

## Effect of Implementing Quality of Nursing Care Intervention on Nurses' performance Regarding Prevention of Decubitus Ulcer at Pediatric Intensive Care Unit

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### Abstract:

Decubitus ulcer is described as localized injury of the skin as well as underlying soft tissue particularly on the bony parts. It is an important issue for professional care that affects pediatric critical care units frequently. Implementation of quality of nursing care intervention for health care professional is considered one of the key elements in preventing decubitus ulcers. **The current study aimed** to evaluate the effect of implementing quality of nursing care intervention on nurses' performance regarding prevention of decubitus ulcer at pediatric intensive care unit. **Research design:** A quasi experimental research design was used. **The subjects:** A convenience sampling of twenty-six nurses from Tanta Main University Hospital and twenty-four nurses from International Educational Hospital at Tanta University. **Three Tools were used:** Structured interviewing schedule, Decubitus ulcer risk assessment using the Braden Q Risk Assessment Scale and Decubitus ulcer prevention observational checklist. **Results:** there was a statistical significant difference regarding nurses' practice between before and after quality of nursing care intervention implementation. **Conclusion:** performance of the nurses has significantly improved after the implementation of quality of nursing care intervention in relation to prevention of decubitus ulcer at pediatric intensive care unit. **Recommendations:** Pediatric nurses should be stay current about knowledge and practice regarding measures of prevention of decubitus ulcer through workshops and training which provide the nurses with a power to utilize preventive measures of decubitus ulcer in workplaces.

**Keywords:** Decubitus ulcer, nurses' performance, pediatric intensive care unit, quality of nursing care intervention.

### Introduction

The most important tissue in the human body is the skin which serves as a barrier against germs and other harmful physical, chemical, and biological agents while preserving a constant inside environment.

Three-quarters of the blood volume received by the skin and circulates and serves a variety of purposes, including sensation, temperature regulation, absorption, excretion, and secretion as well as protection and immunity.<sup>(1)</sup>

Decubitus ulcer develops when pressure and shear forces combine to cause a defined lesion to the skin in addition to underlying tissue. <sup>(2)</sup> Although decubitus ulcer has received a lot of attention in the adult, a little is recognized about this condition in children. It is impossible to generalize the exact occurrence as the rate of decubitus ulcer varies based on the different settings. <sup>(3)</sup> Worldwide, in pediatric critical care, decubitus ulcer prevalence rates in 2014 ranged from 10.2% to 32% and 27%, respectively. <sup>(4)</sup> The most common locations of decubitus ulcer in children less than 3 years are the occipital area and the ears. In older children, ulcers on the sacrum and heels are most common. <sup>(5,6)</sup> Decubitus ulcers are more prevalent in newborns and children who hospitalized to the critical care unit and have chronic diseases such psychomotor deficiencies, neurological problems or spinal cord injuries. The incidence of it has been reported to range from 18% to 27%. <sup>(7)</sup>

Multiple factors might contribute to the occurrence of a decubitus ulcer. It can be distinguishing into internal and external factors. Internal factors are including time, wetness, pressure, friction, and shear. While, Poor perfusion, starvation, infection, anemia, and immobility are considered as external causes. <sup>(8)</sup> Extended pressure being the main and key contributing component. Uninterrupted greater pressure develops tissue necrosis and pressure ulcers faster than continuous lower pressure, which takes longer to develop. <sup>(9)</sup>

Complication of decubitus ulcer can result in systemic infections, higher morbidity, more expensive medical care and unfavorable

psychosocial effects. Without proper treatment, the child can easily suffer from severe cellulitis, osteomyelitis, gangrene, sepsis and necrotizing fasciitis. <sup>(10)</sup>

The preservation of skin tissue and integrity are the primary goal of the care. These are the nurse's primary practices and one of them is preventing decubitus ulcers. In order to prevent complications that might affect the children's health condition and quality of life, nursing interventions must be implemented and based on evaluation children who at risk. <sup>(11)</sup> Since the first hospitalization moment until the release, evaluation of children at risk is crucial for the application of preventative measures. <sup>(12, 13)</sup>

Effective preventive methods include regular comprehensive skin assessments, support, careful placing and maintenance of any equipment that connected to children. In addition, treatment of all other factors. The main role is focused on pediatric nurse. Regular inspections of the skin and ongoing children care are the responsibility of pediatric nurses <sup>(14-19)</sup> so this study offer such training to pediatric intensive care nurses in different settings.

#### **Significance of the study:**

Decubitus ulcer risk is higher in pediatric critical care unit admissions than in the others. According to the international decubitus ulcer prevalence survey, children in hospital had the highest prevalence of acquired decubitus ulcers with the rate of 12.1%. <sup>(18)</sup> Decubitus ulcers have been connected in studies to higher rates of morbidity and mortality. Serious infectious consequences like bacteremia and sepsis can potentially result from it. Decubitus ulcer is

a significant health issue for children at hospital. Hence, it is important to implement preventive quality of nursing intervention care to enhance nurses' practice toward prevention of it among children who are at risk and help to reach a higher quality of nursing interventions.

**The current study aimed to:**

Evaluate the effect of implementing quality of nursing care intervention on nurses' performance regarding prevention of decubitus ulcer at pediatric intensive care unit.

**Research Hypothesis:**

Nurses' performance is expected to be improved after implementing quality of nursing care regarding prevention of decubitus ulcer at pediatric intensive care unit.

**Subjects and Method**

**Research Design:**

Quasi-experimental research design was used in the current study.

**Setting**

The research was carried out at Pediatric Intensive Care Unit at Tanta Main University Hospital and Pediatric Intensive Care Unit of International Educational Hospital at Tanta University.

**Subjects**

-All of nurses who are working in the previously mentioned settings (26 nurse working at Pediatric Intensive Care Unit at Tanta Main University Hospital and 24 nurse who working at Pediatric Intensive Care Unit of International Educational Hospital at Tanta University).

-50 critically ill children between the ages of 3-6 who are of both gender.

**Tools of data collecting:**

The following three tools have been used:

**Tool (I): Structured interviewing schedule:**

It was developed by the researcher after reviewing related and current literature<sup>(18,21,38)</sup> to assess characteristics of the studied nurses and children in addition to evaluate nurses' knowledge before, immediately and one month from quality of nursing care intervention implementation regarding decubitus ulcer prevention. It contains three parts:

**Part I: Characteristics of studied nurses**

**such as:** age, gender, academic qualification and experience's years at pediatric intensive care unit.

**Part 2: Characteristics of children such such as;** age, sex and number of siblings.

**Part 3: Nurses' knowledge regarding decubitus ulcer**

including: definition, causes, clinical manifestation, common sites, risk factors, nursing role in prevention and management of decubitus ulcer. It was revised by pediatric nursing professionals and was created as a Multiple Choice Questions (MCQ) format. Three times this tool was utilized. Prior to the implementation of quality of nursing care intervention regarding decubitus ulcer prevention. (Pretest). It was used again immediately after the implementation quality of nursing care intervention regarding decubitus ulcer prevention. In addition, one month after the implementation quality of nursing care intervention regarding decubitus ulcer prevention.

There were 7 questions in the sheet and the grades for each question ranged from 0 to 2. The correct and complete answer has been

scored with (2), correct and incomplete answer has been scored with (1) and wrong or don't known answer has been scored with (0). The sum of all questions score was (14).

**Total score of nurses' knowledge was calculated and categorized into:**

- From 80% and more was considered high level of knowledge
- From 60% to less than 80% was considered moderate level of knowledge
- Less than 60% was considered low level of knowledge

**Tool II: Decubitus ulcer risk assessment using the Braden Q Risk Assessment Scale:**

It was adapted by researcher **based on Quigley S. & Curley M. (1996)** It included 15 items for predicting the risk of pressure ulcer for children. It had six subscales as: activity, mobility, moisture, sensory perception, friction and nutrition. Each subscale had a rating scale of one to four points. Each subscale included four categories as well as the highest risk category having the lowest number. Total scores ranged from (9-18); children were at the highest risk of developing a skin ulcer if their score was 9 or lower, and if it was more than 18, there was no danger.

**All of the items' scores were divided into the following points.**

- From 9 or less point indicates a severe risk.
- From 10-12 point indicates high risk
- From 13-14 point indicates moderate risk.
- From 15-18 point indicates mild risk.
- More than 18 point indicates no risk.

**Tool III: Decubitus ulcer prevention observational checklist:**

Observational checklist was adapted **from the Egyptian Ministry of Health and**

**Population (2010), Ball and Bindler (2008) and Smith, et al., (2008).** It was used to evaluate nurse's practice regards pressure ulcer preventive quality of care. It was included 16 steps and covered five dimensions named:

**1- Assessment child's skin which includes:**

- a. A complete assessment at admission and then every 6 hours
- b. Daily risk assessment by Braden Scale.
- c. The skin is physically inspected on each turning reposition maneuver.
- d. Assess color, turgor, moisture and temperature of the skin
- e. Documentation of skin evaluation in the medical record of the child.

**2- Care of medical devices :**

- a. Every shift or more, evaluate the skin in adherence with medical devices.
- b. Check oxygen saturation and change the site pulse oximeter every eight hours or more.
- c. Investigate the skin beneath any device or equipment with regular removal.

**3- Bed elevation and child positioning:**

- a. Change position and move of children every 2 hours if spend more time in bed.
- b. Head of bed must be maintained about 30 degrees if it not contraindicated.

**4- Adequate support:**

- a. Bony areas can be padded using pillows or pressure-relieving devices.
- b. Take care and pay attention to the exposed skin.
- c. Be careful to any area with no sensation of pain.

**5- Managing the moisture**

- a. Keep skin clean and dry and checking for typical moisture areas periodically.
- b. Apply a layer of cream to form barrier for all diapered children

**The total scores for nurse's preventive practice were calculated and classified as follow;**

- From 80% to 100% was considered satisfactory level.
- Less than 80% was considered unsatisfactory level.

#### **Method**

The following steps were used to complete the study:

##### **1-Administrative process:**

Official permission for data collection was gained from the authority of the Faculty of Nursing, Tanta University. It was directed to administrators responsible for pediatric intensive care unit at Tanta Main University Hospital and International Educational Hospital at Tanta University to gain their permission and participation in order to perform this research.

##### **2-Ethical considerations:**

The researcher obtained an ethical approval to perform the study from Ethical Committee of Scientific Research at the Faculty of Nursing, Tanta University with code No (12/11/2021). The researcher informed nurses about the confidentiality of the information obtained from them. The studied nurses were not harmed or inconvenienced by the study's design. After explaining the purpose of the current study, nurses provided written informed consent to participate in it. The nurses were allowed to exit whenever they wanted.

##### **3- Development of Tools:**

After reviewing recent literature, the researcher created three tools (I & II, III), which were used in the study.

##### **4-Content validity:**

For content validity and clarity, five pediatric nursing professionals were given the study's tools to review. Modifications were made in accordance. Content validity index was 98.5%.

##### **5- Pilot study:**

Five nurses (10% of the sample) were participated in a pilot study to examine the tool's clarity, applicability and feasibility. Additionally, the necessary modifications were performed.

##### **6- Reliability of tools:**

There was a high reliability of the used tools for data collection in the current study as the test of reliability (cronbach's alpha) was 0.954.

##### **7-Phases of the study:**

###### **1- Assessment Phase:**

Before collecting any data, the researcher first conducted interviews with each nurse, introduced herself to each participant in the study, and discussed the purpose, duration, and activities of the study. The researcher collects the baseline data about nurses and children and assess nurses' knowledge about decubitus ulcer (tool I)

###### **2. Planning Phase:**

- Establishing objectives of the implementation quality of nursing care intervention regards decubitus ulcer prevention.
- Preparation of appropriate content and media as power point presentations, lecture, video, booklet with illustrated pictures.

###### **3. Implementation Phase:**

- Prior conducting the implementation quality of nursing care intervention regarding decubitus ulcer prevention, needs were assessed (pretest) for each group separately. The plan for the instructional sessions was created by each group independently utilizing Tools (I) and (II).

- The studied nurses were divided into eight groups; each group contain five to six nurses.

- The implementation quality of nursing care intervention regarding decubitus ulcer prevention was done for the nurses inform of sessions

- Each session began with a summary of what had been discussed before and feedback regarding the content of the previous educational sessions.

- Implementation quality of nursing care intervention regarding decubitus ulcer prevention was performed in four sessions, two sessions each week. Each session was about 30-45 minutes including discussion time based on the nurses' progress and their feedback.

**- The implementation quality of nursing care intervention regarding decubitus ulcer prevention sessions were done as follows:**

**The first session:** definition, causes, common symptoms, types, risk factors, quality of nursing care for decubitus ulcer prevention, goals of quality nursing care for decubitus ulcer prevention, the principles of quality nursing care for decubitus ulcer prevention. The researcher discussed what was taken at the end of the session and a concise summary was done.

**The second session:** - it was focused on degrees of decubitus ulcer, how to assess child's skin.

- The session started with a revision of the concepts previously discussed then discussing the contents of third session.

**The third session:** implementation risk assessment of decubitus ulcer. This session started with a revision of the concepts previously discussed then discussing the contents of third session.

**The fourth session:** it was focused on prevention of decubitus ulcer, implementation nursing care intervention of decubitus ulcer.

#### **4. Evaluation Phase:**

The nurses' performance was evaluated before, immediately and one month after implementing preventive quality of nursing care, the post tests were administered by using same pretest tools. Additionally, the researcher asked the nurses to apply preventive quality of nursing care on high risk children and assess their skin status for decubitus ulcer. (tool II, III).

- The data was collected over a period of six month from October 2022 to April 2023.

#### **Statistical analysis:**

Collected data were organized, tabulated and statistically analyzed using SPSS software (Statistical Package for the Social Sciences, version 20). The range, mean and standard deviation were calculated for quantitative data. Comparison between two groups and more was done using Chi-square test ( $\chi^2$ ) for comparison between more than two means of parametric data for qualitative data. Significance was adopted at  $p < .05$ .

(101)

## Results

**Table (1):** illustrates distribution of studied nurses regarding their characteristics. It was evident that more than half (58% & 56%) of nurses were females and had bachelor of nursing sciences respectively. Regards their years of experience, it was found that, majority of them (80%) had less than 10 years of experience. It was observed that all of the nurses (100%) didn't attend any in-service training program regarding quality care for decubitus ulcer prevention.

**Table (2):** shows percentage distribution of the studied children regarding their characteristics. It was noticed that nearly one third (36%) of children aged from 3 to less than 4 Years. It was found that two third of them (64%) were females. Nearly two third of them (62%) had two children in the family.

**Table (3):** shows total scores of the studied nurses' knowledge regarding decubitus ulcer. It was mentioned that three quarter (76%) and nearly one quarter (22%) of the studied nurses had low and moderate knowledge level before implementation of quality of nursing care intervention respectively. Most of them (92% & 90%) had high level of knowledge immediately and one month after implementation of quality of nursing care intervention respectively. There was statistical significant difference regarding nurses' knowledge before, immediately and after one month from implementation of quality of nursing care intervention as  $P=0.001$ .

**Figure (1):** illustrates total scores of Braden Q rating scale of the studied children regarding decubitus ulcer development regarding decubitus ulcer before, immediate

and after one month from implementation of quality of nursing care intervention. It was mentioned that nearly one third of studied children (38%) had high risk of decubitus ulcer before implementation quality of nursing care intervention. It was found that nearly one third and less than half of them (36% & 40%) had mild risk of decubitus ulcer immediately and one month after implementation quality of nursing care intervention respectively. It was found that less than half and nearly one third of studied children (40% & 36%) had no risk of decubitus ulcer immediately and one month after implementation quality of nursing care intervention respectively compared to 8% of them before implementation quality of nursing care intervention.

**Figure (2):** show total practice scores of the studied nurses regarding prevention of decubitus ulcer. It was apparent that all studied nurses were unsatisfactory in providing decubitus ulcer prevention before quality of nursing care intervention implementation compared to all of studied nurses (100%) were satisfactory immediately implementation quality of nursing care intervention. While majority of studied nurses (98%) were satisfactory one month after implementation quality of nursing care intervention.

**Table (4):** illustrates correlation between total nurses' knowledge, practices and Braden Q rating scale before, immediately and one month after implementation quality of nursing care intervention regarding decubitus ulcer prevention. It was found that, there was significant positive correlation between total practice and Braden Q rating scale one month after

implementation quality of nursing care intervention regarding decubitus ulcer prevention. Positive correlation was also evident between knowledge and Braden Q rating scale one month after implementation quality of nursing care intervention regarding decubitus ulcer prevention.

**Table (1): Distribution of studied nurses regarding their characteristics n=50 .**

| Characteristics of nurses                                      | No           | %      |
|--|--------------|--------|
| <b>Age</b>   | 24-43        |        |
| <b>Range</b>   | 32.200±5.245 |        |
| <b>Mean ±SD</b>  |              |        |
| <b>Sex</b>   |              |        |
| Male   | 21           | 42.00  |
| Female   | 29           | 58.00  |
| <b>Education level</b>   |              |        |
| Technical Nursing Institute                                    | 22           | 44.00  |
| Bachelor of Nursing Sciences                                   | 28           | 56.00  |
| <b>Experience years</b>  |              |        |
| Less than 10 Years   | 40           | 80.00  |
| From 10 to less than 20 Years                                  | 10           | 20.00  |
| <b>Attendance of any scientific course/workshop/conference</b> |              |        |
| Yes  | 1            | 0.00   |
| No   | 49           | 100.00 |

**Table (2) Distribution of children regarding their characteristics n=50.**

| Characteristics of children | children (n=50) |       |
|-----------------------------|-----------------|-------|
|                             | No              | %     |
| <b>Age in years</b>         |                 |       |
| 3 < 4 Years                 | 18              | 36.00 |
| 4 < 5 Years                 | 17              | 34.00 |
| 5 < 6 Years                 | 15              | 30.00 |
| <b>Sex</b>                  |                 |       |
| Male                        | 18              | 36.00 |
| Female                      | 32              | 64.00 |
| <b>Number of brothers</b>   |                 |       |
| one                         | 8               | 16.00 |
| two                         | 31              | 62.00 |
| three                       | 11              | 22.00 |

**Table (3) Total scores of the studied nurses' knowledge regarding decubitus ulcer before, immediate and one month from implementation of quality of nursing care intervention.**

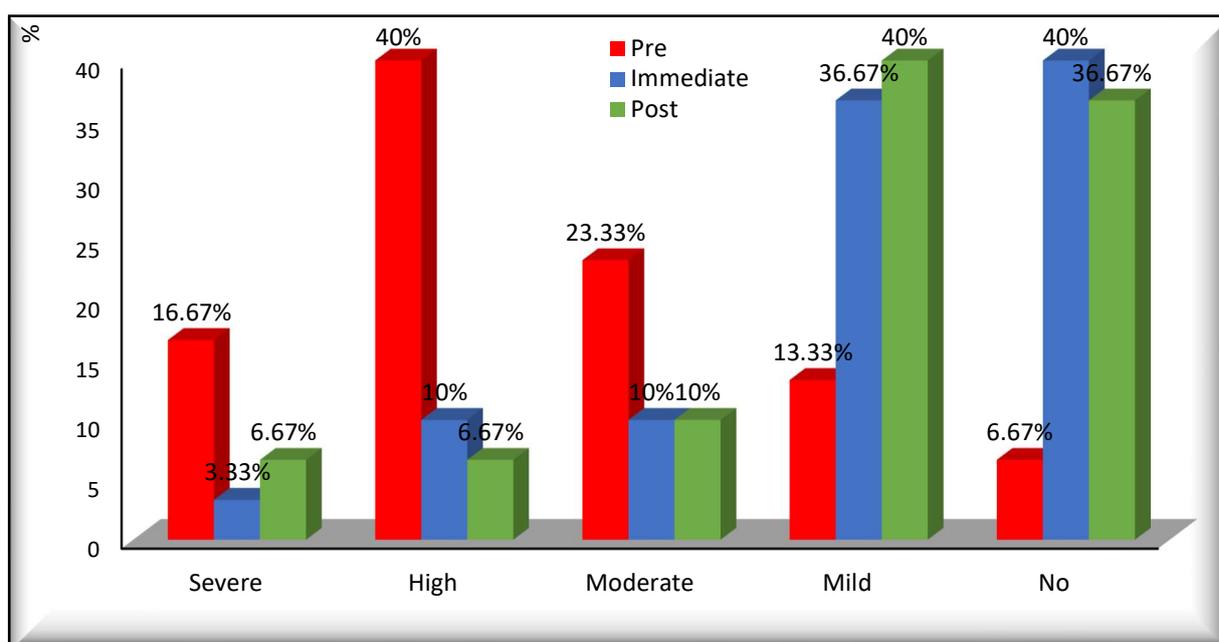
| Knowledge | Before |        | Immediate |        | After one month |        | I             | II            | III           |
|-----------|--------|--------|-----------|--------|-----------------|--------|---------------|---------------|---------------|
|           | N      | %      | N         | %      | N               | %      | $\chi^2$<br>P | $\chi^2$<br>P | $\chi^2$<br>P |
| Low       | 38     | 76.00  | 0         | 0.00   | 0               | 0.00   | 84.352        | 82.337        | 0.122         |
| Moderate  | 11     | 22.00  | 4         | 8.00   | 5               | 10.00  | <0.001*       | <0.001*       | 0.727         |
| High      | 1      | 2.00   | 46        | 92.00  | 45              | 90.00  |               |               |               |
| Total     | 50     | 100.00 | 50        | 100.00 | 50              | 100.00 |               |               |               |

\*Statistically significant difference at (P<0.05)

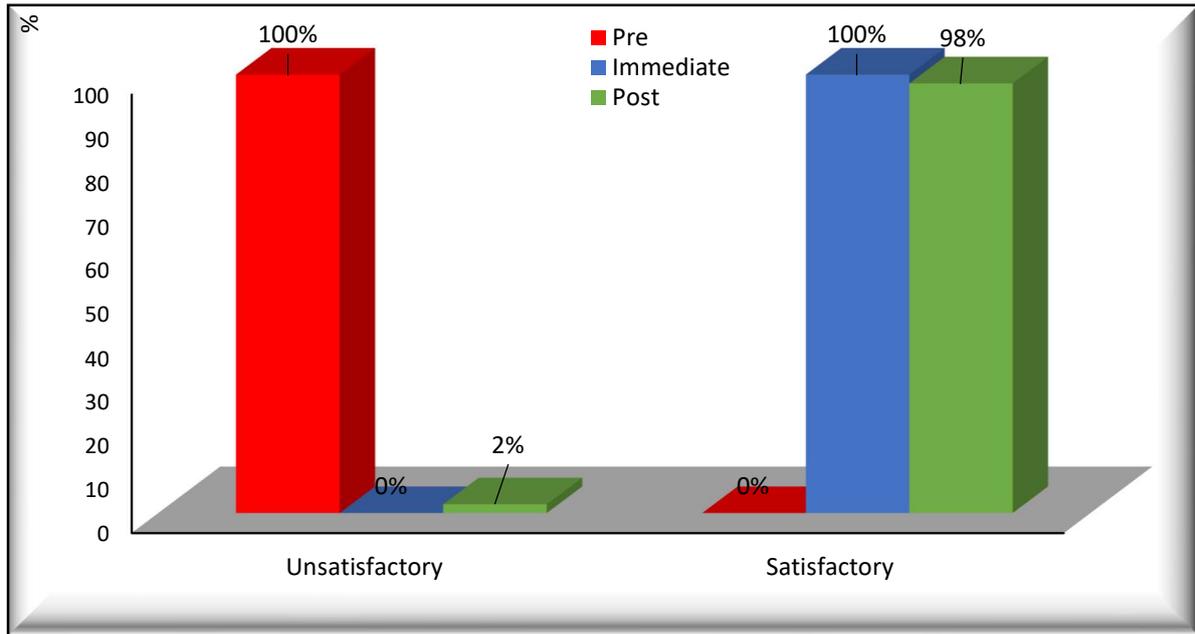
-I Between before and immediate after-

-II Between before and one month after-

-III Between immediate and one-month after



**Figure (1) Total scores of Braden Q rating scale of the studied children regarding decubitus ulcer development before, immediate and one month from implementation of quality of nursing care intervention.**



**Figure (2): Total scores of the studied nurses' practice regarding decubitus ulcer before, immediate and one month from implementation of quality of nursing care intervention.**

**Table (4): Correlation between total knowledge score of the studied nurses and Braden Q rating scale.**

| Correlations    |                       |           |         |                       |         |
|-----------------|-----------------------|-----------|---------|-----------------------|---------|
| Time            |                       | Knowledge |         | Braden Q rating scale |         |
|                 |                       | R         | P-value | R                     | P-value |
| Pre             | Braden Q rating scale | -0.100    | 0.488   |                       |         |
|                 | Practice              | 0.103     | 0.478   | -0.328                | 0.020*  |
| Immediate       | Braden Q rating scale | 0.049     | 0.737   |                       |         |
|                 | Practice              | 0.076     | 0.601   | -0.191                | 0.185   |
| one month after | Braden Q rating scale | 0.348     | 0.013*  |                       |         |
|                 | Practice              | 0.064     | 0.661   | -0.416                | 0.003*  |

## Discussion

Decubitus ulcer is a prevalent issue that can lead to pain, infection, and prolonged hospitalization, especially in critically ill children. It considers the most common iatrogenic, reportable occurrences linked with healthcare. There are many factors as acute and chronic diseases, lack of mobility, age, impaired sensory perception, alteration in tissue perfusion and poor nutrition that make critically ill children are at risk. (20-22)

Decubitus ulcer's prevention depend on the effective capacity for assessment of children who at risk and the effective design and application of prevention strategies. In this process, the main role is focused on pediatric nurse for regular inspections of the skin and ongoing children care. (23-25) Therefore, nurses' performance regarding prevention of decubitus ulcer should be improved by applying quality of nursing care intervention. As regards nurses' total level of knowledge about decubitus ulcer. The present study mentioned that three quarter of the studied nurses had low level of knowledge regarding decubitus ulcer before implementation of quality of nursing care intervention. It might be due to majority of them had less than 10 experience years. This result was in contact with **Coyer et al. (2019)**<sup>(26)</sup> & **Kim (2019)**<sup>(27)</sup> who found that the total level of knowledge about decubitus ulcer was poor before program. This result also in accordance with the study conducted by **Nuru et al. (2015)**<sup>(28)</sup> who stated that, the majority of nurses lacked basic knowledge about pressure ulcers before intervention.

The current study found that nurses' total score of knowledge was improved as majority of them had a high level of

knowledge immediately and after one month from the quality of nursing care intervention implementation. This might be attributed to using multiple teaching methods and development of quality of nursing care intervention based on their needs.

This result was in contact with **Ursavas and Iseri (2020)**<sup>(29)</sup> who concluded that nurses who attended to an educational program having a highly significant degree of knowledge both immediately and after the program. This finding was also in harmony with the study conducted by **Aydin et al.P (2019)**<sup>(30)</sup> who found that nurses in the intervention group showed a significant improve of pressure ulcer knowledge immediately and one month after the intervention.

The current finding was in harmony with the results of **Park et al. (2020)**<sup>(31)</sup> who illustrated that knowledge level of study participants significantly improved immediately after intervention. While it disagreed with the finding of **Park et al. (2020)**<sup>(31)</sup> who reported nurses return to their pre-education baseline one month after intervention and reported that effects drastically reduced or disappeared over time. Regards the effect of Braden decubitus ulcer risk assessment scale on critically ill children in before quality of nursing care intervention implementation. The finding of the present study revealed that the majority of the studied children had a high risk level of Braden risk assessment before implementation quality of nursing care intervention. The researcher suggested that this result might be related to nurses' knowledge shortages and inadequate training

about Braden risk assessment scale for children.

This result was aligned with **David et al. (2015)**<sup>(32)</sup> who stated that prior to intervention, a higher percentage of children fell into the high-risk category for developing pressure ulcers. On the contrary, this finding was uncoordinated with **Stuque et al. (2017)**<sup>(33)</sup> who found that one quarter and one third of the pediatric children were shown to have moderate and high risk for decubitus ulcer development.

As regards total level of practices about decubitus ulcer prevention. The present study mentioned that the majority of the nurses were unsatisfactory in the intervention related decubitus ulcer prevention before quality of nursing care intervention implementation which it might be related to different views on how important nursing care for children is important, workload and a lack of administrative attention to nursing training.

This finding was in accordance with **Mwebaza et al. (2017)**<sup>(34)</sup> who mentioned that nurses weren't professional in providing pressure ulcer prevention and few of the inpatient unit nurses give low priority for pressure ulcer care practices before implementing an educational program for the nurses. Also, **Nasreen et al (2017)**<sup>(35)</sup> who stated that more than half of the nurses had poor practice toward pressure ulcer .

This finding was in contrast with **Etafa (2015)**<sup>(36)</sup> who found that nearly half of nurses have good practice towards pressure ulcer prevention. This result was also in contrast with **Gedamu et al. (2021)**<sup>(37)</sup> who stated that majority of nurses were

professional in providing pressure ulcer prevention.

On the other hand, the overall level of nurses' practices improved both immediately and one month after the quality of nursing care intervention was implemented as all of studied nurses were satisfactory immediately quality of nursing care intervention. This improvement might be attributed to the structured implementation of quality of nursing care intervention that was effective in improving the practice of the studied nurses regarding decubitus ulcer prevention.

This finding was in the same line with **Kwong et al. (2020)**<sup>(38)</sup> who concluded that evidence-based pressure injury prevention program reduced the development of the pressure injury and improved the skill performance of the nursing after intervention. Also, **Diab (2015)**<sup>(39)</sup> was in the same line which revealed that nurses' practice of pressure ulcer increased immediately and after one month of the educational program. **Vasconcelos et al. (2017)**<sup>(40)</sup> was also in the same line with the present study and discovered that nurses' practice was influenced by the introduction of a protocol with a set of guidelines for the prevention of pressure injuries, resulting in higher performance of preventive measures.

#### **Conclusion:**

According to the findings of the current study, it can be stated there was a significant improvement in nurses' knowledge and practice after the implementation of quality of nursing care intervention in relation to prevention of decubitus ulcer at pediatric intensive care unit than before implementation. There was a positive correlation between the total knowledge

scores among the studied nurses and the total practice scores of nursing intervention for decubitus ulcer prevention after implementation of quality of nursing care intervention.

### Recommendations:

The following recommendations are made in light of the study's findings:

- Designing of quality of nursing care intervention's handout for nurses regarding decubitus ulcer prevention.
- Incorporating pediatric decubitus ulcer prevention into nursing education curriculum.
- Organizing frequent workshops to enhance nurse expertise and methods for preventing decubitus ulcers.
- Creating a clinical pathway strategies of decubitus ulcer prevention for nurses for high quality care.

### Reference

1. Pérez A, Navarro C, Mateos T, Engel E. Instructive microenvironments in skin wound healing: Biomaterials as signal releasing platforms. *Journal of Advanced Drug Delivery Reviews*. 2018 ; 129 (32) : 95-117.
2. Santos T, Almeida D. The nursing diagnosis of risk for pressure ulcer: Content validation. *Journal of Nursing Care Quality* . 2016; 24(1) : 75-99.
3. Scheans P. Neonatal pressure ulcer prevention. *journal of Neonatal Network*. 2015; 34(2): 126-32.
4. Taradaj J. Prevention and treatment of pressure ulcers by newest recommendations from European Pressure Ulcer Advisory Panel (EPUAP). *Journal of Family Medicine & Primary Care Review*. 2017; 36(1) : 81-83.
5. Smith Q, Hazel A, Moore Z, Mong H. The risk of pressure ulcers and developing a care bundle within a paediatric intensive care unit setting. *journal of Intensive and Critical Care Nursing*. 2019; 53(1): 68-72.
6. Simsic J, Kevin D, Sarah H, Stephanie P, Robert G. Prevention of pressure ulcers in a pediatric cardiac intensive care unit. *Journal of Pediatric Quality & Safety*. 2019; 4(3):11-98 .
7. Behr J, Wardell D, Rozmus C, Casarez L. Prevention strategies for neonatal skin injury in the NICU. *Journal of Neonatal Network*. 2020; 39(6), 321-29.
8. Nordqvist C. Bed sores or pressure sores: what you need to know. *Journal of Medical News Today*. 2017; 26(1): 90-98.
9. Whitty S, Jennifer A, McInnes E, Bucknalla T, Webstera J, Brigid M, Banks M. The cost-effectiveness of a patient centered pressure ulcer prevention care bundle. *International Journal of Nursing Studies*. 2017 ;75 (1): 35-42.
10. McLane M, Bookout K, McCord S, McCain J, Jefferson L. The national pediatric pressure ulcer and skin breakdown prevalence survey. *Journal of Wound Ostomy & Continence Nursing*. 2016 ; 31(4): 168-78.
11. Schindler C, Mikhailov T, Kuhn E, Christopher J, Conway P, Ridling D, Simpson V. Nursing interventions to decrease development of pressure ulcers in pediatric intensive care. *American*

- Journal of Critical Care. 2018; 20(1): 26-35.
12. Sterken A, David J, Mooney J, Ropele D, Kett A, Vander K. Mastering pressure ulcer risk assessment with the pediatric pressure ulcer prediction and evaluation tool . Journal of Pediatric Nursing. 2015; 30(4): 598-610.
  13. Roberts S, McInnes E, Wallis M, Bucknall T, Banks M, Chaboyer W. Nurses' perceptions of a pressure ulcer prevention care bundle. Journal of BMC Nursing. 2016;15(1): 1-10.
  14. Schlueer S, Barbara A. Pressure ulcers in maturing skin—a clinical perspective. Journal of Tissue Viability. 2017; 26(1): 2-5.
  15. National Pressure Injury Advisory Panel .NPIAP pressure injury stages. 2016. Available at: <http://www.npuap.org/resources/educational-and-clinical>.
  16. Hassan E. Impact of educational guidelines about prevention of pressure injuries among infants in intensive care unit. Symbiosis Journal Nursing health Care. 2018; 4(1): 1-10.
  17. Razmus I, Beringer B ,Sandra S. Pressure Ulcer Risk and Prevention Practices in Pediatric Patients. Journal of Ostomy & wound management. 2017; 63(2): 28-32.
  18. Zuo X, Meng F. A care bundle for pressure ulcer treatment in intensive care units. International Journal of Nursing Sciences. 2015; 2(4): 340-47.
  19. Vasconcelos BDJ, Buriti J ,Calirla M, Larcher H. Nursing actions before and after a protocol for preventing pressure injury in intensive care. Journal of BMC Nursing. 2017; 6(1) :21-67.
  20. Beth D, Robert G. Reading the Medical Literature: Basic& Clinical Biostatistics. 5th ed. New York: Mcgraw- Hill Co., 2019; 161-218.
  21. Bucknall, T, Chaboyer W, Webster M, McInnes E, Banks M, Jennifer A, Thalib L. The effect of a patient centred care bundle intervention on pressure ulcer incidence . International Journal of Nursing Studies. 2018; 64 (16): 63-71.
  22. Curley A, Hasbani N, Quigley S, Stellar J, Pasek T, Shelley S. Predicting pressure injury risk in pediatric patients. Journal of Pediatric. 2018; 192(1): 189-95.
  23. Santos L, Serpa F, Cordero M, Gamboa G. Risk Assessment in Pressure Ulcers. journal of Science and Practice of Pressure Ulcer Management. 2018;12(1): 57-77.
  24. Reyna R. Preventing pressure ulcers in pediatric patients. (2015) available at : <https://woundcareadvisor.com/preventing-pressure-ulcers-in-pediatric>.
  25. David J, Sterken N, Mooney j, Ropele D, Kett A, Karen J, Laan V. Mastering pressure ulcer risk assessment with the pediatric pressure ulcer prediction and evaluation tool . Journal of Pediatric Nursing. 2015; 30(4): 598-610.
  26. Coyer J, Cook A, Doubrovsky J, Campbell A, Vann G. Understanding contextual barriers and enablers to pressure injury prevention practice in an Australian intensive care unit. Journal of Austrian Critical Care. 2019; 32(2) :122-30.

27. Kim J , Lee Y. A study on the nursing knowledge , attitude , and performance towards pressure ulcer prevention among nurses in Korea long- term care facilities. *Journal of International Wound* .2019; 56(1): 29-35.
28. Nuru N, Zewdu F, Amsalu S, Mehretie Y. Knowledge and practice of nurses towards prevention of pressure ulcer and associated factors in Gondar University Hospital. *Journal of BMC Nursing* . 2015;14(1):34.
29. Ursavaş F , İşeri O. Effects of education about prevention of pressure ulcer on knowledge and attitudes of nursing students. *Journal of Tissue Viability*. 2020; 29(4): 331- 36.
30. Aydin K, Karadag A, Gül S, Avsar P, Baykara G. Nurses' knowledge and practices related to pressure injury: a cross-sectional study. *Journal of Wound Ostomy & Continence Nursing*.2019; 46(2): 117-23.
31. Park M, Kim G, Kim K, “The effect of pressure injury training for nurses. *Journal of Advances in Skin and Wound Care*. 2020; 33( 3) : 1-11.
32. David J, Sterken M, Mooney j, Ropele D, Kett A, Karen J, Laan V. Mastering pressure ulcer risk assessment with the pediatric pressure ulcer prediction and evaluation tool. *Journal of pediatric nursing*. 2015; 30(1) : 598-610.
33. Stuque A, Silva W, Araujo R, Oliveira E, Falcao v. Applicability of pressure ulcer protocol in intensive care unit. *Journal of Revista Brasileira de Terapia Intensiva*. 2017; 5(1): 22-45.
34. Mwebaza I, Katende G, Groves S, Nankumbi J. Nurses’ knowledge, practices, and barriers in care of patients with pressure ulcers in a Ugandan teaching hospital. *Journal of Nursing Research and Practice*. 2017; 6(1):613-23.
35. Nasreen S, Afzal M, Sarwar H. Nurses knowledge and practices toward pressure ulcer prevention in general hospital Lahore. *Journal of Tissue Viability*.2017;87(166): 34-4.
36. Etafa W. Nurses knowledge ,attitude and practice toward pressure ulcer prevention in Addis Ababa public hospital. *Journal of BMC Nursing*. 2015;17(1): 1-8.
37. Gedamu H, Abate T, Ayalew E, Tegenaw A, Birhanu M, Tafere Y. Level of nurses’ knowledge on pressure ulcer prevention: A systematic review and meta-analysis study in Ethiopia. *Journal of Heliyon*.2021; 7(7):328-45.
38. Kwong E, Chen Y, Kwan R, Lee H. The effectiveness of a pressure injury prevention program for nursing assistants in private for-profit nursing homes. *Journal of Advanced Nursing*.2020; 76(7): 1780-179.
39. Diab M . Effect of educational guideline on prevention of skin breakdown in pediatric critical care unit at Al-Jouf city. *International Journal of Novel Research in Healthcare and Nursing*. 2015;2(2):12-24.
40. Vasconcelos B , Caliri L. Nursing Actions Before and After A protocol for Preventing Pressure Injury in Intensive Care. *Anna Nery School Journal of Nursing*. 2017;21(1):345-55.