

Effect of Educational Guideline on Prevention of Skin Breakdown in Pediatric Critical Care Unit at Al-Jouf City

Dr. Samar Salah Eldin Mohamed Diab

Lecturer of Pediatric Nursing Faculty of Nursing Menofia University Egypt
Assistant Professor of Nursing Applied Medical Science Aljouf University Saudi Arabia

Abstract: The prevention and management of skin break down and maintenance of skin integrity in the pediatric population often is not a high priority, especially when caring for the critically ill child. The aims of this study were: to increase knowledge and practices of nurses for assessment and prevention of pediatrics' skin break down among nurses of Pediatric Critical Care Unit . Hypothesis increasing nurses' knowledge and using assessment Braden Q scales will be positively effect on improving of nurses performance to prevent skin break down at Pediatric Critical Care Units. Design was: A quasi experimental design one group pre- post education guideline test. Settings were: Sakaka Maternity and Pediatric Hospitals and Domah Hospital at Aljouf City. Sample: A Convenience sample of 38 nurses working in Pediatric Critical Care Units 18 work in Sakaka and 20 work in Domah as well as 39 hospitalized children from two hospitals. Tools: Data were collected through three tools: An interviewing questionnaire sheet and Performance observation sheet for nurses. Pediatric sheet divided into two parts the socio-demographic data, and the second part was observation assessment profile of pediatric patient for Signs of skin break down at Pediatric Critical Care Units. Results: The majority 90% and 57.9% of pediatric patient's age was from 1 day-<1year respectively in Domah hospital and Sakaka maternal and pediatric hospitals at Aljouf City .The majority 68,4%and 60% were girls. The most of nurses' age was 26- 30 years with 55.6%for Sakaka , and Domah hospitals. As regards total nursing care provided to pediatric patient all procedure improved and were done in accepted manner except use of Braden Q scale 20% of nurses at Domah at were apply it compared with 0% of nurses at Sakaka as well as apply positioning and repositioning schedule was improved after education guideline at Sakaka and Domah hospital. The majority of pediatric patients (40.1% and 55%) in Sakaka and Domah hospitals respectively were suffered from skin break down over the buttocks before skin care program this percentage decreased to (10.5 and 20%) in Sakaka and Domah hospitals respectively after skin care program. The occipital and back locations (15.7 and 20%) before then declined into (5.2%-5%) after education guideline. This profile reflects the effect of education guideline of skin care. Conclusion was increase nurses' knowledge was positively affect on prevention of pediatrics' skin break down as well as applying standardized assessment by using Braden Q scales was helpful in limit risk of pediatric skin break down at pediatric critical care units . So it was recommended that: A comprehensive pediatric skin care education guideline for nurses at all hospitals emphasized on the need for accurate, consistent skin assessment and how to prevent and manage of pediatric risk of skin break down.

Keywords: Prevention, skin break down, Pressure ulcer, Pediatric Critical Care Units, Braden Q Scale.

1. INTRODUCTION

The skin is the largest organ of the body and provides a protective barrier against bacteria, chemicals, and physical action while maintaining homeostasis in the internal environment. The skin receives one-third of the body's circulating blood

and is involved in many functions, including protection, immunity, thermoregulation, metabolism, communication, identification, and sensation.¹

The skin consists of four layers: the epidermis, dermis, subcutaneous fat, and muscle. In the outermost layer, the epidermis, dead skin cells are constantly being shed and replaced. The dermis, or second layer, has sweat glands, blood vessels, nerve endings, and capillaries, which are all woven together to provide nourishment and support. Destruction to either the epidermis or the dermis can cause systemic infection. So, skin integrity, or skin intactness, is an important factor is the skin's ability to perform its functions, especially protecting against infection.^{1,2}

Injury of either the epidermis or the dermis can lead to systemic infection, increased morbidity, increased cost of care, and negative psychosocial implications associated with scarring or alopecia. Physiological changes in the skin in relation to vascular supply are the most important factor for attaining and maintaining skin integrity. When the vascular supply is compromised, a pressure ulcer may develop.^{1,2,3}

Breaks in skin integrity increase a pediatrics' risk for infection and can lead to pain management challenges and psychological distress. Increased length of stay and readmission for treatment increase health care costs.^{4,5}

Skin of infants and children has a higher overall water content and is able to absorb and lose water faster than adult skin, resulting in more fragile skin surface. Neonates and premature infants have a thinner stratum corneum and fewer fibrils connecting the epidermis to the dermis, resulting in an increased risk for injury from physical forces.^{6,7,8}

Prevalence is a snapshot of a clinical situation, usually involving an assessment of all patients on one day or at one time. Prevalence is expressed as a percentage of those with "a disease" compared to all patients assessed. It is not equal to incidence because incidence includes a measurement over a period of time.^{6,9}

Prevalence rates of skin break down as high as 27% have been reported among patients in Pediatric Intensive Care Unit and 20% in Neonatal Intensive Care Unit with most ulcers occurring within two days of admission.¹ Among non-critical hospitalized pediatric patient prevalence rates of 0.47% -13% and incidence rates of 0.29% - 6% have been cited. The most frequent sites of ulcer formation reported are the sacrum/coccyx, followed by heels and occipital.^{10,11}

So implementation of specific and manageable guidelines can help standardize skin care in the PICU and help in the reduction of the prevalence of skin breakdown therefore staff education should be done prior to any policy changes to inform staff of new standards for assessing, monitoring, preventing, and treating skin breakdown.^{9,10} Ideally, the education for all new policy changes and expectations would be given by the skin care team that will be established. Education efforts should focus on specific, measurable interventions to be performed consistently across the unit in order to enhance the effect of prevention efforts.^{11,12}

Comprehensive skin care for children in the PICU involves early and frequent assessment, selection of proper methods for prevention of injury, appropriate treatment for existing problems, and frequent reevaluation of prevention and treatment techniques.¹³

One of the first activities in preventing pressure ulcers is the early identification of individuals who are susceptible to developing them. If a person is identified as susceptible or 'at risk', it is the health care professional's duty to ensure that preventive measures are implemented. The earliest phases of skin break down development may show no outward visible signs of damage. Therefore it is important that individuals 'at risk' are given an immediate prevention plan.^{14,15}

Therefore health care professionals should be vigilant to the following signs which may indicate incipient skin break down development e.g.: persistent erythema; non-blanching erythema; blisters; discolorations; localized heat; localized edema and localized indurations. In those with darkly pigmented skin: purplish/bluish localized areas of skin; localized heat which, if tissue becomes damaged, is replaced by coolness; localized edema and localized indurations.^{15,16}

In the hospitalized pediatric population, skin breakdown has been shown to increase mortality.¹⁷ Interventions that reduce the incidence of skin breakdown will, therefore, reduce the risk of mortality in PICU patients. Policy changes should be based on the need to change factors that precede the development of skin breakdown. Accurate measurement of the incidence of skin breakdown both before and after implementation of the guidelines is important in determining the effectiveness of the interventions.¹⁸ To measure the incidence of skin breakdown, the literature has suggested use of a

skin care team to perform audits and help staff members with comprehensive skin assessments incidence of skin breakdown in hospitalized patients, a detailed assessment must be performed on every patient on admission to the PCCU.¹⁹

2. AIMS OF THE STUDY

The aims of this study were: to increase knowledge and practices of nurses for assessment and prevention of pediatrics' skin break down among nurses of Pediatric Critical Care Unit .

3. HYPOTHESIS

Increasing nurses' knowledge and using assessment Braden Q scales will be positively affect on improving of nurses performance to prevent skin break down at Pediatric Critical Care Units .

4. DEFINITION OF TERMS

Skin breakdown - Changes to intact skin, including inflammation without overlying tissue loss, abrasion, mild entry into the skin, and deep and extensive pressure ulcers^{17,18}.

Pressure ulcer : Is a pressure ulcer is an area of skin and tissue that becomes injured or broken down. It is usually over a bony prominence, as a result of pressure or pressure in combination with shear and/or friction^{17,18,19}.

5. SUBJECTS AND METHOD

Design: A quasi experimental design one group (before- after intervention) cross sectional study was utilized in this research.

Setting: This study was conducted in Maternity and Pediatric Hospitals of Sakaka and in Pediatric Critical Care Units of Domah hospital at Aljouf City.

Sampling: A Convenience sample of 38 nurses working in Pediatric Critical Care Units . 18 in Sakaka and 20 in Domah hospitals as well as 39 hospitalized bedridden children (19 in Sakaka and 20 in Domah) hospitals.

Tools of the study: Three tools were utilized in Arabic and English language. **Tool one:** An interviewing questionnaire sheet was developed by researcher, it include two parts, **part one** for assessment socio-demographic data for nurses and **part two** for assessment of nurses' knowledge regards definition of skin break down ,assessment scale for pediatric patient at risk, preventive methods of skin beak down at PCU, location of skin break down on pediatric patient ,positioning and repositioning etc . **Tool two:** performance observation sheet was developed by researcher for observing nurses' performance regards preventing pediatric, patient skin break down it include two parts: First for the following items (washing child's skin and dry it carefully ,assessment bony prominent &skin affected, using an ointment on baby skin, provide specialist diet) and Second Braden Q scale . It was validated and developed by *Sandy Quigley and Catherine Noonan 2012*. Is a modified version of the Braden Scale for use with pediatric patients. The scale has been validated for identifying pressure ulcer risk in children 8 years old and under. Mild risk 22-25, Moderate risk 17-21, High risk 16 or below^{20,21}.

Braden Q Scale score : Is assesses each pediatric client according to 7 scales: sensory perception, skin exposure to moisture, the client's level of activity, the client's ability to change positions, nutritional intake, the presence of friction and shearing force and tissue perfusion / oxygenation. The total Braden Q score ranges from 7 – 28 indicating risk to very high risk. Lower scores indicate higher risk. The cut off score indicating risk is 16. There is not a range of scores indicating gradations of risk²²⁻²⁷.

Tool three: pediatric assessment sheet divided into two parts the socio-demographic data for children' age, sex, diagnosis, duration of hospitalization ,types of delivery ...etc. And the second part was observation assessment profile of paediatric patient for Signs of skin break down at Pediatric Critical Care Units in Sakaka and Domah hospitals.

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Validity of the tool was done by 5 of faculties' staff nursing expertise from the pediatric specialists. Reliability test was done by test retest method for data collection tools $p = 0.68$.

Ethical consideration: The researcher emphasized to the nurses that the study was voluntary and anonymous. Nurses had the full right to refuse to participate in the study at any time. Verbal consent was obtained from each nurse in the study as well as doctor permission to proceed the study on pediatric patient at Pediatric Critical Care Units (PCCU).

6. PILOT STUDY

A pilot study was try carried out on 15 nurses who work in pediatric inpatient medical unit in maternal and pediatric hospitals at Sakaka as well as 9 bed ridden children in order to test the applicability of tools clarity and simplicity of included questions as well as to estimate the average time needed to fill in the sheets. Those who shared in the pilot study were not included into the main study sample.

7. PROCEDURE OF THE STUDY

An official permissions were obtained from the dean of the faculty of Applied Medical Science to get the agreement of the administrators of both Hospitals directors. The study lasted Four months, It was started at first October to the end of January 2015.

Educational guideline:

Step I- Administrative approvals before was developed by the researcher. A content validity was established by a group of pediatric nursing specialists to agree upon the accuracy and importance of information in the questionnaire prior the data collection phase in this study.

Step2- Identification of a convenient sample, all the available nurses who were work in the governmental Sakaka and Domah hospitals (38 nurses) and (39 pediatric patient) at Al-Jouf city, different ages and qualifications was included.

Step 3: Preparation of scientific contents of the educational guideline which includes the following:

1-Discuss simple notes of anatomy and physiology of the skin , 2) Care of the pediatric patient ' skin ,3) Discuss of Assessment Braden Q scale for assessing skin break down ,4) Identify the location of skin break down of pediatric patient , 5) Demonstrate positioning and repositioning of bed ridden pediatric patient at Critical care units , 6-Explain complication of skin break down and how to prevent .

B - The preparation of scientific content for observational checklist of Braden Q assessment scale to assess risk of skin break down.

Step 4: a - Implementation of the program through conducting 2 sessions \week for four months to cover all nurses sample in Critical care units for three shifts in Sakaka and Domah hospitals at Aljouf city Girls.

b – Apply the work of the after educational guideline test and practical.

The following steps for each program intervention session:

Each nurse was interviewed individually .The interview lasted 20 minutes to fill interview sheet. During the interview the other trained researchers were checked the other nurses' performance through observation sheet on skin care for pediatric patient at PCCU. This observation was for nurses both at Sakaka and Domah hospitals. (Before education intervention) . As well as assess socio-demographic data for pediatric patient through his\her medical file. Assess pediatric skin problems as diaper dermatitis, dry skin, and skin disease also pediatric patients were assessed for location of skin breakdown as buttocks, occipital, back, cheeksetc. This assessment done through observation assessment profile to pediatric patient's skin profile where scored by "Yes" (1) and "No" (0) .This process was done before and after education intervention on group of nurses work in PCCU at the two hospitals in Sakaka and Domah.

Immediately after proceed the before assessment of nurses' information and performance the educational intervention of skin assessment care was done through educational guideline twice week for an hour to each session to cover all nurses at two hospitals over three shifts. It included simple explanation for anatomy and physiology of the skin. locations of

bone prominent affect pediatrics' skin , how to use skin assessment scale and finally skin care booklet was given to each nurse as a media. Then nurses were assessed for their information by Yes (1) No (0) and observed for their performance by calculated score was : Done (1) Not done (0).

8. STATISTICAL DESIGN

The statistical analysis of data was done using the excel program and the statistical package for social science (SPSS) program version 17. The first part of data was a descriptive one. Data were revised, coded, and statistically analyzed using the proportion and percentage, the arithmetic mean \pm standard deviation (\pm SD) and T test.

9. RESULTS

Table (1) :describes the Socio - demographic characteristics of pediatric patient at PCCU , the majority (90% and 57.9%) of pediatric patient's age was from 1 day-<1year respectively in Domah and Sakaka hospitals. The majority (68,4%and 60%) of pediatric patient were girls respectively in Sakaka and Domah hospitals. All (100%) of them were Saudi ,the common diagnosis on admission was respiratory disease that affect 40% in Domah and 31.6%in Sakaka followed by congenital anomalies was affect 42% in Sakaka and 25% in Domah, followed by cerebral palsy &epilepsy 25.1% in Sakaka and 10% in Domah and finally neonatal jaundice where constitutes the 25% in Domah and 5.3% in Sakaka. The majority (52.6%and 35%) of pediatric patient weight was from 5kg-<7kg in Sakaka and Domah respectively .

Regards duration of hospitalization the majority (52.6% and 35%) of them were stayed from <one week - < one months, and according to types of delivery the majority (57.9% and 50%) were delivered through caesarian section respectively in Sakaka and Domah hospitals.

Table (2) :shows frequencies and percentages of demographic characteristics of nurses sample at PCCU of both two hospitals(Sakaka and Domah) . Most the of nurses' age was ranges from (26- 30 years) with (55.6%) for Sakaka hospital, and (35%) for Domah hospital .as regards nurses' nationality most of them 61.1% at Sakaka and 65% at Domah were Indian and other nationalities while about one third of nurses sample (38.9% and 35%) at Sakaka and Domah hospitals were Saudi .According distribution of nurses related the majority of nurses(55.6% and 55%) at Sakaka and Domah hospitals their residence in Sakaka city .Out of total number (88.9%) of nurses working in Sakaka hospital were bachelor degree while more than half (65% of nurses working in Domah hospital were diploma degree. As regards nurses' years of experience the majority (94.4% and 70%)of them were ranged between 2-4 years at Sakaka and Domah hospitals respectively .finally Most of nurses (66.7% and 45%) were working at ICU the least of them distributed at CCU and High risk neonates.

The table (3,4) : shows the differences between two hospitals group (Sakaka and Domah) in Nurses' awareness at PCCU in Domah and Sakaka after education intervention, the sample of two hospitals were(18) for Sakaka and (20) for Domah . The mean (1. 1) before and (1.3) after for Sakaka group with std .Deviation (0.25 before) and (0.36 after) , Domah group it's mean was (1.13) before and (1.88) after with std. Deviation(0.31 before) and (0.38 after).

Table (5) Percentages and Frequencies of nurses' performance at PCCUs in Sakaka and Domah hospitals for prevention of pediatric patient skin break down before and after education intervention sessions. As regards washing child skin and dry it carefully it was found that 66.6% of nurses at Sakaka compared with 70% of nurses at Domah before intervention this percentage increased after educational guideline as 88.8% of Sakaka nurses and 90%of Domah. As regards total nursing care provided to pediatric patient all procedure improved and were done in accepted manner except use of Braden Q scale 20% of nurses at Domah at were apply it compared with 0% of nurses at Sakaka as well as apply positioning and repositioning schedule was improved after educational guideline at Sakaka and Domah hospital .

Table (6) Clarify the relation between nurse's performance according to their nationality at Sakaka and Domah Hospitals. There was no statistical significant difference between before and after intervention program as regards nationality to at P value <0.05.

Table (7) illustrates the Relation between Nurse’s Performance According to their years of experience at Sakaka and Domah Hospitals . There was no statistical significant difference between before and after intervention as regards to their years of experience at P value <0.05.

Figure (1 and 2) Clarify the observation assessment profile of pediatric patients for Signs and affected locations of skin break down at Critical Care Units in Sakaka and Domah hospitals. It was clear that 42% of pediatric patient at Sakaka hospital had diaper dermatitis before intervention of skin care this percentage declined to 26.3% after guideline ,while 50% of pediatric patients at Domah hospital had dry skin before intervention this percentage declined to 20% after sessions .As regards skin break down over bone prominent areas 21.1% of pediatric patients before intervention this declined to 5.2% after skin care in Sakaka hospital, as well as 15% of pediatric patients before intervention this declined to 10% after skin care educational guideline in Domah hospital. The majority of pediatric patients (40.1% and 55%) in Sakaka and Domah hospitals respectively were suffered from skin break down over the buttocks before skin care program this percentage decreased to (10..5 and 20%) in Sakaka and Domah hospitals respectively after skin care educational guideline. The occipital and back locations (15.7 and 20%) before then declined into (5.2%-5%) after educational guideline. This profile reflects the effect of intervention sessions of skin care.

Table (1): Percentages distribution of the studied pediatric patient according to socio - demographic characteristics at Pediatric Critical Care Units (PCCUs)

Socio- demographic Characteristics:	Sakaka		Domah	
	Percentages	Frequencies	Percentages	Frequencies
Age				
a)1 day-<1year	57.9	11	90.0	18
b)1 year-<2years	21.1	4	5.0	1
c)2years-<3 years	15.8	3	5.0	1
d)3years- up 4 years	5.3	1	0	0
Sex				
a)Boy	31.6	6	40.0	8
b)Girl	68.4	13	60.0	12
Nationality				
a)Saudi	100.0	19	100.0	20
Diagnosis				
a)Respiratory disease	31.6	6	40.0	8
b)Congenital anomalies	42.1	8	25.0	5
c)Neonatal jaundice	5.3	1	25.0	5
d)Cerebral palsy &epilepsy	21.1	4	10.0	2
Weight				
a)<3kg- <5kg	31.6	6	40.0	8
b)5kg-<7kg	52.6	10	35.0	7
c)7kg and more	15.8	3	25.0	5
Duration of hospitalization				
a)<one week - < one months	52.6	10	35.0	7
B)One month - <2 months	26.3	5	45.0	9
c)2 months or more	21.1	4	20.0	4

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Table (2) Percentages distribution of socio-demographic characteristics of Nurses work in Sakaka and Domah hospitals at PCCUs

Socio -demographic characteristics	Sakaka		Domah	
	Percentages	Frequencies	Percentages	Frequencies
Age				
22y -25years	16.7	3	20.0	4
26- 30 years	55.6	10	35.0	7
31- 40 years	22.2	4	30.0	6
Up to45 years	5.6	1	15.0	3
Nationality				
Saudi	38.9	7	35.0	7
Indian and other	61.1	11	65.0	13
Residence				
Sakaka	55.6	10	55.0	11
Domah	44.4	8	45.0	9
Education level				
Diploma	11.1	2	65.0	13
Bachelors	88.9	16	35.0	7
Occupation				
Head nurse	11.1	2	5.0	1
Bedside nurse	16.7	3	60.0	12
Specialized nurse	72.2	13	35.0	7
Years of experience				
Less 1 years	5.6	1	5.0	1
2 to 4years	94.4	17	70.0	14
More6 years	0	0	25.0	5
Department				
CCU section	27.8	5	15.0	3
ICU section	66.7	12	45.0	9
High risk neonates	5.6	1	40.0	8

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Table (3) Mean and Std.Deviation of nurses' knowledge for prevention of skin break down before education intervention in PCCUs in Sakaka and Domah hospitals

Items	Sakaka		Domah	
	Mean	Std.Deviation	Mean	Std.Deviation
Receiving training-courses	1	0	1.82	0.31
Receiving program about heath care	1.06	0.24	1.18	0
Receiving training-courses about skin care	1.06	0.24	1.41	0.37
Has information about skin care	1	0	1.41	0.31
Identify the reasons for skin break down (SB)	1.11	0.32	1.35	0.23
Knowledge about degree of skin break down	1.11	0.32	1.35	0.30
Use Scale for assessing skin break down	1.22	0.43	1.35	0.36
Identify risk group for skin break down	1.06	0.24	1.41	0.37
Determined common places in body of skin break down	1.06	0.24	1.47	0.31
List methods for prevention SB	1	0	1.24	0.49
Describe the methods for care patient with SB	1.17	0.38	1.82	0.37
Has information about schedule of positioning and repositioning	1.17	0.38	1.53	0.31
Follow guidelines in unit about skin care	1.28	0.46	1.82	0.31
Total	1.1	0.25	1.13	0.31

Table (4) Mean and Std.Deviation of nurses' knowledge for prevention of skin break down after education intervention in PCCUs in Sakaka and Domah hospitals

Items	Sakaka		Domah	
	Mean	Std.Deviation	Mean	Std.Deviation
Receiving training-courses	1.57	0.81	1.9	0.88
Receiving program about heath care	1.10	0.30	2	0.39
Receiving training-courses about skin care	1.33	0.48	1.85	0.51
Has information about skin care	1.62	0.50	1.9	0.51
Identify the reasons for skin break down	1.48	0.51	1.95	0.49
Knowledge about degree of (SB)	1.48	0.51	1.9	0.49
Use Scale for assessing skin break down	1.57	0.51	1.85	0.49
Identify risk group for skin break down	1.38	0.50	1.85	0.51
Determined common places in body of skin break down	1.52	0.51	1.9	0.51
List methods for prevention SB	1.57	0.51	1.65	0.44
Describe the methods for care patient with SB	1.90	0.30	1.85	0.39
Has information about schedule of positioning and repositioning	1.90	0.30	1.9	0.51
Follow guidelines in unit about skin care	1.86	0.36	1.9	0.39
Total	1.3	0.36	1.88	0.38

Table (5) Percentages and Frequencies of nurses' performance at PCCUs in Sakaka and Domah hospitals for prevention of pediatric patient skin break down before and after education intervention sessions

Items	Before				After			
	Sakaka N=18		Domah N=20		Sakaka N=18		Domah N=20	
	NO	%	NO	%	NO	%	NO	%
washing child skin and dry it carefully	12	66.6	14	70.0	16	88.8	18	90.0
Using an ointment on baby skin	15	83.3	12	60	17	94.4	15	75.0
Care of skin frequency through shift more than 2 times	13	72.2	15	75	15	83.3	18	90.0
Use comfortable measurement	15	83.3	17	85.0	17	94.4	19	95.0
Use antiseptic techniques	16	88.8	15	75.0	16	88.8	17	85.0
Provide care for bed making	9	50.0	16	80.0	15	83.3	18	90.0
Provide specialist diet	18	100.0	20	100.0	18	100.0	20	100.0
Dry skin frequency	9	50.0	14	70.0	17	94.4	19	95.5
Isolation for infection child	8	44.4	16	80.0	18	100.0	18	90.0
Provide hygiene for all body	16	88.8	13	60.0	17	94.4	16	80.0
Assessment bony prominent & skin	11	61.1	14	70.0	16	88.8	18	90.0
Provide skin massage on pressure areas	5	27.7	12	60.0	15	83.3	19	95.5
Apply positioning and repositioning schedual	8	44.4	5	55.0	16	88.8	18	90.0
Use Braden scale in PCCU	0	0.0	4	20.0	15	83.3	17	85.0
Plan techniques prevent complication	7	38.8	11	55.0	16	88.8	19	95.0
Frequency change pediatrics' diaper	16	88.8	14	70.0	17	94.4	18	90.0

Table (6) Relation between Nurse's Performance According to Their Nationality at Sakaka and Domah Hospitals

Sakaka Nationality	Saudi (N=7) Mean ± SD	Indian (N=3) Mean ± SD	Other Nationality (N=8) Mean± SD	χ^2	p-value
Performance					
Before	9.3 ± 1.1	9.3± 2.1	7.6 ± 1.1	10.170	> 0.05
After	12.7 ± 1.4	11.3 ± 2.1	12.3 ± 1.9	14.036	> 0.05
Domah Nationality					
Before	9.6 ± 0.98	8.6 ± 1.8	8.3 ± 1.3	9.54	> 0.05
After	14.0 ± 1.7	12.8± 1.6	12.1 ± 1.6	16.58	> 0.05

Table (7):- Relation between Nurse's Performance According to Their Years of Experience at Sakaka and Domah Hospitals.

Sakaka Years of experience	Less1 year (N=1) Mean ± SD	2 to 4years (N=17) Mean ± SD	More than 6 years (N= 0) Mean ± SD	χ^2	p-value
Nurses' Performance					
Before	11.0 ± 0	8.4± 1.4	0	.132	> 0.05
After	14.0 ± 0	12.2 ± 1.7	0	0.839	> 0.05
Domah Years of experience					
Before	10.0000± 0	8.6429± 1.60	9.00±.707	8.500	> 0.05
After	16.0000± 0	12.929± 1.77	12.400±1.34	14.810	> 0.05

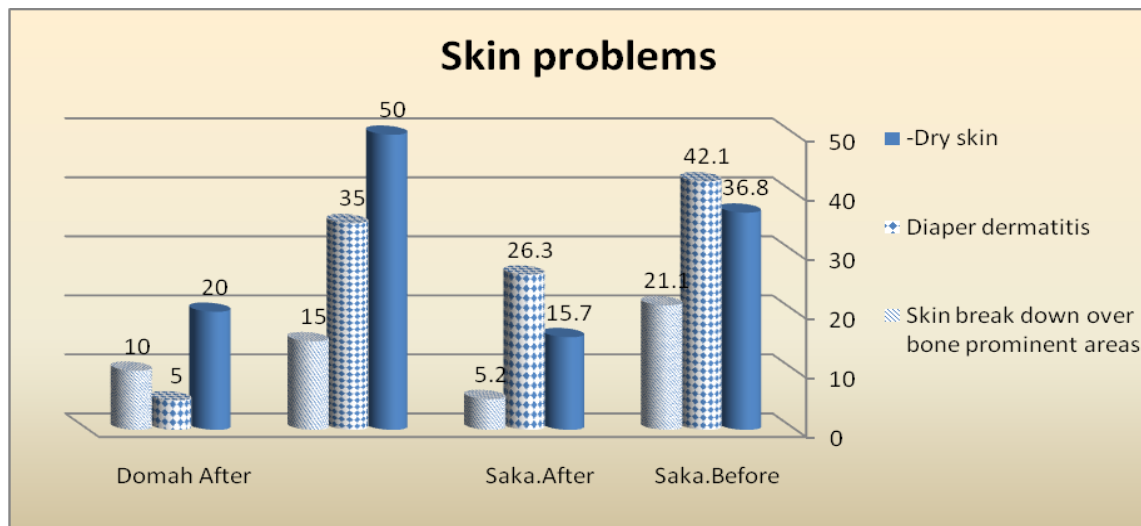


Figure 1: Observation assessment profile for pediatric patient skin problems at Critical Care Units in Sakaka and Domah hospitals

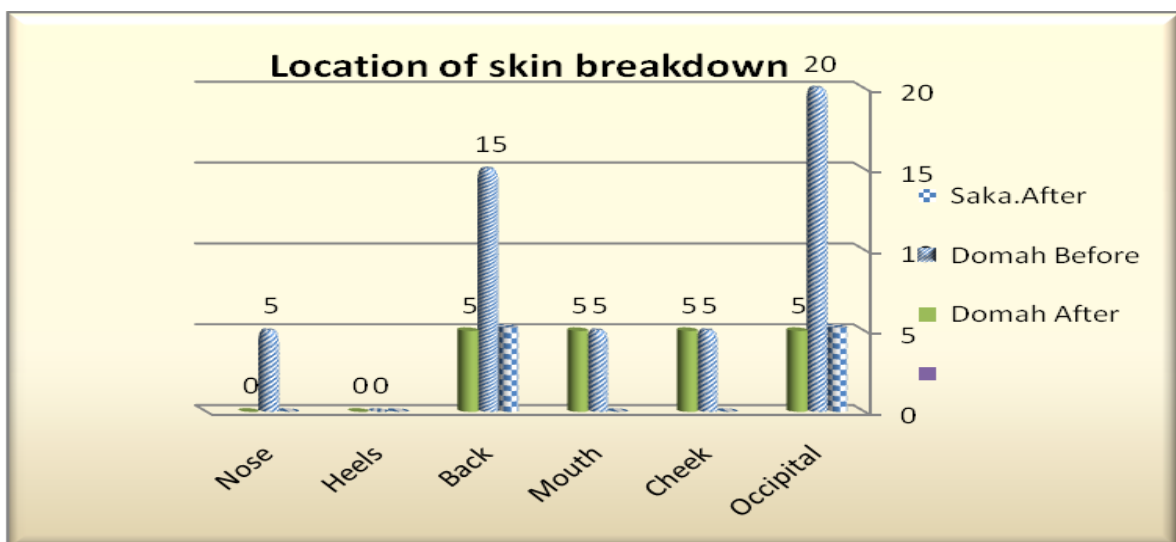


Figure 2: Observation assessment profile of pediatric patient for affected locations of skin break down at Critical Care Units in Sakaka and Domah hospitals

10. DISCUSSION

The aim of this study was to increase awareness for assessment of pediatrics' skin break down amongst nurses of Pediatric Critical Care Units and prevent risk of skin breakdown through using Braden Q scale, and hypothesis was increasing nurses' awareness and using assessment Braden Q scales will be positively affect on improving of performance to prevent pediatric patients' skin break down at Pediatric Critical Care Units .

The review of literature suggests the pediatric population was at risk for skin breakdown and therefore pressure ulcer development. The literature reveals limited information on pediatric skin care issues in comparison to the adult population. The prevention and treatment of pressure ulcers and maintenance of skin integrity in the pediatric population often is not a high priority especially in the critically ill child. Research has demonstrated that children differ from adults in the anatomical sites of skin breakdown; however, treatment remains the same. It was important to have an understanding of the underlying physiology of ulcer formation, the factors responsible for ulcer development, and the factors that put infants and children at risk for developing pressure ulcers. Accurate assessment, documentation, prevention, and treatment are all key factors^{22,23,24,25,26,27,28,29}.

So early intervention can be an effective preventative measure if patients at increased risk for pressure ulcer development are identified. The principal components for early intervention are (a) identification of at risk individuals, (b) maintenance and improvement of tissue tolerance to injury, (c) protection against the adverse effects of pressure, friction, and shear, and (d) reduction of the incidence of pressure ulcers through an educational program.^{10,11,16}

According to Bernabe and Kathryn (2012) who study Pressure ulcers in the pediatric patient Pediatric skin break down area serious and largely preventable condition. Who stated that "Increased awareness, and accurate , timely assessment to recognize at-risk children, can lead to skin break down as well as pressure ulcer prevention". This finding emphasized the current study where it was found that the differences between nurses' performance (before and after) education intervention at critical care units in Domah hospital , As regards washing child skin and dry it carefully it was found that 66.6% of nurses at Sakaka compared with 70% of nurses at Domah before intervention guideline this percentage increased after education guideline as 88.8% of Sakaka nurses and 90%of Domah. As regards total nursing care provided to pediatric patient all procedure improved and were done in accepted manner except use of Braden Q scale 20% of nurses at Domah at were apply it compared with 0% of nurses at Sakaka as well as apply positioning and repositioning schedule was improved after guideline at Sakaka and Domah hospital . There was no statistical significant difference between before and after intervention program as regards to nurses performance and their years of experience as well as nurses ' performance and nurses nationality at P value <0.05.

Improving in knowledge and performance of nurses after program of skin care was reflect on decrease the risk of skin break down of pediatric patient at critical care units as stated by Reddy, Gill and Rochon (2006) who agree with present study which illustrated that the observation assessment profile of pediatric patients for Signs and affected locations of skin break down at Critical Care Units in Sakaka and Domah hospitals. Current study was revealed that 42% of pediatric patient at Sakaka hospital had diaper dermatitis before intervention of skin care guideline this percentage declined to 26.3% after intervention ,while 50% of pediatric patients at Domah hospital had dry skin before intervention this percentage declined to 20% after educational guideline .

As regards skin break down over bone prominent areas 21.1% of pediatric patients before intervention this declined to 5.2% after skin care guideline in Sakaka hospital, as well as 15% of pediatric patients before intervention program this declined to 10% after guideline session in Domah hospital. The majority of pediatric patients (40.1% and 55%) in Sakaka and Domah hospitals respectively were suffered from skin break down over the buttocks before skin care program this percentage decreased to (10.5 and 20%) in Sakaka and Domah hospitals respectively after skin care guideline. The occipital and back locations (15.7 and 20%) before then declined into (5.2%-5%) after education guideline. This profile reflects the effect of intervention sessions of skin care . So more studies are needed to better define risk factors and effective prevention of pediatric pressure ulcers^{17,28,30,31}.

11. CONCLUSION

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Increasing nurses' knowledge was improve nurses' performance and help in prevention of pediatrics' skin break down as well as applying standardized assessment Braden Q scales was help in limit risk of pediatric skin break down at pediatric critical care units .So implementation of specific and manageable guidelines can help standardize skin care in the Critical Care Units and help in reduction of the Prevalence of skin breakdown. Therefore early assessment, intervention, and reporting was key to preventing skin break down.

12. RECOMMENDATIONS

Assessment is an important step in the prevention and proper treatment of skin breakdown in order to provide the most complete care for pediatric patients. So a comprehensive pediatric skin care program for nurses at Pediatric Critical Care Units should be given as in-service training. The need for accurate, consistent assessment, including description and documentation of the extent of tissue damage should be considered. Assessment scale for risk of skin break down and preventive measures should be applied by all health care team for all hospitalized children.

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