

Assessment of Nurses' knowledge and practice regarding Burn in children

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Abstract

Background: Burn is the most important cause of child injury that leads to serious health problems, severe social functional and psychological impairment. Burn is the major cause of hospitalization and association with significant morbidity and mortality. **Aim:** The present study aimed to assess nurses' knowledge and practice regarding burn in children. **Design:** A correlational descriptive study was utilized. **Setting:** The study was carried out at Burn Units affiliated to Suez Canal University and Ismailia General Hospitals. **Sample:** A convenience sample of nurses (35) was working at the previous mentioned settings and 20 children suffering from burn injury during the study period. **Tools of data collection:** a structured interview questionnaire, and observational checklists to assess Nurses' knowledge and practices regarding burn in children. **Results:** The study results revealed that less than half of the studied nurses had poor knowledge and most of them had unsatisfactory practice regarding burn in children. **Conclusion:** There was no a significant correlation between the studied nurses' total knowledge and their total practices regarding burn in children. **Recommendations:** The study suggested nursing intervention program regarding management of burn in children based on their actual need assessment.

Key words: Burn - Children - Nurses' knowledge - Practices.

1. Introduction

Burn injuries are among the most devastating of all injuries and a major global public health problem. Burn is the fourth most common type of trauma worldwide, following traffic accidents, falls and interpersonal violence. Approximately 90 percent of burn occurs in low and middle income countries (*Murray, 2020*). Burn is the most serious forms of trauma experienced by children that have long-term physical, psychological, economic and

social consequences for children and their families with the need for regular interventions (*Dhopte et al., 2017*).

According to the International Society for Burn Injury, burn is defined as damage to body's tissues caused by heat, chemicals, electricity, sunlight, or radiation. Scald from hot liquids and steam, another kind is an inhalation injury that caused by breathing smoke (*Lundy et al., 2016*). The prognosis of burn injury depend primary on the percentage of the total body surface area and the age of

the child. The presence of smoke inhalation lesions and other significant injuries will affect the prognosis. Advances in resuscitation, surgical management, intensive care, control of infection and rehabilitation are responsible for improvement in burn mortality and morbidity (*Shah and Liao, 2017*).

Worldwide, an estimated 6 million pediatric patients seek medical help for burn annually. About 80% of all burn injuries occur within the home, most from exposure to flames (*Abdelrahman et al., 2021*). Worldwide there are over 265,000 deaths are caused by burn, and the majority of these deaths occur in low and middle-income countries that estimated as 90% of burn injuries (*Kellerman and Pakel, 2021*).

Nurses play an important role in teaching strategies to prevent burn injuries and improvement in the overall outcome for burn in children. The improvement has largely been achieved by advancements in resuscitation, surgical and anesthetic techniques, infection control, nutritional and metabolic support (*Ignatavicius et al., 2021*).

The care of a burn in children requires interactions with inter professional team. During hospitalization, the nurse provides

essential nursing care and acts as an advocate for the child and family. The nurse also coordinates care of other health care professionals such as a physical therapist who helps the child maintain or regain physical function. An occupational therapist helps the child adapt to activities of daily living and makes splints for treatment (*Ward and Hisley, 2016*).

1.2. Significance of the study:

Burn is one of the most severe injuries to children and major global public health concern (*WHO, 2017*). In the United States, burn injuries are one of the main causes of death, accounting for 3.240 deaths per year and 40.000 hospitalized children annually. In Egypt, burn in children is a significant problem, especially in families of low socioeconomic status. Three hundred and twenty one burn children presented to burn unit of Suez Canal University over twenty month period (2019-2020) proportionately more girls than boys were injured. Most burned children presented to burn unit of Assuit University were among the age groups of toddler and preschool (*Ebrahim et al., 2022*). Therefore, this study has been carried out to assess nurses' knowledge and practice regarding burn in children.

The aim of the study: Assess nurses' knowledge and practices regarding burn in children.

Research Question:

Is there a relationship between nurses' knowledge and practices regarding burn in children?

2. Subjects and Methods

Study design: A correlational descriptive research design was used in this study.

Study setting: The study was carried out at Burn Units affiliated to Suez Canal University and Ismailia General Hospitals.

The sample of the study: A convenience sample of nurses (35) was working at the previously mentioned settings and 20 children suffering from burn injury during the study period.

Tools of data collection:

Tool (I):A structured interview questionnaire: It was designed by the researcher based on recent relevant literature review and studies. It was composed of the following items.

Part (1): Characteristics of the studied nurses namely age, marital status,

qualification, work place, year of experience and previous training program.

Part (2): Concerned with nurses' knowledge regarding burn in children

Part (3): Concerned with nurses' knowledge regarding burn management in children at emergent, acute and rehabilitation phase.

Part (4): Child assessment for burn area concerned with characteristics of the studied children (age, gender) and characteristics of burn (degree of burn, total body surface area%, causes, site of burn, recurrence, and duration of hospital stay/week).

Scoring system:

The total number of questions that assessed the studied nurses' knowledge was 52 questions. Regarding the knowledge scores, the correct answer was given one while, the incorrect answer was zero. Total nurses' knowledge was considered to be good ($\geq 75\%$), average ($60\% < 75\%$) and poor ($< 60\%$).

Tool (II): Observational checklists: Adapted from **Andrew et al., (2010)** and **Abdallah, (2013)** to assess the nurses' practices regarding nursing management of 2nd and 3rd degree of burn in children. Observational checklists used to assess the studied nurses' practices regarding

maintaining oxygenation, ventilation, and circulation, care of second and third degree of burn, application of splints, dressing change and infection control.

Reliability of the study Tools:

Tools reliability was tested by using a Cronbach's Alpha test for questionnaire (0.863) and (0.785) for observation checklists.

Field work:

The purpose of the study was explained briefly by the researcher to nurses who were willing to participate. The actual field work was carried out over a period of six months, starting from the 1st of May 2019 to the end of November 2019. The average time needed to fill the structured interviewing questionnaire was about 20-25 minutes. The average time required for the completion of each observational checklist was ranged from 5-10 minutes for the nurses' practices regarding nursing management of burn in children. The researcher observed the studied nurses directly during childcare.

Administrative design:

An official letter was obtained from the Dean of the Faculty of Nursing, Suez

Canal University, to the Director of both Suez Canal University and Ismailia General Hospitals, for permission and cooperation to conduct the study. The aim of the study and the expected outcomes were illustrated.

Ethical considerations:

Verbal consent was taken from each nurse prior to participation in the study after simple explanation of the aim and the expected outcomes. The researcher assured voluntary participation, anonymity and confidentiality of the information.

Statistical design:

Upon the completion of data collection, the gathered data were organized and coded prior to computer entry. The data were imported into statistical package for social sciences (SPSS version 20) software for statistical analysis.

Results

Table (1): illustrates that 51.4% of the studied nurses aged 25< 30 years old and most of them were females. Meanwhile 45.7% of the studied nurses had diploma of technical nursing institute, 88.6% of them had less than 5 years of experience in nursing management of burn in children, 71.4 % working at Suez Canal University hospitals 51.4% of them attended training courses

about nursing management of burn in children.

Table (2) illustrates that $\bar{x} \pm SD$ of children' age was 5.5 ± 4.06 year and more than one half (55%) of them were females.

Table (3) clarifies that, 48.6% of the studied nurses had poor knowledge, while 8.6 of the studied nurses had good knowledge regarding burn in children.

Table (4): illustrates that 82.9% of the studied nurses had unsatisfactory scores of total practices regarding nursing management of burn in children, while 17.1% had satisfactory scores of practices regarding burn in children.

Table (5): demonstrates that there was no statistical significant correlation between total scores of the studied nurses' knowledge and their total scores of practices regarding burn in children.

4. Discussion

Burn in pediatric patients are among the most devastating injuries and are a leading cause of life-threatening trauma worldwide (*Aitken et al., 2019*). Burn injured children are subjected to a number of serious complications resulting both from the burn

and systemic alterations (*Hockenberry et al., 2017*).

Pediatric nurses have challenge and responsibility to assist burn children effectively by coping with their stress, hospitalization and working toward recovery. The nurse roles involve promoting gas exchange and airway clearance, restoring fluid and electrolyte balance, maintaining normal body temperature, minimize pain and anxiety, preventing infection, maintaining an adequate nutrition and promoting skin integrity (*Belleza, 2021*).

Regarding characteristics of the studied nurses, the results of the present study showed that, more than half of the studied nurses were in age group of $25 < 30$ years. This result was in an agreement with *Alkassar and Kadhim, (2020)*, study which entitled "Effectiveness of an Educational Program on Nurses' Knowledge toward Burn Management" who found that, more than half of the studied nurses were in the age group of $21 < 30$ years. While this finding disagreed with *Rashid et al. (2017)*, a study which entitled "Characteristics of Burn Injury and Factors in relation to Infection among Pediatric Patients", who found that 52.8% of the studied nurses were in the age group of

30-39 years. This may due to Egyptian culture which lead to early married and difficult to complete their level of education.

Concerning the studied nurses' qualification, nearly half of the studied nurses were having diploma of technical nursing institute. This finding was in an agreement with a study carried out by **Mohammed et al. (2021)**, a study which entitled "Nurses' Knowledge, Practices, and Attitude regarding Burn Injury Management" who found that, half of the studied nurses were graduated from technical nursing institute.

Concerning the studied nurses' years of experience, the findings of the current study showed that, most of the studied nurses had experience of less than 5 years. The current study finding was supported by **Lam et al. (2018)**, a study which entitled "Nurse Knowledge of Emergency Management for Burn and Mass Burn Injuries, Annual of Burns and Fire Disasters" who found that, nearly more than half of the studied nurses had experience of < 5 years. This result was in disagreement with **Aredebili et al (2017)**, study "Effect of Multimedia Self-Care Education on Quality of life in Burn Patients" who found that, more than three quarters of the studied nurses had more than

10 years of experience. The researcher believes that burn unit as a critical area unit requires a qualified nursing staff with long years of experience.

In relation to attending training courses in care of children with burn, the present study showed that, more than half of the studied nurses attended training courses regarding care of burn in children. This finding was in an agreement with a study carried out by **Mohammed, (2017)** study "Evaluating Nurses' Performance regarding Care of Children Suffering from Burn Injuries" who found that, most of the studied nurses attended a training course regarding burn injuries. This finding disagreed with a study carried out by **Elbilgahy, (2018)** study which entitled "Current Nursing Practices for Managing Children with Burn Injuries" who found that, the majority of the nurses didn't attend any training about care of burn in children. This reflects great variation in training available for nurses at burn units in different health care setting.

The results of this study illustrated that, $\bar{x} \pm SD$ age of the studied children was 5.5 ± 4.06 . This finding was in an agreement with a study carried out by **Abdallah, (2013)** study which entitled " First Aid and Hospital

Care Provided to Burned Children and Expected Outcomes" who found that three fifths of the studied children were in the age group 1<5 years. It was reported by, **Hockenberry et al. (2019)**, that the high incidence of burn injuries occur in the age group younger than 2 to 5 years. This result may be due to that children in this age group begin to learn how to use some tableware for food, out of curiosity to the environment and have scanty knowledge about the potentially risky environment as burn.

The results of present study revealed that, more than half of the studied children were females. This finding was on the same line with a study done by **Abd Elalem et al. (2018)**, study which entitled "The Effect of Self-Care Nursing Intervention Model on Self-Esteem and Quality of Life among Burn Patients" who found that the majority of the studied children were females. Also, **Abdel-Khalek, (2015)** study which entitled "Prediction of Risk Factor for Infection Occurrence in Patient with Burn Injury" found that, two thirds of the studied children were females. While these results disagreed with **Rashid et al. (2017)**, who revealed that, more than half of the studied children were males. This may be due to that female children usually spend most of their time in

close contact with their mothers, preference to play with kitchen equipment and imitating their mothers in cooking.

Concerning total score of nurses' knowledge regarding children with burn, nearly half of the studied nurses had total poor knowledge regarding burn and its nursing management in children. This result was supported by **Mohammed et al. (2021)**, who mentioned, that the majority of the studied nurses had unsatisfactory knowledge regarding burn injury. This may due to heavy workload and lack of motivation for nurses to update their knowledge.

Concerning the total score of nurses' practices regarding management of burn in children, most of the studied nurses had unsatisfactory practice. This finding was supported by **Asmat and Ashraf, (2019)** who assessed nurses' knowledge and practice for prevention of infection in burn patients and found that, unsatisfactory score of knowledge and practice. Also, this result was supported by **Mohammed et al. (2021)**, who found that, all the studied nurses had unsatisfactory practice regarding burn care in children. This may due to lack of standard nursing management skills of burn in children.

The current study demonstrated that, there was no statistical significant correlation between total nurses' knowledge and total practices. This was in an agreement with a study done by *El-Sayed et al. (2015)*, who found that, no significant relationship between total nurses' knowledge and total nurses' practices. Also, this agreed with the studies of *Abdallah, (2013)*, *Abdel-aziz, (2013)*, and *Elbilgahy, (2018)*, who found that no statistical correlation between total nurses' knowledge and total nurses' practices regarding management of burn in children. This may due to lack of updating their knowledge and learn practice by routine care that leads to the gap between theory and practice.

5. Conclusion:

In the light of the current study findings, it can be concluded that, nearly half of the studied nurses had poor knowledge and most of them had unsatisfactory practice regarding burn in children.

6. Recommendations:

In the light of the finding of this study, the following recommendations are proposed:

- 1- In- service training program for nurses to update their knowledge and improve their practices in management of burn in children in the study setting.
- 2- Establishment of standards of nursing care for children with burn in burn units.
- 3- Continuous educational programs based on actual need assessment of nurses providing care to children with burn.
- 4- Further studies regarding burn management with emphasis on psychological complications among burned children.

Table (1): Distribution of the studied nurses according to their characteristics (n = 35)

Studied nurses' characteristics	Number	Percentage
Age in years:		
20<25	8	22.9
25<30	18	51.4
30<35	5	14.3
35≤ 40	4	11.4
$\bar{x} \pm SD$	31.2±3.6	
Range	20-40	
Gender:		
Male	3	8.6
Female	32	91.4
Qualification:		
Diploma of nursing school	14	40.0
Diploma of technical nursing institute	16	45.7
Bachelor in nursing science	5	14.3
Nurses' experience in years:		
< 5	31	88.6
≥ 5	4	11.4
$\bar{x} \pm SD$	2.77±1.78	
Range	1-5	
Work place:		
Suez Canal University hospitals	25	71.4
Ismailia General hospital	10	28.6
Attendance of training courses about burn:		
Yes	18	51.4
No	17	48.6

Table (2): Distribution of the studied children with burn according to their characteristics (n = 20)

Items	No.	%
Children's age/years:		
1<5	12	60.0
5<10	5	25.0
10<15	1	5.0
15 ≤ 18	2	5.0
$\bar{x} \pm SD$	5.5±4.06	
Range	1 – 18	
Gender:		
Male	9	45.0
Female	11	55.0

Table (3): Distribution of the studied nurses' total scores of knowledge regarding burn and its management in children (n=35)

Total studied nurses' knowledge	No.	%	<i>t-test</i>
Poor (< 60%)	17	48.6	25.75
Average (60< 75%)	15	42.8	
Good (≥ 75%)	3	8.6	
$\bar{x} \pm SD$	61.69±9.3		

Table (4): Distribution of the studied nurses' total scores of practices regarding nursing management of burn in children (n= 35)

Items	Total studied nurses' practices		<i>t-test</i>
	No.	%	
Unsatisfactory	29	82.9	15.55
Satisfactory	6	17.1	
$\bar{x} \pm SD$	99.97±20.56		

Table (5): Correlation between the studied nurses' total scores of knowledge and practices regarding burn in children (n=35)

Items	Total score of nurses' knowledge	
	r	P-value
Total scores of nurses' practices	0.093	0.59

(r) Correlation coefficient

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