

Assessment of Nurses' Performance Regarding Care Of Children Suffering from Burn injuries

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Abstract

This study aimed to assess nurses' performance regarding care of children suffering from burn injuries. **Subject and methods:** A purposive study was conducted at burn center affiliated to Ain Shams University Hospitals and Embaba Hospital. **Sampling:** The subjects of this study were composed of 39 nurses who worked in the previously mentioned study setting. **Tools:** (1): Structured questionnaire sheet. (2): Observational checklists. **Results:** More than three quarters of the studied samples were females and had diploma nurses. More than one third of them 5-10 years of experience. There were statistically significant relations between nurses' knowledge related to burn throughout the intervention and there were statistically significant relations between nurses' practice related to care of burn throughout the intervention. There was positive correlation between total knowledge of the studied sample and their total practice regarding care of burn throughout the intervention. **Conclusion:** The study concluded that, more than three quarters of the studied samples were females and had diploma. More than one third of them 5-10 years of experience. There were statistically significant relations between nurses' knowledge related to burn throughout the intervention and there were statistically significant relations between nurses' practice related to care of burn throughout the intervention. There was positive correlation between total knowledge of the studied sample and their total practice regarding care of burn throughout the intervention. **Recommendations:** The study sample recommended that, there is need for improving the knowledge and practice of nurses' about burn injuries through: developing continuous educational programs including evidence based guidelines based on needs' assessment for nurses to improve their performance and quality of care regarding caring of children suffering from burn injuries, developing & availability of a simplified and comprehensive educational, guidelines and booklet about nursing management for nurses in burn center.

Keywords: Nurses, Children-Burn injuries –Assessment – Performance

Introduction

Children are naturally curious, as soon as, mobile, begin to explore the 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. That

are classified according to severity, source, and extent of surface involve. 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 aimed to assess nurses' performance regarding care of children suffering from burn injuries.

Research Question:

1. What is the nurse's performance regarding care of children with burn injuries?
2. Is there a relation between nurses' performance regarding care of children suffering from burn injuries and their demographic characteristics?

Subjects and Methods

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 descriptive 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.

Tools 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:

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).

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 ≤ 100 referred to good knowledge.

Tool (2): An observational Checklist

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 incompetence

practice, while $75 \leq 100$ referred to correct practice.

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 don 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 researcher first met with the nurses were worked in the previously mentioned setting, explained the aim of the study after introducing herself and done by oral nurses' consent.

-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.

-The nurses were assured that information collected would be treated confidentially, and it would be used only for the purpose of the research. Then, individual interviewing was done after obtaining nurses consent to participate.

- The studied sample filled in the questionnaire through interviewing nurses individually in a time ranged between 20 to 30 minutes and 30 to 50 minutes during observational checklist.

- The researcher informs the studied sample to withdraw from the study at any time.

- A code number was used for every nurse to ensure anonymity and to compare between them.

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 (χ^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 ≤ 0.05 was considered significant.
- P value < 0.001 was considered as highly significant.
- P value > 0.05 was considered insignificant.

Results

Table (1): Distribution of the studied nurses according to their demographic characteristics (no=39)

Item	No	%
Age		
20 < 30 years	11	28.2
30 > 40 years	20	51.3
≥ 40 years	8	20.5
Mean \pmSD	32.5\pm2.3	
Gender		
<i>Female</i>	34	87.17
<i>Male</i>	5	12.83
Level of education		
Diploma	20	51.3
Diploma and specialty	8	20.5
Technical institute	7	17.9
Bachelors	4	10.3
Years of experiences		
5 < 10 years	8	20.5
10 < 15 years	14	35.9
15 < 20 years	10	25.6
≥ 20 years	7	17.9
Attendance of training courses about burn management		
Yes	17	43.6
No	22	56.4

Table (1) showed the distribution of the studied nurses according to their characteristics, the above table revealed that, more than (51.3%) (51.2%) were in the age group of 31-40years with mean \pm SD 32.5 \pm 2.3. and diploma nurse respectively. Also more than three quarters of them (87.17%) were females, and one third (36.0%) of them had 5-10 years of experience, and 56.4% of them were not attended previous training courses about burn management.

Table (2): Distribution of the studied children according to their illness history (no=39)

Items	No	%
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Cause of burn		
Flammable	17	43.6
Hot objects	15	38.5
Chemical substances	6	15.4
Radiation	1	2.6
Degree of burn		
First	3	7.7
Second	29	74.4
Third	7	17.9
Mothers intervention		
Put burned part under water	6	11.3
Put ice on burned part	36	90.0
Go to the hospital	34	85.0
cover burned part with gauze	8	20.1

Table (2) represented that, less than half (43.6%) of the studied children were burned by flammable and 74.4% had second degree of burn. Regarding mothers intervention this table showed that, 90% put ice on burned part and the majority of them go to the hospital by their burned children for asking treatment.

Table(3): Distribution of the studied nurses according their knowledge regarding meaning, consist and function of the skin (no= 39)

Item	N0	%
Meaning of Skin		
Complete correct answer	6	15.4
Incomplete correct answer	10	25.6
Incorrect answer	11	28.2
Do not know	12	30.8
Consist of Skin		
Complete correct answer	11	28.2
Incomplete correct answer	13	33.3
Incorrect answer	9	23.1
Do not know	6	15.4
Function of the skin		
Complete correct answer	8	20.5
Incomplete correct answer	12	30.8
Incorrect answer	10	25.6
Do not know	9	23.1

Table (3) revealed that, about 15.4% and 20.5% of the studied sample answered completely correct answer regarding meaning and function of the skin in pre-program implementation respectively as compared with 30.8% and 51.3% answered completely correct answer regarding meaning and function of the skin.

Table (4) Distribution of the studied nurses according their knowledge regarding definition, causes and types of burn (no= 39)

Item	No	%
Definition of Burns		
Complete correct answer	9	23.1
Incomplete correct answer	16	41.0
Incorrect answer	10	25.6
Do not know	4	10.3
Causes of Burns		
Complete correct answer	5	12.8
Incomplete correct answer	8	20.5
Incorrect answer	16	41.0
Do not know	10	25.6
Types of burn		
Complete correct answer	13	33.3
Incomplete correct answer	11	28.2
Incorrect answer	8	20.5
Do not know	7	17.9

Table 4) revealed that, about 23.1%, 12.8% and 33.3% of the studied nurses answered completely correct answer regarding definition, causes and types of burn in pre-program implementation respectively as compared with 53.8%, 43.6% and 61.1% answered completely correct answer regarding definition, causes and types of burn in post-program implementation respectively.

Table (5): Distribution of the studied nurses according their knowledge regarding signs and symptoms of burns and percentage of the burn (no= 39)

Item	No	%
Signs and symptoms of burn		
Complete correct answer	14	35.9
Incomplete correct answer	10	25.6
Incorrect answer	9	23.1
Do not know	6	15.4
Percentage of the burn		
Complete correct answer	10	25.6
Incomplete correct answer	15	38.5
Incorrect answer	9	23.1
Do not know	5	12.8

Table (5) revealed that, more than one third (35.9%) of the studied nurses answered completely correct answer regarding signs and symptoms of burn in pre-program implementation respectively as compared with more than half of them (56.4%) answered completely correct answer regarding signs and symptoms of burn

Table (6): Distribution of the studied nurses according their knowledge degree& characteristics of the burn (no= 39)

Item		
	No	%
Degree of burns		
Complete correct answer	9	23.1
Incomplete correct answer	14	35.9
Incorrect answer	12	30.8
Do not know	4	10.3
First burn degree characterized by		
Complete correct answer	17	43.6
Incomplete correct answer	9	23.1
Incorrect answer	8	20.5
Do not know	5	12.8
second burn degree characterized by		
Complete correct answer	11	28.2
Incomplete correct answer	18	46.2
Incorrect answer	7	17.9
Do not know	3	7.7
Third burn degree characterized by		
Complete correct answer	7	17.9

Incomplete correct answer	10	25.6
Incorrect answer	19	48.7
Do not know	3	7.7

Table (7): Distribution of the studied nurses according their knowledge regarding nursing care for burning child (no= 39)

Item	No	%
Nursing care for first burn degree		
Complete correct answer	12	30.8
Incomplete correct answer	14	35.9
Incorrect answer	7	17.9
Do not know	6	15.4
Nursing care for second burn degree		
Complete correct answer	4	10.3
Incomplete correct answer	13	33.3
Incorrect answer	17	43.6
Do not know	5	12.8
Nursing care for third burn degree		
Complete correct answer	3	7.7
Incomplete correct answer	16	41.0
Incorrect answer	12	30.8
Do not know	8	20.5
Nursing care for chemical burn on eye		
Complete correct answer	2	5.1
Incomplete correct answer	6	15.4
Incorrect answer	19	48.7
Do not know	12	30.8

Table (7) revealed that, about 30.8%, 10.3% and 7.7% of the studied nurses answered completely correct answer regarding nursing care for first, second and third degree of burn .

Table (8) distribution of the studied nurses according to their total knowledge score regarding burn (No= 39)

Item	No	%
Good	11	28.2
Average	13	33.3
Poor	15	38.5

Table (8) showed that, there was statistically significant poor knowledge score of total nurse's knowledge related to burn.

Assess Practice of the Studied Nurses regarding Care of Burn:

Table (9): Distribution of the studied nurses according to their practice regarding care of the first degree of burn (no= 39)

Item	Done		not done	
	No	%	No	%
Wash hand	22	56.4	17	43.6
Done gloves	14	35.9	25	64.1
Remove burning agent , and apply towels moistened with cool water for 5-10 minutes	10	25.6	29	74.4
Remove and discharge gloves	17	43.6	22	56.4
Done gloves	17	43.6	22	56.4
Gently wash burned area with taped water and soap , and pat dry with a towel	16	41.0	23	59.0
Elevated burned extremity	17	43.6	22	56.4

Arrange water proof barrier as appropriate for comfort and monitor for hypothermia	19	48.7	20	51.3
Apply only water based nondrying lotion to healed areas	11	28.2	28	71.8
Remove and discharged gloves	17	43.6	22	56.4
Wash hands	12	30.8	27	69.2
Document procedure in the child record	13	33.3	26	66.7
Total mean score	15	38.5	24	61.5

Table (9) clarified that, there was statistically significant difference between nurses practice related to nursing care for the first degree of burn

Table (10): Distribution of the studied nurses according to their practice regarding care of the second& third degree of burn (no= 39)

Item	Done		not done	
	No	%	No	%
Wash hand	12	30.8	27	69.2
Done gloves	10	25.6	29	74.4
Remove and discard old dressing	11	28.2	28	71.8
Discard gloves	12	30.8	27	69.2
Done gloves	12	30.8	27	69.2
Gently wash the burn	11	28.2	28	71.8
Deride loose narcotic tissue	10	25.6	29	74.4
Assess the burn	16	41.0	23	59.0
Gently warp in warm towels	10	25.6	29	74.4
Remove and discharged gloves	15	28.5	24	61.5
Wear single sterile gloves	12	30.8	27	69.2
Remove adequate amount of anti-microbial area from jar	14	35.9	25	64.1
Apply anti-microbial cream to burn	16	41.0	23	59.0
Remove and discard single glove and done sterile gloves	12	30.8	27	69.2
For closed method applies non-adherent gauze	13	33.3	26	66.7
Wrap burn loosely with bulky gauze	15	38.5	24	61.5
Total mean score	13	33.3	26	66.7

Table (10) clarified that, there was statistically significant difference between nurses practice related to nursing care of the second& third degree of burn

Table (11): Distribution of the studied nurses according to their practice regarding burn cleaning by irrigation (no= 39)

Item	Done		not done	
	No	%	No	%
Prepare equipment	19	48.7	20	51.3
Assess pain before beginning procedure and medicate if necessary	18	46.2	21	53.8
Assist the child to a comfortable position that provides easy access to the burn area	16	41.0	23	59.0
Place a waterproof pad under the burn site and waste receptacle next to burn	13	33.3	26	66.7
Use cover as not to expose anything other than the burn area	17	43.6	22	56.4
Place PPE, gown, mask and goggles for irrigation	14	35.9	25	64.1
Loosen tape on old dressing	12	30.8	27	69.2
Carefully remove the soiled dressings	16	41.0	23	59.0
Use a small amount of sterile normal saline to loosen and remove dressing	17	43.6	22	56.4
Assess dressing for presence, amount, type, color, and odor of any drainage on the dressings	13	33.3	26	66.7
Dispose of used dressings and gloves; perform hand hygiene	14	35.9	25	64.1
Set up sterile field	18	46.2	21	53.8
Using sterile technique, open the supplies and dressings	17	43.6	22	56.4
Loosen the cap on sterile solution	15	38.5	24	61.5
Apply one sterile glove and set up supplies on sterile field	11	28.2	28	71.8
Open sterile solution; pour sterile solution into irrigation container	17	43.6	22	56.4
Apply 2nd sterile glove	19	48.7	20	51.3

Item	Done		not done	
	No	%	No	%
Fill 30-60mL piston syringe with sterile solution. Note careful not to touch container	16	41.0	23	59.0
Direct gently a stream of solution into the burn	11	28.2	28	71.8
Keep the tip of the syringe at least 1 inch above the upper tip of the burn	12	30.8	27	69.2
Gently flush all burn areas until solution of the burn flows out clearly	19	48.7	20	51.3
Assess burn, bed and burn margins, If exudates remain, clean with gauze	10	25.6	29	74.4
Removed and discard the gloves	12	30.8	27	69.2
Wash hands	14	35.9	25	64.1
Document procedure in the child record	18	46.2	21	53.8
Total mean score	15	38.5	24	61.5

Table (11) clarified that, there was statistically significant difference nurse's practice related to burn cleaning by irrigation.

Table (12): Distribution of the studied nurses according to their practice regarding administration of IV (no= 39)

Item	Done		not done	
	No	%	No	%
Check the physician order	17	43.6	22	56.4
Confirm that child has signed informed consent.	15	38.5	24	61.5
Ensure child identification	12	30.8	27	69.2
Explain procedure to the child	13	33.3	26	66.7
Wash hands.	15	38.5	24	61.5
Check rate and time	14	35.9	25	64.1
IV infusion rate	18	46.2	21	53.8
Test for vein integrity	10	25.6	29	74.4
Position the child with the IV securely	22	56.4	17	43.6
Observe for signs of extravasations	16	41.0	23	59.0
Removed and discard the gloves	17	43.6	22	56.4
Wash hands	11	28.2	28	71.8
Document procedure in the child record	15	38.5	24	61.5
Total mean score	14	35.9	25	64.1

Table (12) clarified that, there was statistically significant difference between nurses practice related to administration of IV

Table (13): Distribution of the studied nurses according to their practice regarding measuring axillary temperature (no= 39)

Item	Done		not done	
	No	%	No	%
Wash hands.	14	35.9	25	64.1
Prepare the equipment	11	28.2	28	71.8
Explain the procedures to the child and his parents.	16	41.0	23	59.0
Check thermometer to see the reading	19	48.7	20	51.3
Clean thermometer from tip to the bulb.	16	41.0	23	59.0
Shake down the level of mercury down to below 35C.	15	38.5	24	61.5
Rinse and dry axilla	17	43.6	22	56.4
Place thermometer under arm with tip center of axilla	13	33.3	26	66.7
Hold child's arm firmly against side for 5 minutes.	14	35.9	25	64.1
Keep the arm flexed across the chest and close to side	16	41.0	23	59.0
Remove thermometer and wipe it from up to down	10	25.6	29	74.4
Hold the thermometer at eye level	19	48.7	20	51.3
Take the reading	15	38.5	24	61.5
Record the temperature	18	46.2	21	53.8
Wash thermometer	11	28.2	28	71.8
Keep equipment in their place	14	35.9	25	64.1
Total mean score	15	38.5	24	61.5

Table (13): clarified that, there was statistically significant difference between nurses practice related to measuring axillary temperature.

Table (14): Distribution of the studied nurses according to their practice regarding plasma transfusion (no= 39)

	Done	not done
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	No	%	No	%
Check physician order.	11	28.2	28	71.8
Ask if child has had plasma transfusion reaction in the past.	12	30.8	27	69.2
Assess child's condition.	15	38.5	24	61.5
Prepare equipment.	12	30.8	27	69.2
Advise child to report any chills, itching, rashes	19	48.7	20	51.3
Perform hand washing.	17	43.6	22	56.4
Put on clean gloves.	11	28.2	28	71.8
Hang container of 0.9 normal saline with blood administration set.	16	41.0	23	59.0
Start IV with 18 or 19 gauge catheter if not already present keep IV open by starting flow of normal saline.	13	33.3	26	66.7
Obtain plasma from blood bank.	19	48.7	20	51.3
Check plasma bag label for identification number, expiration date and child name.	13	33.3	26	66.7
Take baseline vital signs before beginning transfusion. Start administration slowly.	10	25.6	29	74.4
Stay with the child for 5 to 15 minutes of transfusion.	18	46.2	21	53.8
Check vital signs at least every 15 minutes for the first half hour.	15	38.5	24	61.5
Observe child for flushing, itching or skin rash.	16	41.0	23	59.0
Maintain the prescribed flow rate.	10	25.6	29	74.4
When transfusion is completed, clamped off plasma and begin to infuse 0.9 % of normal saline.	11	28.2	28	71.8
Clean and return equipment.	14	35.9	25	64.1
Remove gloves.	15	38.5	24	61.5
Wash hands.	16	41.0	23	59.0
Recording administration of plasma and child's reaction.	17	43.6	22	56.4
Return plasma transfusion bag to blood bank.	13	33.3	26	66.7
Total mean score	15	38.5	24	61.5

Table (14) clarified that, there was statistically significant difference between nurses practice related to plasma transfusion.

Table (15): Distribution of the studied nurses regarding to their total practice regarding burn (no= 39)

Item	No	%
Competence practice	14	35.9
Incompetence practice	25	64.1

Table (15) showed that, there was statistically significant incompetence of total practice nurse's regarding care of burn.

Relation between studied nurse's total knowledge and practice in relation to their demographic Characteristics

Table (16): Relation between total Knowledge of the studied nurses regarding care of burn and Socio - Demographic Characteristics (no= 39)

Socio- demographic Characteristics		Studied nurses								X2	P Value
		Total knowledge									
		Good (11)		Average (13)		Poor (15)		Total			
		No	%	No	%	No	%	No	%		
Age	20<30	5	12.83	4	10.3	2	5.1	11	28.2	5.8	0.11
	30< 40	5	12.83	4	10.3	4	10.3	13	33.3		
	≥40	6	15.4	5	12.83	4	10.3	15	38.5		
Gender	Male	4	5.1	0	5.1	1	2.6	5	12.38	0.71	0.69
	Female	14	35.9	11	28.2	9	23.1	34	87.17		
Level of	Diploma	10	25.6	6	15.4	4	10.3	20	51.3		

education	Diploma and Specialty	3	7.7	3	7.7	2	5.1	8	20.5	8.9	*0.02
	Technical institute	3	7.7	2	5.1	2	5.1	7	17.9		
	Bachelors	2	5.1	1	2.5	1	2.5	4	10.3		
Years of experiences	5<10	3	7.7	3	7.7	2	5.1	8	20.5	9.6	*0.02
	15<10	7	17.9	4	10.3	3	7.7	14	35.9		
	10<15	5	12.83	3	7.7	2	5.1	10	25.9		
	≥20	3	7.7	2	5.1	2	5.1	7	17.9		
Attendance of training courses	Yes	9	23.1	5	12.38	3	7.7	17	43.6	15.8	**0.001
	No	10	25.6	7	17.9	5	12.83	22	65.4		

Table (16) illustrated that, there was statistically significant relation between level of education, years of experience and Attendance of training courses of the studied nurses and their total level of knowledge regarding burn respectively. Also, this table showed that, there was non-statistically significant relation between age, gender of the studied nurses and their total level of knowledge regarding burn.

Table (17): Relation between total practice of the studied nursing regarding care of burn and Socio - Demographic Characteristics (no= 39)

Socio- demographic Characteristics		Studied nurses				X2	P Value
		Total practice					
		Incompetence (14)		Competence (25)			
		No	%	No	%		
Age	20<30	5	12.8	10	25.6	9.59	0.65
	30< 40	7	17.9	10	25.6		
	≥40	2	5.1	5	12.8		
Gender	Male	3	7.7	4	10.3	0.09	0.75
	Female	11	28.2	21	51.1		
Level of education	Diploma	5	12.8	8	20.5	10.13	*0.01
	Diploma and Specialty	4	10.3	8	20.5		
	Technical institute	2	5.1	5	12.8		
	Bachelors	3	7.7	4	10.3		
Years of experiences	5<10	7	17.9	5	12.8	8.24	*0.02
	15<10	3	7.7	4	10.3		
	10<15	2	5.1	7	17.9		
	≥20	2	5.1	9	23.1		
Attendance of training course	Yes	5	12.8	15	38.5	9.6	*0.02
	No	9	23.1	10	25.6		

Table (17) illustrates that, there was statistically significant relation between level of education, years of experience and attendance of training course of the studied nurses and their total level of practice regarding to burn .Also this table showed that, there was non- statistically significant relation between age, gender of the studied nurses and their total level of practice regarding burn.

Table (18): Correlation between total knowledge of the studied nurses and their total practice regarding care of burn

Item	Practice	
	r	P Value
Knowledge	0.57	0.8

Table (18) illustrates that, there a positive correlation between total knowledge of the studied sample and their total practice regarding care of burn ($p<0.05$).

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

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.

Also the current study clarified that, there was statistically significant relation between nurses practice related to (administration of IV, and measuring axillary temperature, pulse, blood pressure, and respiratory rate) .Moreover there was statistically significant difference between nurses practice related to plasma transfusion. Form the researcher point of view it might be due to the nursing care by fluid replacement can improve pediatric patient's health status.

This was supported by (Matthew, 2018), whose study was about “Progress of clinical practice on the management of bum-associated pain” reported that, there was statistically significant relation between the practice of the studied nurses regarding measuring of (temperature, pulse, blood pressure, and respiratory rate of burned children)

Also, on assessing the relation between characteristics of the studied nurses and their total level of practice regarding burn, the current finding enumerated that there was statistically significant relation between levels of education, years of experience, attended training course and their practice regarding burn. The current study findings were supported by Berman and Snyder, (2019), who studies nurses’ Practice for prevention of infection in burn unit at a university hospital: Suggested Nursing Guidelines mentioned that there was statistically significant relation between the study nurses demographic

data, level of education, experiences and their practice regarding burn management. Form the researcher point of view it might be due to instructional guidelines can improve nurse's performance regarding care of children with burn injuries.

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.

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 practice regarding care of burned children.

Conclusion

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

The current study concluded that, More than three quarters of the studied sample were females and had diploma; More than one third of them had 5-10 years of experience. There were statistically significant relations between nurses' knowledge related to burn. And there was statistically significant relation between nurses' practice related to care of burn throughout the intervention. There was positive correlation between total knowledge of the studied sample and their total practice regarding care of burn.

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 and quality of care 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- Developing educational program/ self-learning packaging (SLP) for infection control and follow up of aseptic techniques during care for burn injuries.
- 5- An orientation program should be prepared to help newly appointed nurses to acquire, develop their knowledge and practice to deal with such group of pediatric patient with burn injuries.

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