

# Effect of Instructional Guidelines on Nurses' Performance Regarding Care of Children Suffering from Burn injuries

(\*) Sahar M. Abdelrahman (\*\*\*) Safaa Salah Ismail, (\*\*\*) Hayam Rafaat Tantawi

(\*) Master Degree in Pediatric Nursing - Teacher in Technical health institute at Embaba  
Faculty of Nursing - Ain Shams University

(\*\*\*) Professor of Pediatric Nursing, Dean at the Faculty of Nursing - Helwan University

(\*\*\*) Professor of Pediatric Nursing - Faculty of Nursing - Ain Shams University

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**Abstract:** This study aimed to evaluate the effect of instructional guidelines on nurses' performance regarding care of children suffering from burn injuries. **Study design:** A quasi- experimental design was utilized to conduct this study. **Study setting:** A purposive study was conducted at burn center affiliated to Ain Shams University Hospitals and Embaba Hospital. **Sample:** The subjects of this study were composed of (39) nurses who worked in the previously mentioned study settings. **Tools:** (1): Structured questionnaire sheet. (2): Observational checklists. (3) Design an instructional guidelines regarding care of children suffering from burn injuries. **Results:** More than three quarters of the studied sample (87.17%) were females and 51.3% had diploma nurses. More than one third of them (35.9%) had 5-10 years of experience. There was a statistically significant difference between nurses' knowledge related to burn before and after instructional guidelines and there was a statistically significant difference between nurses' practice related to care of burn before and after instructional guidelines. There was a positive correlation between total level of knowledge of the studied sample and their total level of practice regarding care of burn before and after instructional guidelines. **Conclusion:** Instructional guidelines had a positive effect on nurses' knowledge and practice regarding care of children suffering from burn injuries. There was significant improvement in the level of knowledge and practice among the studied nurses before and after instructional guidelines. **Recommendations:** Continuous educational program and training should be offered to the nurses on updating knowledge and practice to raise their standard of care for pediatric patients with burn injuries. In service training program for newly recruited nurses to update their knowledge and improve their practice in management of pediatric patients with burn injuries.

**Keywords:** Nurses- Children-Burn injuries – Instructional guidelines – Performance.

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## 1. INTRODUCTION

Children are naturally curious, as soon as they are mobile, they begin to explore their surroundings and play with new objects. In this way, children acquire the skills needed to survive in the world. At the same time, though, children come into contact with objects that can cause severe injuries, dangers as playing with sharp objects, fire or touching hot objects that can result in burn injuries. This is a debilitating condition accompanied by intense pain and often by longer-term illness that creates suffering not only for the child but for the family and community (Sachdev et al., 2016).

Burns are injuries to the skin and underlying tissues caused by flames, electricity, contact with hot articles or water, or radiation therapy. Burns affect children of all ages. They are classified according to severity, source, and extent of surface involved. Most burn injuries occur commonly in children less than 5 years of age (Luxner, 2016). Burns are the third

leading cause of accidental death in children. About 80 % of all burn injuries occur within the home, most from exposure to flames or hot water. (Speer, 2015).

Worldwide, an estimated 6 million pediatric patients seek medical help for burns annually, but the majorities are treated in outpatient clinics. Whether inpatient treatment in a specialized burn unit is required depends principally on the severity of the burn, the, and the general condition of the patient (American Burn Association, 2017).

Burns are classified according to severity; source and extent of surface involve. Burn injuries symptoms vary depending on how deep the skin damage is. It can take a day or two for the signs and symptoms of a severe burn to develop. However, classification by depth (superficial, superficial partial-thickness, deep partial thickness, and full thickness. Superficial (first –degree) burns are red, painful, and dry. These burns involved injury to the epidermis only. Superficial partial thickness (second –degree) burns involve the entire epidermis and Superficial dermis. Full-thickness (third –degree) burns involve all skin layers. They appear dray, white, brown, or black in color (Marcdante, 2016).

Complications of burn injuries are burn wound infection, sepsis, hypovolemic shock, hypothermia, laryngeal edema, carbon monoxide, poisoning, cardiac dysfunction, heterotopic ossification, central nervous system failure, gastric ulcers, cyanide poisoning, compartment syndrome, contractures, hyper metabolic state, renal failure, anemia, transient antidiuretics, psychological trauma, pulmonary infiltrates, pulmonary edema, ongoing hyper metabolism, pneumonia, bronchospasm, isolation, septicemia, suffocation, and death ( World Health Organization, 2017).

Instructional guideline is very important for pediatric nurse who provide nursing care to children with burn injuries for improving quality of care. Updating the nurses knowledge and improve practice related care for children with burn It involves first aid, intravenous therapy, plasma transfusion, assessment of total body surface area (TBSA) and intake and output chart for pediatric patients (World Health Organization, 2017).

Role of nurse involves fluid and electrolyte replacement, burn care (using sterile dressings, debridement and topical ointments) and physical therapy (Marcdante, 2017). Systemic antibiotics, relieving anxiety, fear and nutritional support. Children with critical burn injury may require parenteral nutrition if unable to tolerate trace elements. Effective pain control is important to allow for complete debridement. (Kligman, 2018).

Care of burn also includes discharge planning about nutrition and diet needed safety in home to prevent burn, wound care and range of motion exercises to prevent contraction. This care should help the child to perform activities of daily living and return to normal activities and provide social, emotional, psychological and rehabilitation support to the child and his family (Wilkins, 2016).

#### Significance of the study:

Children with burn injuries in Egypt are a significant problem, especially in families of low socioeconomic status. These families live in overcrowded flats and tend to use kerosene stoves and lack of safety measures. Three hundred and fifty children with burn injuries presented in Burn center of Ain Shams University hospital over a 20 month period (Statistic office Annual report in Ain Shams University hospital, 2018). Proportionately more boys than girls were injured (Elbadawy, 2018).

From the researcher point of view it is important to shed light on the pediatric nurses' performance regarding care of children suffering from burn injuries.

#### Aim of the Study

This study aims to evaluate the effect of instructional guidelines on nurses' performance regarding children suffering from burn injuries through:

1. Assessing performance of nurses regarding burn injuries.
2. Design, implement and evaluate the effect of applying the instructional guidelines on nurses' performance regarding care of children suffering from burn injuries.

## 2. SUBJECTS AND METHODS

### Research Hypothesis

The instructional guidelines have a positive effect on nurses' performance regarding care of children suffering from burn injuries.

**The subjects and methods of the current study were discussed under the following four designs:**

- I. Technical Design
- II. Operational Design
- III. Administrative Design
- IV. Statistical Design

### I. Technical Design

It was include researcher design, setting, subject and tools for data collection.

### Research Design

A quasi-experimental design was utilized to conduct this study.

### Study Setting

The study was conducted at burn center affiliated to Ain shams University Hospitals and Embaba Hospital affiliated to Ministry of Health. In Ain Shams University Hospitals: The first department: Emergency unit in the first floor it consists of three rooms each room contains of two beds for care of children suffering from burn injuries to assess burn degree. The second department dressing room in the fourth floor of the burn center consists of five rooms .Each room contains of two beds for care of children suffering from burn injuries.

In Embaba Hospital: The first department in the first floor of the burn center and outpatient clinic consists of four rooms each room contains of five beds (inpatient) for care of children suffering from burn injuries. And two beds (Outpatient for dressing).The second department (dressing room) in the second floor of the burn center consists of two rooms. Each room contains of two beds for care of children suffering from burn injuries (sever burn injuries)

### Sample

A purposive sample included 39 nurses, who working at the previously mentioned setting with the following inclusive criteria:

- Nurses from both sex regardless their age, years of experiences, qualification, nurses who work with the children suffering from burn injuries and provide care for children have the following criteria:
- Stage hospital not less than two weeks.
- Free from any chronic disease mental or physical.

**Tool of data collection:** A structured interviewing questionnaire developed by the researchers was used in the study after reviewing the national and international related literature. It consisted of four parts:

### Tool (1): Structured questionnaire sheet: (pre/post)

It was designed by the researcher after reviewing the relevant literature. It will be written in a simple Arabic language to assess the following parts:

#### First part:

- A. Nurses' characteristics: as: age, gender, position, level of education, years of experiences and previous training programs about care of burn injuries).
- B. Children characteristics: as: age, gender, level of education, ranking, pediatric history of burn injuries (causes of burn injuries, degree of burn injuries, past history.).

**Second part:** Knowledge of study nurses about care of children suffering from burn injuries as (Definition of burn injuries, causes, signs and symptoms, degrees and care of burn injuries (Pre/ post)

**Scoring system for knowledge:** Each question had a score ranged from 0 - 2 grades, whereas, correct and complete answer scored 2 grades, correct but incomplete answer scored 1 grade and score zero for an incorrect or unknown answer. These scores were summed-up and converted into a percent score: from  $0 < 50$  referred to poor knowledge,  $50 < 75$  referred to average knowledge while score from  $75 \leq 100$  referred to good knowledge.

**Tool (2): An observational Checklist, (pre/post):**

Adopted from (Clinical Skills Manual for Pediatric Nursing Caring for Children (**Ruth, 2016**)). To assess the nurses' practices regarding providing care for children with burn it was contain checklist about the following (burn dressing, Intravenous therapy, plasma transfusion, measuring vital signs).

**Scoring system for practices**

The correct step was scored one, and that incorrect step was scored zero. These scores were summed-up and converted into a percent score: from  $0 < 75$  referred to incorrect practices, while  $75 \leq 100$  referred to correct practices.

**Tool (3):** Design the instructional guidelines regarding nursing care about children suffering from burn injuries. The researcher was established the instructional guidelines regarding care of children suffering from burn injuries as cool the burn with cool tap water, cover burn area with cling wrap, warm the children; based on actual needs assessment of the studied sample. Each nurse was assessed twice pre and post implementation of instructional guidelines regarding care of children suffering from burn injuries as using the previously mentioned tools.

## II. Operational Design

The operational design for this study consisted of preparatory phase, content validity, pilot study and fieldwork.

### Preparatory Phase

This phase was including reviewing of literature related to nurses' knowledge about care of children suffering from burn injuries. This served to develop the study tools for data collection. During this phase, the researcher also will visit the selected places to get acquainted with the nurses and the study setting.

### Content Validity and Reliability

It was ascertained by a panel of 5 experts in the field of pediatric nursing. their opinions were elicited regarding the format, layout, consistency, accuracy and relevancy of the tools to test its content validity and applicability, reliability was done used test-retest were (0.89) for knowledge and (0.83) for the practices.

### Pilot Study

A pilot study was carried out on 10% (4) of the total nurses in order to test the applicability of the constructed tools and the clarity of the included questions. The pilot had also served to estimate the time needed for each nurse to fill in the questions. According to the results of the pilot, some corrections and omissions of items were performed as needed. The pilot participants were not included in the main study sample.

### Fieldwork

The actual field work was carried out over a period of 12 months. The researcher was available in the study settings four days per week during morning shift (from 9-12am) and afternoon shift (from 2-5pm) at mentioned settings. (2days for Ain shams university hospitals and 2 days for Embaba hospital) by rotation (every Saturday, Sunday, Monday and Tuesday)

The instructional guidelines were developed based on the result obtained from the pre-test questionnaire sheet. The plan of the instructional guidelines was prepared according to the needs of the nurses, implemented, and evaluated the degree of improvement in the nurse's condition.

The teaching methods were lectures discussions, and brain storming. Also, media used included pictures and handouts. An illustrated booklet and CD prepared by the researchers and real objects were also used. By the end of each session, the nurses were informed about the content of the next session and its time.

### The present study was conducted in four phases:

**1. Preparatory phase:** The tool of data collection development: A review of the past and current related literature covering various aspects of care of children with burn, using available books, periodicals, articles and magazines. The objectives were to get acquainted with the research problem to develop the study tools.

**2. Assessment phase:** By using pre-testing questionnaire to assess the present nurse's knowledge and practices about care children with burn and home environment suitable for their children.

**3. Planning and implementation phase:** By developing the instructional guidelines content and implementing it.

✓ General objective of the instructional guidelines was to improve the nurse's knowledge and practices regarding care of children with burn.

✓ Based on the result of the pre-test questionnaire, the researchers utilized multiple sessions (theory & practice) ranged from 7-10 sessions and each session needed from 1-2 hours, and meeting with nurses were two days per week.

✓ The content helped every nurse to be able to: identifying \types of burn, causes of burns, signs and symptoms of burn, area exposed to burn, complications from burn.

✓ The instructional guidelines were tailored to suit nurse's educational needs. The researcher developed an Arabic illustrated booklet which directed the nurses about care of children with burn.

- Educational sessions were constructed by the researcher which contain the following topics: **Venue:** Burn center affiliated to Ain shams University Hospitals and Embaba Hospital affiliated to Ministry of Health. In Ain Shams University Hospitals

- **Teaching methods including:** Face to face teaching to nurses, lectures, group discussion, demonstration and role play

- **Teaching materials including:** Laptop, booklet, real objects, posters, white board, flip chart, videos and simulation

- **Evaluation methods including:** Pre/post tests, observation checklists and summative: pre-post /tests analysis.

### 4. Evaluation phase

Instructional guidelines outcomes were assessed through pre and post implementation of the program.

### III. Administrative Design

An official permission to conduct the study was obtained through an issued letter from the Dean at the Faculty of Nursing, Helwan University to the medical and nursing directors of the previously mentioned study settings.

#### Ethical Considerations

The research approval was obtained from the Faculty Ethical Scientific Research Committee before starting the study. The researcher was clarifying the aim of the study to nurses who included the study before starting. The researcher was assuring maintaining the confidentiality of subjects' data. The nurses were informed that have the right to accept of participation or not in the study and have the right to withdraw from the study at any time without any reason. The confidentiality of the study subjects was secured.

### IV. Statistical Design

The data obtained were synthesized, analyzed, and presented in the form of tables and figures using the Statistical Package for Social Sciences version 24 (SPSS). Qualitative variables were presented in the form of frequencies and percentages; quantitative variables were presented in the form mean and SD. Test of significance was used to find out associations between study variables. Chi-square ( $\chi^2$ ) test of significance was used in order to compare proportions between two qualitative parameters. Spearman's rank correlation coefficient ( $r$ ) was used to assess the degree of association between two sets of variables if one or both of them was skewed. The confidence interval was set to 95% and the margin of error accepted was set to 5%. So, the p-value was considered significant as the following:

- P value  $\leq 0.05$  was considered significant.
- P value  $< 0.001$  was considered as highly significant.
- P value  $> 0.05$  was considered insignificant.

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### Training program for improving nurses' performance regarding care of children suffering from burn injuries

A preparation of the program was designed by investigator and implemented only to the study group. It was designed in English and translated into Arabic language. The content of the program was built on the review of related literature. The time allocated (10 hours theory and 4 hours practice).

#### General objective:

#### At the end of this program, each nurse should be able to:

- Improve nurse's knowledge regarding Anatomy and physiology of the skin.
- Improve the nurse's understanding definition, causes and degrees of burn injuries.
- Improve the nurse's understanding high risk affected to burn injuries and dangerous factors.
- Improve the nurse's understanding complications and preventions of burn injuries.
- Improve the nurse's understanding data collection in burn injuries and follow up of children with burn injuries in home and hospital. Improve the nurse's understanding treatment of burn injuries and instructional guidelines regarding burn injuries.
- Improve the nurses understanding resuscitation of children with burn injuries.
- Improve the nurse's performance regarding care of children with first degree of burn injuries.
- Improve the nurse's performance regarding care of children with second and third degree of burn injuries.

#### Introduction:

Pediatric nurse plays an important role in designing intervention program for management children with burn injuries. She is milestone in early detection and high risk affected burn injuries because she is often the first health care setting. By the virtue of the close nurse-children relationship, pediatric nurse also plays an important role in the implementation of nursing care regarding burn injuries along with the physician (*Bengtson, 2016*).

#### Target population:

Nurses who work with the children suffering from burn injuries in Ain shams university hospitals and imbaba hospital and provide care for children have the following criteria:

- Stay at hospital not less than 2 weeks.
- Free from any chronic disease mental or physical.

#### Teaching process:

1- Nurses were actively involved in session of intervention program by giving them the opportunity to ask questions, respond and apply information.

#### 2- Feedback:

Give the nurse a chance to know how well they are doing in order to guide their effort toward further progress, Improve nursing care, improvement health status, maintain healthy life for hypertension and give the nurses actual results about content and methods of teaching to cover the gaps exhibited.

#### 3- Clarity:

The nurses must be able to hear and understand the researcher and see what is being demonstrated .use clear language, define new wards and use the pictures and booklet.

#### 4- Mastery:

Researcher must ensure at the beginning of each session that the nurses have the perquisites knowledge and at the end of each session that the objectives have been achieved. **Strategy of teaching:**

**1-Teaching methods:**

Illustrated lectures supplemented by audiovisual aids encouraging the nurses to interrupt the researcher for questions, comments and clarification and this through: group discussion, demonstration and re-demonstration.

**2-Teaching media:**

**A- Audiovisual aids:**

- Pictures
- Handouts(Booklet)
- Laptop/ data show

**B-Real object:**

- Cotton.
- Gauze.
- Plaster.
- Medication application.
- Disinfection solution for wound.

**Evaluation:**

• **Formative evaluation:** was carried out using the previously mentioned tools. Pre and post was done regularly throughout the intervention program through: ongoing questions and answers, and Re-demonstration.

**Summative evaluation:** was done at the end of intervention program (post-test) to assess the nurses knowledge acquired, were tested after 3 months from the end of the intervention program (post-test).

**3. RESULTS**

**Table (1): Distribution of the studied nurses according to their total knowledge score regarding burn (No= 39)**

Item	Pre program		Post program		X2	P Value
	No	%	No	%		
Good	11	28.2	16	41.0	8.4	*0.01
Average	13	33.3	19	48.7		
Poor	15	38.5	4	10.3		

(\*) Statistically significant at p<0.05

**Table (1)** showed Clarifies that, there were statistically significant relations between nurses knowledge related to burn throughout the intervention (p<0.05).

**Table (2): Distribution of the studied nurses regarding to their total practices regarding burn (no= 39)**

Item	Pre program		Post program		X2	P Value
	No	%	No	%		
Incorrectly practices	14	35.9	24	61.5	5.1	*0.02
Correctly practices	25	64.1	15	38.5		

(\*) Statistically significant at p<0.05

**Table (2)** showed clarifies that, there was statistically significant relation between nurses practices related to care burn throughout the intervention (p<0.05).

**Table (3): Correlation between total knowledge of the studied nurses and their total practices regarding care of burn**

Knowledge	Practices	
	r	P Value
Pre program	0.57	0.8
Post program	0.91	*0.01

(\*) Statistically significant at  $p < 0.01$

Table (3) showed illustrates positive correlation between total knowledge of the studied sample and their total practices regarding care of burn throughout the intervention ( $p < 0.05$ ).

#### 4. DISCUSSION

A burn is defined as an injury to the skin or other organic tissue principally caused by heat or due to radiation, radioactivity, electricity, friction or contact with chemicals. Burn injury is recognized as the most devastating of all injuries and is considered a public health crisis. Furthermore, it is reported that burns are the 11th leading cause of death in children aged 1–9 years, and children less than five years in the WHO African Region (WHO, 2016).

Concerning the total knowledge of the studied nurses regarding burn the current work reported that, there was statistically significant relation between nurses knowledge about burn throughout the intervention

This was in accordance with the study of (Kambli, 2014), which was about “Knowledge Regarding Burn Wound Care among Nurses “ clarified that, there was statistically significant difference between nurses knowledge about burn pre –post instructional guidelines intervention.

The current study illustrated that, there was positive correlation between the total knowledge of the studied nurses and their total practices regarding care of burn throughout the intervention. This was supported by (Rene, et al., 2014), who studied “ Pediatric burn care in sub-Saharan Africa” clarified that, there was positive correlation between the total knowledge of the studied nurses and their performance regarding care of burn pre – post educational program implementation.

Also this was in agreement with (Alice and Richard, 2016), who conducted a study about “Burns management in NICU” showed that , there was positive correlation between the total knowledge of the studied nurses and their total practices regarding care of burned children throughout the instructional guidelines intervention.

#### 5. CONCLUSION

**Based on the findings of the present study, it can be concluded that:**

Instructional guidelines had a positive effect on studied nurses' knowledge and practice regarding care of children suffering from burn injuries. There was significant improvement in the level of knowledge and practice among the studied nurses' before and after instructional guidelines.

#### 6. RECOMMENDATIONS

Based on findings of the current study, the researcher recommends the following:

- 1- Continuous evaluation of nurses' knowledge and practice is essential to identify nurses' needs and factors affecting their performance in burn center.
- 2- Developing continuous educational programs including evidence based guidelines based on needs' assessment for nurses to improve their performance regarding caring of children suffering from burn injuries.
- 3- Developing & availability of a simplified and comprehensive educational, guidelines and booklet about nursing management for nurses in burn center.
- 4-Continuous educational program and training should be offered to the nurses on updating knowledge and practice to raise their standard of care for pediatric patient with burn injuries.
- 5- In- service training program for newly recruited nurses to update their knowledge and improve their practice in management of pediatric patient with burn injuries.



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