raised awareness about major complication of burn can lead to death if not appropriately handle in emergency department.

This study was agreement with **Melo, & Lima, (2017)** who conducted this study entitled "Cost of nursing most frequent procedures performed on severely burned patients" and found that there is a positive correlation between nurses' total knowledge, and their practice. Conversely, this study was disagreement with **Ardebili, et al., (2017)** who conducted entitled "Effect of multimedia self-care education on quality of life in burn patients" and found that there is negative correlation between nurses' total knowledge, and their competence skill.

## CONCLUSION

The study findings concluded that that more than three quarters of studied nurses had unsatisfactory knowledge level at the pre-intervention phase, while fifth of them had satisfactory level. These were upturned at the post-intervention phase, where majority of studied nurses had satisfactory knowledge level about burn. Moreover, the percent of improvement of knowledge score was more than fifth. These improvements were highly statistically significant. Minority of studied nurses had competence skill about burn at the pre-intervention phase. These were upturned at the post-intervention phase, where majority near to quarter of studied nurses had competent level about burn. Moreover, the percent of improvement of competent skill score was more half. These improvements were highly statistically significant. Finally, indicated that there was statistically significant correlation between nurses' knowledge score and nurses' competence skill score at pre & Post intervention phase. This finding confirmed the research hypothesis which were "The training program will improve competence level for nurses in emergency burn unit".

## RECOMMENDATIONS

**Based on Main Study Findings, the Following Recommendations are suggested:**

### For Service

- Nursing administration should develop book for staff nurses related to nursing care for burned patients.
- Provision of in-service training on regular basis in order to update and refresh practice related to nursing care of burned patients.
- The researcher recommends that training course be mandatory yearly and that it should be a requirement for yearly nursing registration in hospitals.



## On Research Level

- Impact of nursing competencies on quality of nursing care and safety of nursing practice in burn unit.
- Competency -based program among staff nurses and its effect on productivity.
- Assessing factors affecting to adherence with competency based practice among staff nurses at different health care sectors.

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