

Effect of Educational Program on Nurses Knowledge and Practice Related to Care for Children with Moderate Burn Degree

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Abstract: Background: Burns are one of the most physically and psychologically devastating forms of trauma in children. They are also one of the most common household injuries and thus an important cause of morbidity and mortality. In both developed and developing countries, burn injuries have a significant impact on pediatric patients and may affect a range of body systems. The impact of these injuries on children and families is often long lasting. Aim: was to determine the effect of educational program on nurses' knowledge and practice related to care for children with moderate burn degree. Settings: The study was conducted at two sitting, Pediatric burn ward at Emergency Hospital of Main Tanta University and Pediatric burn unit at Sporting Hospital of Alexandria affiliated to the Ministry of Health. Subjects the sample consists of fifty nurses (25 from each above mentioned settings). Tools: three tools were used for data collection. The first tool was Structured Questionnaire Schedule. The second tool was Assessment of nurses' knowledge related to burn. The third tool was observation checklist for nurses' practice. Results: It was recognized that their knowledge and practice were much better immediately after the educational program and after one month.

Conclusion: Nurses attend educational program exhibited to be improvement in total knowledge and practice score post program with a significant positive correlation was found between nurses' knowledge score and their practice score.

Recommendations: Booklet about nursing guideline protocol for pediatric burn care should be available in burn unit or ward. Continuous in-services education and training programs should be offered to the nurses on updating knowledge and practice to raise their standard of care for pediatric burn.

Keywords: Educational program, nurses' knowledge and practice, children moderate burn.

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I. Introduction

Burn have always been an important cause of human injuries. They are a fast moving progressive illness involving the largest organ of the body; namely the skin.⁽¹⁾ Burn injuries represent one of the most series public problems facing both developing and industrialized nations today. In many high-income countries, burn death rates have been decreasing, and the rate of child deaths from burns is currently over 7 times higher in low- and middle-income countries than in high-income countries.^(2,3) Burns are referred to a transfer of energy from a heat source to the body. Heat may be transferred through conduction or electromagnetic radiation. Burn are categorized as thermal, electrical burn, radiation, or chemical burn according World Health Organization.⁽⁴⁾

Children account for almost half of the population with burn injury and children less than 5 years account for 50% to 80% of all childhood burns.⁽⁵⁾ In pediatric populations, scalds clearly dominate, accounting for 60 % to 75% of all hospitalized burn children, followed by flame and contact burns. Globally, the majority of children burnt are boys with a ratio of around 2:1 to girls.^(4,6-7)

Major risk is improper adult supervision, regional factors; children under 5 in the World Health Organization, African region have almost 3 times the incidence of burn deaths than infants worldwide. Socioeconomic factors children living in low- and middle-income countries are at higher risk for burns than children living in high-income countries.^(4,8) Complications may occur, with infections being the most common. The skin acts as a main protection against infection. In burn victims, the skin is severely damaged or dead, leaving the body susceptible to airborne pathogens such as bacteria and fungi. Hypovolemia, or low blood volume from damaged blood vessels and excessive fluid.^(9,10) Electrical burns may lead to compartment

syndrome due to muscle breakdown. Keloids may form subsequent to a burn, particularly in those who are young and dark skinned. Scarring may also result in a disturbance in body image.^(11,12)

World Health Organization (WHO, 2016) estimates that burn injury in the United States is 2 million injuries per year there are over 410,000 deaths each year from fires alone, with more deaths from scald, electrical burns, and other forms of burn.^(4,13) Globally, there were more than 7.1 million fire-related unintentional burns with overall incidence rate of 110 per 100,000 per year in the great majority was found in low-income and middle-income countries with a global mortality rate amounting to 4.8 per 100,000 per year.^(14,15) According WHO 2016, reported in Egypt 17% of children with burns have a temporary disability and 18% have a permanent disability. The incidence of pediatric burn injury was significantly higher among boys 57% than girls and in children aged 3-6 years 70% compared with younger children and school age was 15% child burn.⁽⁴⁾

In Alexandria, the statistical record of Sporting Pediatric Hospital revealed that 56% child burn in year 2018. Scald burn 55%, fire burn 33%, and 11% electrical burn.⁽¹⁶⁾ While, the statistical record of Emergency Hospital of Main Tanta University in year 2017 record 62% of child burn, 60% scald burn and 40% from fire burn.⁽¹⁷⁾ Centers for Disease Control and Prevention (CDC 2011).⁽¹⁸⁾ provides the following statistics for costs related to burns: Fatal burn injuries cost roughly \$3 billion. Direct costs for care of children with burns in the United States of America (USA) exceeded \$ 211 million. Costs for hospital burn management exceeded €10.5 million. Furthermore, mean daily cost of wound dressings for burn.^(19,20)

The nurses play an important role in the overall management of a burn child's. They must be well versed with the various protocols available that can be used to rationally manage a given situation. The management not only involves medical care but also a psychological assessment of the child's and the family. The process uses a scientific method to combine systems theory with the art of nursing, entailing both problem solving techniques and a decision making process.⁽²¹⁾ It involves assessment of the child's to arrive at a diagnosis and then determining the child's goals.

II. Aim of the study

The study aimed to determine the effect of educational program on nurses' knowledge and practice related to care for children with moderate burn degree.

III. Subjects and Method

3.1 Study design: A quasi-experimental research design was used in this study.

3.2 Study hypotheses: Nurses attend educational program expected to be improvement in total knowledge and practice score post program.

3.3 Study setting: The study was conducted at two settings, Pediatric burn ward at Emergency Hospital of Main Tanta University and Pediatric burn unit at Sporting Hospital of Alexandria affiliated to the Ministry of Health.

3.4 Subjects: The sample consists of fifty nurses (25 from each above mentioned settings) nurses who provide care for children have the following criteria:

- Recent moderate degree of burn (Total Body Surface Area from 10% to 30%).
- Children age ranged from 1-6 years.
- Hospital length of stays not less than 2 weeks.
- Free from any chronic disease and not critically ill.

3.5 Tools of the study: In order to collect the necessary data for the study three tools were used:

Tool (I): Structured Questionnaire Schedule: It was comprised of three parts:

Part I: Bio-socio-demographic data related to nurses: it included: age, level of education, years of experience, and attendance of courses about burn.

Part II: Data related to the child as age, sex, educational level, birth order and residence.

Part III: Medical history of children: Past and present medical history, diagnosis, causes of burn and total body surface area.

Tool (II): Assessment of nurses' knowledge related to burn.

It was developed by the researcher after review of recent literature to assess nurses knowledge about the following items: Includes open end question about, definition of burn, risk factor, causes, diagnosis, degree of burn, signs and symptoms, complication of burn, and management of burn as fluid, electrolyte, nutritional requirement during burn, hygienic care, itching control, injury prevention.

Tool (III): An observation checklist for nurses' practice which include:

- Wound dressing.

- Using aseptic technique to control infection
- Intravenous fluids administration .
- Prevent burn injury.
- Measuring vital signs
- Nutrition needs
- Care post discharge from the hospital

3.6 Method:

1. An official Permission to conduct the study was obtained from the responsible authorities of the Neonatal Intensive Care Unit after explanation of the aim of the study.

2. Ethical consideration;

Written consent form was obtained from nurses after explaining the aim of the study and their right to withdraw from the study at any time. Confidentiality and privacy was taken into consideration regarding the data collection.

3. The tool was developed and was tested for its content validity by five experts in Pediatric Nursing Field and its reliability was ascertained.

4. Reliability was tested using Cronbach's alpha test, it was $\alpha = 0.970$

5. A pilot study was conducted on nurses to test the applicability and clarity of the Tools (I - III). Necessary modifications were done. Data obtained from the pilot was excluded from the original sample.

6. The researcher distributed the Tool II to the nurses' to collect data at the end of the shift or during the break time.

7. Researcher was assess nurses knowledge through distribution of Tool II to assess the nurses' knowledge through distribution of nurses was asked to fill and returned back to the researcher.

8. Every nurse was observed by the researcher during morning and afternoon shift to assess her actual practice while providing care for children with burn through using nurses' practice observation checklist Tool III.

9. The study was conducted through three phases:

1-Assessment phase:

- It was carried out by the researcher for all nurses to assess their knowledge using Tool I. Nurses knowledge were assessed before, immediate and after from the program application

- Nurses practice were assess before, immediate and after from the program application using Tool II as all nurses were observed during different nursing procedures in all period of morning and evening shift.

2- Implementation phase:

The developed educational program was implemented by the researcher for based on assessment phase and literature review. The aim of this program was to develop the basic knowledge related to care of children with moderate degree of burn and improve nurses' practices.

This program is composed of theoretical and clinical parts. The theoretical contents include, 8 sessions each one for duration of one hour 2 days weekly. Session was given to 5 groups for each hospital 5 nurses in each group. Each educational session was taken 15- 20 minutes.

Meetings at the head nurse office with all nurses included in the study training as attending workshops and in-service training programs to care for children with moderate burn degree. All study subjects using interactive lectures, video presentation posters, simulation and actual situation. Nurse was able to take the following session.

The first session: introduction about important of this program and identify definition, anatomy of the skin, sign and symptom- risk factors for burn

The second session: Estimation the degree of burn, causes of burn as thermal, chemical, electrical, and radiation

The third session: management of wound dressing

The fourth session: infection control by using universal precautions (mask, gown and gloves)

The fifth session: hygienic care, itching control, prevent burn injury

The sixth session: pharmacological and non-pharmacological for pain control

The seventh session: nutritional needs, intervenes fluid monitoring

The eight sessions: prevent complication, psychological support.

The clinical practice: included observing nurses for their clinical practice during procedure such as wound dressing, using aseptic technique to control infection, intravenous fluid administration, injury prevention, measuring vital signs, nutrition needs, care post discharge through checking the actual nurses' performance throughout clinical procedures for 15-20 minutes per procedure at 3 days weekly for over one month.

Demonstration of the procedures for all nurses was carried out while focusing on missed parts; introducing procedure manual updates with soft copies were also provided for reference.

3-Evaluation phase:

Evaluation of educational program was carried out through nurses immediately after finishing the educational program and after one month; in order to assess the effect of an educational program on improvement of the knowledge and practice.

-Data were collected over a period of 14 months starting from the beginning of August 2016 till the end of December 2017. The duration of the study was taken over a period of 2 years.

Statistical analysis:

The collected data were coded and transferred into specially designed forms in order to be suitable for computer feeding. Following data entry, checking and verification process were carried out to avoid any error during data entry. Frequency analysis, cross tabulation, and manual revision were all used to detect any error. The SPSS version 20 for statistical package was utilized for both data presentation and statistical analysis of the results.

The following statistical measures were used:

Descriptive measures included number percentage, arithmetic mean and standard deviation. Statistical test include: Chi Square Test or Fisher's Exact Test were used to test the significance of results of quantitative variables. The level of significance selected for this study was P less than 0.05.

IV. Results

Table (1) shows percentage distribution of studied children regarding to their characteristic. It was found that one third of children age 1 to less than 3 years (30%), while 40% age 3 to less than 5 years, with a mean age 3.52 ± 1.408 years. Slightly less than two third of third sex had male, while 42% of them had female. Regarding birth order, it was noticed from the same table that less than half of children third birth order (40%). While, first, second and four children were (22%, 18% and 20% respectively). More than two third residences in rural (68%), while 32% in urban.

Table (2) Percentage distribution of studied children regarding to their medical history of the disease is illustrated in table 3. It was found that 100% of the child no present history of disease. More than one third of the children had 2 to less than 3 weeks as length of hospital stay (38%). Slightly less than one half of the children had 3 to 4 weeks as length of hospital stay (46%). While, only 16% of children had 4 weeks and more of length of hospital stay. Considering degree of burn, it was noted that more than two third of children were first degree of burn (66%). The vast majority of the children had second degree of burn, while 70% of children had third degree of burn. It is clear from the same table that slightly more than one third of children had 10% to 15% of total body surface area (32%) and 46% of children had 16% to 20% of total body surface area. On the other hand, 22% of children had 21% to 30% of total body surface area and anti-inflammatory, antibiotic and analgesic were 82%, 92% and 86% of children as treatment. In addition, two third of children have skin graft as surgical operation (60%).

Table (3): presents percentage distribution of studied nurses' regarding to their knowledge about care for children burn. The table revealed that 12%, 22% and 24% of nurses' psychological care, nutrition needs and care of isolation child burn was correct answer before educational program respectively, while immediately after educational program the correct answer among nurses was amended to 82%, 86% and 76% respectively. After one month this correct answer was decreased among 74%, 78% and 70% of them. Only 6% of nurses' fluid resuscitation cares for children burn correct answer before educational program, the rate of their correct answer increased to 78% immediately after educational program, while a decline was detected among 58% of them after one month. Considering hygienic care and itching control for children burn it was obvious that 26% and 20% respectively of nurses correct answer before educational program, while the majority of them were correct answer immediately after educational program 80% and 84% respectively. Correct answer was increased to 96% and 94% after one month respectively with Statistically significant difference between before and immediately program, before and after one month of program implementation ($P=0.001$).

Table (4): illustrates percentage distribution of studied nurses' regarding to their knowledge about infection control. It was found that care of spot blood and contaminated linen nearly equal percent of nurses (24% and 20%) correct answer before educational program respectively. This was amended to 86% and 88% immediately after educational program respectively. Their correct answer decreased to 80% and 74% after one month respectively. Statistically significant difference between before and immediately program, before and after one month of program implementation ($P=0.001$). As regards discard contaminated gauze and cleaning of contaminated surface correct answer was by 46% and 26% of nurses' knowledge before educational program respectively. This was amended to (94% and 90%) and (100% and 96%) immediately after educational program

and after one month respectively. Statistically significant difference was found between before and immediately program, before and after one month of program implementation (P=0.001).

Table (5): Continuation of wound dressing is presented in table 9 (b). It was obvious statistical significant difference between correct nurses practice and step remove clean gloves and discard it in disposable bag, wash hand and wear sterile gloves, use sterile technique and apply antiseptic ointment as Dr order, dry the surrounding skin and apply several dry sterile gauze, remove all equipment and record the dressing change notes on chart (P= 0.000 for each respectively). On the other hand, remove, discard gloves and secure the dressing correctly done were by 62% of nurses' before educational program. This was amended to 86% immediately after educational program and increased after one month to 90% with Statistical significant difference between before and immediately program, before and after one month of program implementation (P=0.001). Only 28% of nurses remove PPE and hand washing correctly done before educational program, the rate of their correctly done increased to 82% immediately after educational program and after one month with statistical difference between before and immediately program, before and after one month of program implementation (P=0.001).

Table (6): Obvious percentage distribution of studied nurses' according to their practice of measure vital signs in the table 13 it can be observed that there was statistical significant difference between correctly done of nurses practice and measuring temperature, pulse, respiration and blood pressure, before and immediately program, before and after one month (P=0.001).

Table (7): presents percentage distribution of nurse' according to their practice of post discharge care. It can be seen in the table that only 20% of them requiring dressing changes correctly done before educational program. This percent was amended to 88% immediately after educational program and elevated to 94% after one month with significant difference before and immediately program, before and after one month of program implementation (P=0.001). Regarding the Exercise, skin and itching car, diet, medication, and sign of complication the table revealed that there was statistical significant between correctly done of nurses practice where P= 0.000 for each of the previously mentioned respectively. More than half of nurses 54% Schedule for follows up correctly done before educational program. Such steps were practiced correctly done among 90% of nurses immediately after educational program and after one month with statistically significant difference before and immediately program, before and after one month of program implementation (P=0.001).

Table (8): Present correlation between nurses' score of knowledge and their score of practice in table 21. It was apparent that positive correlation between nurses' knowledge score and their practice score before, immediately and after one month of the educational program. With statistically significant different (P= 0.001).

Table (1): Percentage Distribution of Studied Children Regarding to their Characteristic.

Characteristic of studied children	(n=50) No	%
Age /years		
1 –	15	30
3 –	20	40
5 – 6	15	30
Mean ± SD	3.52± 1.408	
Sex		
- Male	29	58
- Female	21	42
Birth order		
-First child	11	22
-Second child	9	18
-Third child	20	40
-Four child	10	20
Residence		
-Rural	34	68
-Urban	16	32

Table (2): Percentage Distribution of Studied Children Regarding to their Medical History of the Disease.

Medical history of studied children	(n=50) No	%
Present history		
-No	50	100
Length of hospital stay		
2 > 3 weeks	19	38
3 > 4 weeks	23	46
4 and more	8	16
Degree of burn #		
-First degree	33	66
-Second degree	46	92
-Third degree	35	70
Total body surface area		
10% - 15%	16	32
16% - 20%	23	46
21% - 30%	11	22
Treatment #		
-Anti-inflammatory	41	82
-Antibiotic	46	92
-Analgesic	43	86
Surgical operation		
-Skin graft	30	60
-No	20	40

Table (3): Percentage Distribution of Studied Nurses' Regarding to their Knowledge about Care for Children Burn.

Knowledge items	Studied nurses (n=50)															χ ² (p) 1'	χ ² (p) 2''	χ ² (p) 3'''			
	Before						Immediately						After one month								
	Correct answer		Incomplete answer		Didn't know		Correct answer		Incomplete answer		Didn't know		Correct answer		Incomplete answer				Didn't know		
	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No				%	No	%
-Psychological care for children burn	6	12	10	20	34	68	41	82	4	8	5	10	37	74	7	14	6	12	50.199 0.001*	42.478 0.001*	1.114 0.573
-Fluid resuscitation Care	3	6	13	26	34	68	39	78	6	12	5	10	29	58	10	20	11	22	55.000 0.001*	33.272 0.001*	4.721 0.094
-Nutrition needs for children burn	11	22	19	38	20	40	43	86	3	6	4	8	39	78	5	10	6	12	41.266 0.001*	31.385 0.001*	1.095 0.578
-Hygienic care for children burn	13	26	10	20	27	54	40	80	7	14	3	6	48	96	0	0	2	4	33.484 0.001*	51.634 0.001*	7.927 0.059
-Itching control for children burn	10	20	17	34	23	46	42	84	2	4	6	12	47	94	3	6	0	0	41.500 0.001*	56.818 0.001*	6.481 0.052
-Care of isolation Child burn	12	24	8	16	30	60	38	76	5	10	7	14	35	70	8	16	7	14	28.510 0.001*	25.553 0.001*	0.816 0.665

Table (4): Percentage Distribution of Studied Nurses' regarding to their Knowledge about Infection Control.

Knowledge items	Studied nurses (n=50)															χ ² (p) 1'	χ ² (p) 2''	χ ² (p) 3'''			
	Before						Immediately						After one month								
	Correct answer		Incomplete answer		Didn't know		Correct answer		Incomplete answer		Didn't know		Correct answer		Incomplete answer				Didn't know		
	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No				%	No	%
-Care of spot blood	12	24	18	36	20	40	43	86	2	4	5	10	40	80	4	8	6	12	39.273 0.001*	31.524 0.001*	0.866 0.649
-Discard contaminated gauze	23	46	17	34	10	20	47	94	0	0	3	6	50	100	0	0	0	0	28.998 0.001*	36.986 0.001*	3.093 0.079
-Cleaning of contaminated surface	13	26	11	22	26	52	45	90	5	10	0	0	48	96	0	0	2	4	45.905 0.001*	51.653 0.001*	7.097 0.129
-Care of contaminated linens	10	20	7	14	33	66	44	88	4	8	2	4	37	74	6	12	7	14	49.683 0.001*	32.488 0.001*	3.783 0.151

Table (5): Percentage Distribution of Nurse' According to their Practice of Wound Dressing.

Wound dressing steps	Studied nurses (n=50)															χ^2 (p) 1*	χ^2 (p) 2**	χ^2 (p) 3***			
	Before						Immediately						After one month								
	correctly done		Incompletely done		Not done		correctly done		Incompletely done		Not done		correctly done		Incompletely done				Not done		
	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No				%	No	%
-Wash hand and wear sterile gloves for clean wound	11	22	9	18	30	60	44	88	2	4	4	8	34	68	7	14	9	18	44.137 0.001*	23.313 0.001*	5.983 0.065
-Using sterile technique to clean wound (open blisters, remove necrotic tissue)	16	32	19	38	15	30	42	84	6	12	2	4	46	92	2	4	2	4	44.137 0.001*	23.313 0.001*	5.983 0.065
-Apply antiseptic ointment as Dr order	12	24	14	28	24	48	40	80	7	14	3	6	36	72	8	16	6	12	33.744 0.001*	24.436 0.001*	1.277 0.528
-Dry the surrounding skin, apply several sterile gauze	13	26	5	10	32	64	39	78	6	12	5	10	35	70	10	20	5	10	32.794 0.001*	31.453 0.001*	1.216 0.544
-Remove, discard gloves and secure the dressing	31	62	12	24	7	14	43	86	3	6	4	8	45	90	3	6	2	4	8.164 0.001*	10.757 0.001*	0.712 0.700
Remove all equipment	15	30	11	22	24	48	45	90	5	10	0	0	40	80	4	8	6	12	41.250 0.001*	25.430 0.001*	6.405 0.061
-Remove PPE and hand washing	14	28	13	26	23	46	41	82	6	12	3	6	41	82	5	10	4	8	31.218 0.001*	30.180 0.001*	0.234 0.890
-Record the dressing change notes on child chart	12	24	9	18	29	58	32	64	10	20	8	16	29	58	10	20	11	22	21.062 0.001*	15.201 0.001*	0.621 0.733

Table (6): Percentage Distribution of Nurse' According to their Practice of Measure Vital Signs.

Measuring vital signs	Studied nurses (n=50)															χ^2 (p) 1*	χ^2 (p) 2**	χ^2 (p) 3***			
	Before						Immediately						After one month								
	correctly done		Incompletely done		Not done		correctly done		Incompletely done		Not done		correctly done		Incompletely done				Not done		
	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No				%	No	%
-Measuring temperature	37	74	0	0.0	13	26	46	92	1	2	3	6	40	80	4	8	6	12	8.226 0.001*	6.696 0.001*	3.219 0.200
-Measuring pulse	11	22	0	0.0	39	78	42	84	2	4	6	12	37	74	5	10	8	16	44.332 0.001*	39.530 0.001*	1.888 0.389
-Measuring respiration	9	18	0	0.0	41	82	35	70	0	0.0	15	30	31	62	0	0.0	19	38	27.435 0.001*	20.167 0.001*	0.713 0.398
-Measuring blood pressure	5	10	0	0.0	45	90	25	50	0	0.0	25	50	20	40	0	0.0	30	60	19.048 0.001*	12.0 0.001*	1.010 0.315

Table (7): Percentage Distribution of Nurse' According to their Practice of Post Discharge Care

Post discharge care	Studied nurses (n=50)															χ^2 (p) 1*	χ^2 (p) 2**	χ^2 (p) 3***			
	Before						Immediately						After one month								
	correctly done		Incompletely done		Not done		correctly done		Incompletely done		Not done		correctly done		Incompletely done				Not done		
	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No				%	No	%
-Requiring dressing changes	10	20	13	26	27	54	44	88	2	4	4	8	47	94	0	0.0	3	6	46.539 0.001*	56.218 0.001*	2.242 0.726
- Exercise	7	14	6	12	37	74	39	78	5	10	6	12	35	70	9	18	6	12	44.701 0.001*	41.616 0.001*	1.359 0.507
Skin and itching care	5	10	13	26	32	64	34	68	9	18	7	14	31	62	10	20	9	18	38.317 0.001*	32.072 0.001*	0.441 0.802
-Diet	9	18	22	44	19	38	40	80	7	14	3	6	43	86	2	4	5	10	39.007 0.001*	47.064 0.001*	3.386 0.184
-Medication	8	16	12	24	30	60	43	86	5	10	2	4	40	80	6	12	4	8	51.402 0.001*	43.216 0.001*	0.866 0.649
-Schedule for follows up	27	54	13	26	10	20	45	90	0	0.0	5	10	45	90	2	4	3	6	19.167 0.001*	16.336 0.001*	2.50 0.287
-Sign of complication	6	12	17	34	27	54	32	64	11	22	7	14	29	58	12	24	9	18	30.840 0.001*	24.976 0.001*	0.441 0.802
-Returning to school	9	18	8	16	33	66	35	70	9	18	6	12	30	60	13	26	7	14	34.115 0.001*	29.398 0.001*	1.189 0.552

Table (8): Correlation between Nurses Score of Knowledge and their Score of Practice.

Score of practice	Score of knowledge					
	Before		Immediately		After	
	r	P	r	p	r	p
-Wound Dressing	0.606*	<0.001*	0.673*	<0.001*	0.715*	<0.001*
-Aseptic Technique	0.817*	<0.001*	0.642*	<0.001*	0.530*	<0.001*
-Intravenous Fluids Administration	0.782*	<0.001*	0.614*	<0.001*	0.557*	<0.001*
- Prevent burn injury	0.734*	<0.001*	0.717*	<0.001*	0.638*	<0.001*
-Measuring Vital Signs	0.639*	<0.001*	0.430*	<0.002*	0.535*	<0.001*
-Nutrition Needs	0.814*	<0.001*	0.552*	<0.001*	0.530*	<0.001*
-Care Post Discharge	0.774*	<0.001*	0.504*	<0.001*	0.565*	<0.001*
-Overall practice	0.878*	<0.001*	0.686*	<0.001*	0.625*	<0.001*

V. Discussion

Regarding to their characteristic of studied children have showed that the less one half of children age 3 to less than 5 years high incident among children. This fact can be due to the preschool age are always trying to explore everything around them. This agrees with other studies like Hassen (2010) ⁽²²⁾ who how noted that two third of children burn the age 5 years.

In regard to sex of studied children the finding of slightly less than two third had male may be explained by the fact that they are generally active and exposed to hazardous situations. While, less than half of children third birth order this may be justified by lack of supervision, low socioeconomic status, poor housing and overcrowding from presence children at home beside their mothers that increase workload which leads to carelessness during cooking by traditional ovens. This result supported by Abdel-hamid (2009) ⁽²³⁾ who found that the majority of victims were males. On the contrary, WHO (2008) ⁽¹²⁴⁾ and Sabry (2009) ⁽²⁵⁾ at the burn unit of Mansoura university hospital who found that incidence of burns among females was higher than males this can be attributed to the fact that in our culture the female are spends more time at home participating in activities such as preparing and serving hot drinks and cooking.

In regard to residence, more than two thirds of children in this study come from rural areas. This could be early females married according to Egyptian society culture which lead to an increased workload, houses designed with small rooms, tinny kitchens equally, lack of education and safety precaution knowledge can expose to high risk of burn injuries. In additional, lack of kindergartens which the children in preschool age instead of their, Furthermore, this is considered similar to El-Sebaie (2006) ⁽²⁶⁾ who found that patients from rural areas are more affected than urban areas. Nevertheless these results contradict the results of Abbass (2009) ⁽²⁷⁾ who found the majorities of patients come from urban areas.

In the present study, about slightly less than one half of the children had 3 to 4 weeks as length of hospital stay, the vast majority of the children had second degree of burn, total body surface areas this result noted the slightly less than one half of children had 16% to 20% of TBSA and Two third of children have skin graft as surgical operation in the present study. These results supported by Ismail (2003) ⁽²⁸⁾ who found that the majority of children stay one month, found the majority of cases were second degree of burn, more than one half had less than 20% of TBSA and who found 46% of cases was done skin graft.

The present study revealed that few of nurses had correct answer about care of isolation child burn before educational program. This percentage was increase immediately after educational program. This could be justified by the fact that nurses are prone to infection more than any other one in the health team because they are in continuous contact with sick children and the liability for exposure to infection is great. Having such awareness results from their intention to protect themselves in the first place as well as protecting others. These findings are consistent with Garner S (2014) ⁽²⁹⁾ who reported that the majority of nurses were aware about care of isolation child burn.

The findings of the present study showed that a low percent of nurses' had correct answer before starting educational program about discard the contaminated gauze, while, immediately after educational program and after one month were increase correct answer. This finding may be due to the availability of red containers in burn unit and aware about uses of different color. This result is not supported by Ali (2017) ⁽³⁰⁾ who found that nurses' knowledge regarding discard the contaminated gauze was poor. This result may be unawareness of the nursing for the role of environment in transmission of infection. Providing care for burn children requires specific skilled nurses and instrumented for maintenance of high stander of care. Finding of the present study showed statistical significance differences between nurses' score of practice at their sittings and total nurses' practices. This finding could be attributed to this improvement of nurses practices may be due to the fact that the educational program stressed on the practical training to change nurses' practices using adequate sessions and demonstration which is needed for achievement of the desired level of practices.

Recent CDC guidelines (2014) ⁽³¹⁾ strongly recommended that following aseptic technique in burn wound dressing enhances epithelialization and promotes burn wound healing. Findings of the current study about wound dressing it were obvious that the observations indicated that low percentage of nurses was correctly done practice before educational program. This percentage was increase immediately after education program while, decreased after one month with statistical significance different. This could be attributed to the lack of opportunity for continuous education, shortage of equipment and lack of strong infection control group supervision. These findings were congruent with research has been performed by Keat and Smith (2014) ⁽³²⁾ has shown that infection control practices during burn wound dressing have decreased the level of burn wound infection and this may be due to the absence of standardized form for documentation that can be followed in the hospital regarding these procedures.

The finding of the present study revealed that all observations lighted that nurses recorded vital signs in nursing sheet but not all of them measure it and didn't pay enough attention about importance for measure vital signs as a way to follow up children condition. Moreover, accurate documentation is one of the best defenses for legal claims associated with nursing care. This may be attributed to workload, lack of continuous nursing supervision by the head nurse and nurses may depend on the child health stability and his physical appearance. The finding of this study was in line with Mansy (2018) ⁽³³⁾ who found that not all of the nurses measured vital signs but they recorded them.

Regarding the post discharge, none of the nurses had good score before starting program in both Hospitals while, their good score immediately and after one month of educational program in both hospitals with statistical significance difference. It was obvious that majority of the observations displayed that nurses was correct practice about requiring dressing changes and diet, at immediately and after one month educational program. On the other hand, correct practice after one month was decreased about exercise, skin and itching care, medication, schedule for follow up, sign of complication and returning to school. These results may attribute to nurses workload, lack of the nurse's communication skills with parents or may due to lack of adequate information to conduct education for parent. Moreover, nurses may assume that health instructions after surgery are the role of the physician. This was in line with Abd El-Kader (2015) ⁽³⁴⁾ who stated that nurses did not give health education to parent because they have limited information.

The result of present study indicated that there was a positive correlation between nurses' total score of knowledge and their practice with statistical significance different. This reflects the importance of integration between theory and practice. In addition the educational program was effective in improving the nurses' knowledge and practice. This finding is also in agreement with the study done by Rasslan (2018) ⁽³⁵⁾ who found that, there was a positive correlation between the nurses' knowledge and practice scores.

VI. Conclusion & Recommendations

Conclusion

Nurses attend educational program exhibited to be improvement in total knowledge and practice score post program with a significant positive correlation was found between nurses' knowledge score and their practice score.

Recommendations:

- Continuous in-services education and training programs should be offered to the nurses on updating knowledge and practice to raise their standard of care for pediatric burn.
- Per-service training programs for newly recruited nurses to update their knowledge and improve their practice for management of pediatric burn.
- Pediatric burn care should be emphasized in the curricula of the nursing faculties or nursing institutes. This will equip the students with necessary knowledge and skills that enable them to function properly in this field later on.
- Reasonable nurse to child burn ratio has to be maintained to permit high quality of care.
- A concentrative, strict and continuous close supervision should be done to make sure that nurses' performance is perfectly.
- Offering rewards for the well-done jobs will motivate nurses to function up to the stander.

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