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Developing Competencies of Maternity Nurses on Relieving Postpartum Perineal Pain Using Cold Application

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Abstract Nursing competency is one of the factors to be considered in assessing the performance of a nurse. It includes knowledge, skills and attitudes (KSA) which could lead to the achievement of the goals of the nurse to the patient. A variety of nursing interventions aimed at relieving perineal pain are largely based on localized cooling. Unfortunately, these interventions may not follow the accurate nursing practice for providing immediate and adequate postpartum perineal pain relief. The accurate assessment and appropriate management of postpartum perineal pain requires high levels of nursing skills and competency. **Aim of the study:** To investigate developing competencies of maternity nurses on relieving postpartum perineal pain using cold application. **Method:** A quasi-experimental research design was used. **Sample:** A convenience sample of 70 staff nurses who had worked in the study settings and purposive sample of 200 postpartum women from the same place. **Settings:** The study was conducted at the postpartum unites in Teaching Hospital and University Hospital, at Shebin El-Kom, Menoufia Governorate, Egypt. **Instruments:** Four instruments were used in this study for data collection, a structured interviewing questionnaire, competency standards checklist (CSC), short-form McGill pain questionnaire (SF-MPQ) and postpartum comfort questionnaire (PCQ). **Results:** There was an increase in the percentage of nurses who were classified at the good level in their knowledge and practice regarding perineal cold application to postpartum women in the post-intervention compared to the pre-intervention and overall competency practice increased significantly ($p < .001$) in the post-intervention compared to the pre-intervention. **Conclusion:** The nurses who are subjected to competency intervention about relieving the postpartum perineal pain using cold application had a higher knowledge score and a competent practice in the post-intervention than pre-intervention. **Recommendations:** In-service training programs should be provided for developing the nurses' competency regarding postpartum perineal cold application in order to develop their best practice.

Keywords: *developing competencies, maternity nurses, postpartum perineal pain, cold application*

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1. Introduction

Perineal pain from a tear and/or surgical cut (episiotomy) is a common problem following vaginal birth. It affects the physical, psychological, and social well-being of the mother during the postpartum period. It can also disrupt breastfeeding, family life, and sexual relations. Most women experience perineal pain during the postpartum period. The perineal pain that persists for hours after delivery results in feelings of discomfort during carrying out the physical activities, elimination. Also, it can cause a short-term interference with the infant care and breastfeeding and it may give rise to depression, maternal anxiety, stress urinary incontinence, dyspareunia, communication problems, irritability, and fatigue on the long-term [1].

The approach for treatment of postpartum perineal pain includes various pharmacological methods such as oral and local anesthetics and non-pharmacological methods such as cold application [2]. Cold application effectively relieves pain in two ways. Firstly, it reduces edema, and muscle spasm associated with inflammation or trauma. Secondly, it relieves pain by inducing short-term paresthesia of the peripheral nerve fibers and decreasing the inflammatory response. Cold application to the perineum decreases the temperature of the skin and the underlying tissue, causes alpha receptors in the blood to become stimulated by the sympathetic nervous system, and decreases blood circulation to the region because of vasoconstriction, all of which reduce pain [3].

Cold application is a cheap, safe, and easy-to-use method which does not have any side effects and does not prevent breast feeding. Few randomized controlled studies have been conducted to investigate cold application,

which is effective in reducing postpartum perineal pain. Being carried out by the nurses in the hospital, most of the cold applications generally require doctors' order [4].

In obstetrics, there is a concern with pain occurring during labor. However, perineal pain after vaginal delivery and after episiotomy is often forgotten or ignored by the health care professionals. Health care professionals need to actively promote the ways to assist women in managing their perineal pain experiences as this will help them to be adapted to the motherhood more easily. Therefore, especial attention and nursing management is needed in caring the postpartum perineal pain during the postnatal period [5].

Competency refers to one's ability to apply certain level of knowledge and skills to produce specific outcomes according to some pre-test standards, that are required for the most efficient and effective achievement of the larger organizational goals. This definition highlights that competency is a multi-faceted assemble. It is far a complicated combination of knowledge, overall performance, skills, values, and attitudes [6].

Competency is the ability of the individual to do a task correctly. In nursing, it includes knowledge and attitude in providing health care. This is very vital in nursing because this profession deals with saving lives of individuals. Nursing competency is one of the factors to be considered in assessing the performance of a nurse. It could affect every single part of his/her job. Nursing competency includes skills and knowledge which could lead to achievement of the goals of the nurse for the patient. Also, competency involves care that protects the client from harm [7].

The accurate assessment and appropriate management of postpartum perineal pain requires high levels of nursing skills and competency. Implementation of guide lines and recommendations could reduce maternal morbidity associated with perineal trauma, which is commonly reported and persistent. Despite evidence, limited attention is paid to this important aspect of nursing practice [8].

Variety of nursing interventions aimed at relieving the perineal pain is largely based on localized cooling. The nurses have an important responsibilities for performing cold applications under desirable conditions. They are expected to have sufficient knowledge and skills about effects and side-effects of cold application and the necessary methods because these applications can cause different problems like numbness, pain, cold burns, tissue damage and likely have negative effects on the mother's health when they are not implemented properly and appropriate precautions are not taken. The nurses should follow the advances in cold application methods to increase the quality of nursing care. It is very important to determine the comfort level during the postpartum period in terms of identifying and solving the health problems experienced by women during the postpartum period [9].

1.1. Significance of the Study

Perineal pain after vaginal delivery affects women's recovery from childbirth. Perineal pain is present after birth in almost all women (95-100%) who have experienced perineal trauma. Various studies revealed that 85 percent of 5,471 women giving birth had at least minimal genital tract trauma. Both episiotomy and perineal laceration are strongly associated with the presence of perineal pain during the immediate postpartum period. The prevalence of pain was found to be 90.7% in the first day postpartum 88.2% one week after birth, 8.0% at the seventh week and 0.7% at the six months [10]. Healthcare professionals, including nurses, are available to support the postpartum women 24 hours in the hospital immediately after childbirth and in an ideal position to assist in the management of perineal pain [11]. Therefore, the present study aimed to investigate developing competencies of maternity nurses on relieving postpartum perineal pain using cold application.

1.2. Aim of the Study

The aim of this study was to investigate developing competencies of maternity nurses on relieving postpartum perineal pain using cold application.

1.3. Research Hypotheses

H1- The maternity nurses who are subjected to competency intervention will have higher level of knowledge about relieving the postpartum perineal pain using cold application after the intervention than before.

H2- The maternity nurses who are subjected to competency intervention will have competent practice toward relieving the postpartum perineal pain using cold application after the intervention than before.

H3- The postpartum women who are received competent perineal cold application will have less postpartum perineal pain after the intervention than before.

2. Method

2.1. Research Design

A quasi-experimental research design (pre-post intervention) was used.

2.2. Settings

The study was conducted at the postpartum unites in Teaching Hospital and University Hospital, at Shebin El-Kom, Menoufia Governorate, Egypt.

2.3. Sample

The study includes two samples. A convenient sample of 70 staff nurses (30 from Teaching hospital and 40 from University hospital) who had worked in the study settings. Purposive sample of 200 postpartum women (100 from Teaching hospital and 100 from University hospital) in the postnatal unites at the same study settings. Online sample size calculators have been searched, reviewed and checked for the calculated results based on known formulas for common research objectives [12]. The researchers calculate the number of the postpartum women, based on the flow rate of the sample with this specific inclusion and exclusion criteria. It was 460 women per year. The researchers calculate the sample size by using the creative research systems sample size calculator website.

https://www.surveysystem.com/sscalc.htm. So, the sample size was equal to 200.

Inclusion Criteria

a) The nurses included: All maternity nurses who are available at the time of data collection and willing to participate in the study.

b) The postpartum women included: Healthy postpartum women, had a full term pregnancy, normal vaginal delivery with episiotomy, with no labor complications, not received any analgesic after delivery and agree to participate in the study.

2.4. Instruments

Instrument I: Structured interviewing questionnaire:

It was developed by the researchers to collect the necessary data after using extensive review of literature. **It consisted of two parts:**

1- The first part included (socio-demographic data of the nurses): such as age, education, occupation and years of experience. (socio-demographic data of the postpartum women included in the study): It included two sections: 1) first section: included the personal data such as age, educational level and occupation. 2) The second section: included obstetric health-related data such as type of episiotomy. In addition, it included neonatal health-related data such as neonate gestational age, and weight.

2-The second part (knowledge assessment instrument): This instrument was designed to measure the nurses' knowledge embedded within the instrument 2 of competency standards checklist regarding postpartum perineal cold application. Scoring system: It was adopted from Berman et al., [13]. The subjects' responses were measured by giving a score (1) for the correct answer about the knowledge and (zero) for the wrong answer. For each area of knowledge, the scores of the items were summed-up and the total was divided by the number of the items, giving a mean score for each part. These scores were converted into a percentage score. Total knowledge scores were categorized as: Poor knowledge <50%, Average knowledge 50-70% and Good knowledge ≥ 70%.

Instrument II: Competency Standards Checklist (CSC). It was adopted from Fuzen [14]. The competency standard checklist is a behavioral checklist that aims at measuring the nurses' level of performance in real life nursing situations according to four competency standards CSC that has 110 items and divided over four competency standards. The researchers used this checklist to assess the nurses' level of competence toward the postpartum perineal pain using cold application to the perineum. **Scoring system:** Each of the items on the CSC is rated on a two-point frequency scale (i.e., 0 = No, 1 = Yes). A score of zero means that the behavior described by the statement was not observed by the researchers or wrong. A score of 1 means that the behavior described by the statement was observed by the researchers or correct. Scores of the four main standards can sum to obtain an overall total score that describes the competency for particular postpartum maternity nurses. A high score indicates a high level of competency of the nurses, whereas a low score indicates a low level of competency.

Instrument III: The Short-Form McGill Pain Questionnaire (SF-MPQ): The main components of the SF-MPQ consists of 15 descriptors (11 sensory; 4 affective) which are rated on an intensity scale as 0 equal none, 1 equal mild, 2 equal moderate and 3 describe severe. The four pain scores are derived from the sum of the intensity rank values of the words chosen for sensory, affective and total descriptors. The SF-MPQ scores obtained from patients in the obstetrics wards [15].

Instrument IV: Postpartum Comfort Questionnaire (PCQ). The PCQ was adopted from Karakaplan, and Yildiz [16] to identify the levels of postpartum women comfort (before and after competency intervention). The PCQ includes 20 items related to physical and psycho-spiritual comfort. The responses and the scores range from strongly agree (5points) to strongly disagree (1point). The expression strongly agree in positive sentences signifies the highest comfort (5 points); whereas in negative sentences, it indicates the lowest comfort (1 point). The total score obtained from the scale is divided by the number of items to calculate a mean score of 1-5. While one point shows low level of comfort, five points show high level of comfort. Before conducting the study, permission was obtained from the hospitals directors to use the scale.

Validity: of the instruments was determined by 5 experts (Two professors at obstetrics department, Faculty of Medicine, Menoufia university and three professors at Maternal and Neonatal Health Nursing Department, Faculty of Nursing, Menoufia University) who reviewed the instruments and judged it to measure what it intended to measure (face validity). Experts were also asked to judge the items for their adequacy (content validity).

Reliability of the instruments was done by test- retest for measuring internal consistency. Reliability was assessed by applying the instruments to 5 nurses twice with an interval of two weeks. The Cronbach's alpha for the structured interviewing questionnaire instrument was 0.9 indicating good reliability. The test and retest reliability of the competency checklist was 0.88 indicating good reliability. And the test and retest reliability of the instrument III and IV was 0.98 indicating good reliability.

2.5. Ethical Considerations

An official permission was taken from the authoritative personal in the hospitals. The researchers introduced themselves to the nurses and the postpartum women who met the inclusion criteria and informed them about the aim of the current study in order to obtain their acceptance to share in this study. A written consent was obtained from them. Confidentiality and anonymity of them were assured through coding the data.

2.6. Pilot Study

Pilot Study

It was conducted to test feasibility and applicability of the instruments and maneuver of the interventions. It was also used to estimate the time needed to collect the data. It was conducted on a sample of 10% of total sample (7 nurses and 20 postpartum women). They were not included in the main sample. The results of pilot study were used to finalize the instruments and schedule the field work time needed.

2.7. Procedure for Data Collection

Approval:-An official written letters was obtained from the Dean Faculty of Nursing at Menoufia University as an approval for data collection to conduct the study. The letter explained the study purposes and its main procedure.

- **Implementation phase was divided into three phases:**
- **The pre-intervention phase:**

The data for the present study was collected over a period of 6 months from the beginning of May 2019 to the end of October 2019 from 9 AM to 2 PM, three days per week. Data collection for the pre-test continued for two weeks. The researchers administered three measurement instruments as a pretest for the nurses; competency standards checklist (CSC), the knowledge assessment and pretest for the postpartum women included the short-form McGill pain questionnaire (SF-MPQ). The researchers visited the study settings three days a week from 9:00 AM to 2:00 PM to administer the measurement instruments. The researchers observed each nurse individually.

1- **The intervention Phase:**

2. The application of the competency intervention continued for almost four weeks; from mid-May to mid-June, 2019. The competency intervention consisted of four sessions: one introductory session, one session to increase the nurses' knowledge, two competency intervention sessions for adequate technique of cold application to the perineum runs for one hour. The number of sessions held per week varied depending on the nurse's workload so the researchers applied the intervention on four groups. The total number of hours of the intervention technique for the groups was 4 hours (1 hour x 4 sessions).
3. **Competency intervention session according the American Nurses Association [17] about perineal cold application occurs in three stages:**
4. **Stage I:** Skill acquisition: The postpartum nurses know the steps and their sequence to perform the required skill or activity but needs assistance.
5. **Stage II:** Skill competency: The postpartum nurses know the steps and their sequence and can perform the required skill or activity.
6. **Stage III:** Skill proficiency: The postpartum nurses know the steps and their sequence and efficiently perform the required skill or activity.
7. **In the first stage, skill acquisition,** the postpartum nurses attend interactive and participatory sessions conducted by the researchers. The researchers involve the nurses through a variety of learning methods including the use of questions and role play. In addition, the researchers demonstrate the skills through the role play and through the use of anatomic models, as the nurses observe and follow the steps which help to develop competency. As the nurses practice these skills, the researchers observe, provide feedback, and encourage the nurses to assess each other using the learning guide. The nurses practice until they achieve the competency and feel confident in performing the procedure. The final stage of skill proficiency, occurs only with repeated practice over time.
8. **Learning guides:** -Help the nurses to learn the correct steps and sequence of postpartum perineal cold application in which they should be performed (skill acquisition), and measure the learning process in small steps as the nurses gain confidence and skill (skill competency).
9. **Competent technique of cold application**

* The nurse provided information about the purpose of the cold application such as ice/cool packs immediately postpartum (for the first 24 hours after birth) to the perineum, anticipated effects, benefits, possible problems cold application and ways of preparing an ice pack. Cold application such as ice/cool packs applied immediately postpartum to the perineum can help to reduce swelling and discomfort.

* Keep the perineal area cold by using a wrapped ice pack every 1 to 2 hours or for the first 24 hours after delivery. This decreases the pain and swelling which is important for feeling with comfort. Have the wrapped ice pack for 10 to 20 minutes at the most each time.

* Apply perineal ice packs intermittently for the first 24 hours after birth.

* Instruct the nurses that the ice pack should remain in place approximately 20 minutes and then removed for about 10 minutes before it is replaced.

* It is very important that the ice /cool pack do not come into direct contact with the postpartum mother skin as this can cause painful ice-burn. (Ice packs should be wrapped in a towel or facecloth and not applied directly to the skin).

- **The post-intervention and follow-up phase:**

The researchers administered the post-test to the nurses immediately after the competency intervention sessions. The researchers also followed and evaluated the competency of the nurses' knowledge and practice on relieving the postpartum perineal pain using cold application. The researchers too, evaluated and follow the perineal pain degree and the postpartum women comfort before and after applying the competency intervention to the nurses at three points of time. The first point: before perineal cold application. The second point: two hours after applying ice pack (first perineal cold application). The third point: after the second perineal cold application (before the women discharge from the hospital).

2.8. Statistical Analysis

The data collected were tabulated and analyzed by using SPSS (statistical package for social sciences) statistical package version 20 on IBM compatible computer. Qualitative data were expressed as number and percentage (No & %) and analyzed by applying chi-square test and quantitative data were expressed as mean and standard deviation (X±SD) and analyzed by applying t test.

3. Results

Table 1 showed the socio-demographic characteristics of the study nurses**.** It showed that, the mean age of the study nurses was 25.5 ± 8.99, and (37.1%) of them had a

nursing secondary school. While (70%) of them had experience of five years or less.

Table 1. Socio-demographic Characteristics of the Study Nurses (N=70)

Variables	The Study Nurses	
	No.	%
Age groups		
	X±SD25.5 ± 8.99	
Education		
Nursing secondary school	26	37.1
Technical institute of nursing	20	28.6
Bachelor degree in nursing	24	34.3
Experience group		
<= 5years	49	70
6-15 years	16	22.9
16 - 25 years	5	7.1
Total	70	100.0

Table 2. Knowledge Score of the Study Nurses about Postpartum Perineal Cold Application (Pre and Post Competency Intervention) (N=70)

Variables	Pre-Intervention		Post-Intervention		t-test	P-value
	No.	%	No.	%		
Poor (<50%)	70	100	0	0	47.4	<0.001
Average (50-70%)	0	0	1	1.4		
Good (≥ 70%)	0	0	69	98.6		

Table 2 presents knowledge score of the study nurses about postpartum perineal cold application (pre and post competency intervention). It presented that there was statistical significant difference in the nurses' knowledge score about the postpartum perineal cold application in post intervention than pre intervention. The majority of them (98.6%) had a good knowledge score in post-intervention compared to pre-intervention ($p<0.001$).

Table 3. Quality Practice of the Study Nurses toward the Postpartum Perineal Cold Application (Pre and Post Competency Intervention) (N=70)

Variables	Pre-intervention		Post-intervention		t-test	P-value
	No.	%	No.	%		
- Inadequate Practice	70	100	1	1.4	70.6	<0.001
Adequate Practice	0	0	69	98.6		

Table 3 shows quality practice of the study nurses toward the postpartum perineal cold application (pre and post competency intervention). It shows that there was a significant improvement in the quality of nurses' practice toward the postpartum perineal cold application, the majority of the study nurses (98.6%) had adequate practice in post-competency intervention compared to pre-competency intervention (0).

Table 4. Socio-demographic Characteristics of the Postpartum Women (N=200)

Variables	The Postpartum Women	
	No.	%
Level of education		
-Illiterate	5	2.5
-Primary	30	15
-Deploma	90	45
-University	75	37.5
Occupation		
-House wife	101	50.5
-Working	99	49.5
Age	X±SD 25.6± 5.4	

Table 4 illustrates socio-demographic characteristics of the postpartum women. It illustrates that (45%) of the postpartum women had a secondary education and more than half of them were housewives (54.5%). The mean age of the women was 25.6 ± 5.4 years old.

Table 5. Distribution of Neonatal Health Related Data of the Women (N=200)

Variables	Mean ± SD
Gestational age	38.1 ± 0.7
Neonatal birth weight	2.799 ± 0.6

Table 5 illustrates distribution of neonatal health related data of the women. It illustrates that the mean gestational age and the neonatal birth weight was 38.1 ± 0.7, 2.799 ± 0.6 respectively.

Table 6. Characteristics of Mediolateral Episiotomy Wound of the Women (N=200)

Variables	Mean ± SD
-Episiotomy wound length (mm)	3.57±0.87
-Number of skin stitches on the perineum	4.5± 1.3

Table 6 reveals the characteristics of mediolateral episiotomy wound of the women reported by the nurses. It reveals the mean of episiotomy wound length was 3.57± 0.87 while the mean number of skin stitches on the perineum was 4.5± 1.3.

Figure 1 depicts the postpartum comfort score of the women before and after perineal cold application. It depicts that the mean score of the physical comfort and the psycho spiritual comfort was significantly increased in the first and second cold perineal application compared to before cold application.

Figure 2 reveals the pain degree of the postpartum women before and after perineal cold application by the competent nurses**.** It reveals that more than half of the postpartum women suffered from severe pain (60%) before perineal cold application, while the severity of pain reduced from (5%) in the first cold application to (0%) after the second cold application. The majority of the postpartum women have no pain (99%) after the second perineal cold application.

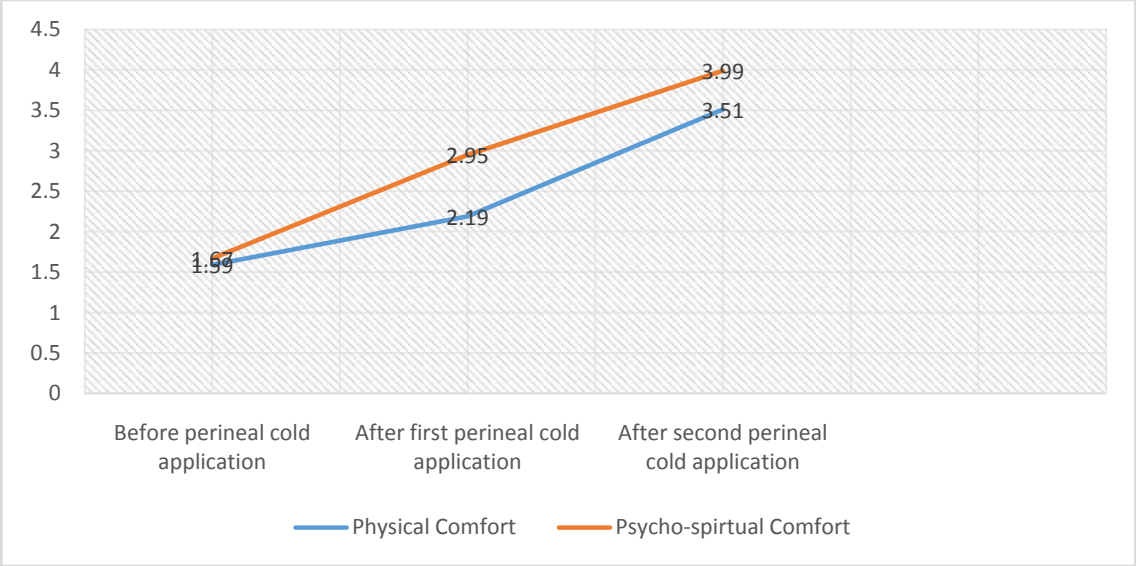

Figure 1. Postpartum Comfort Score of the women before and after Perineal Cold Application (N=200)

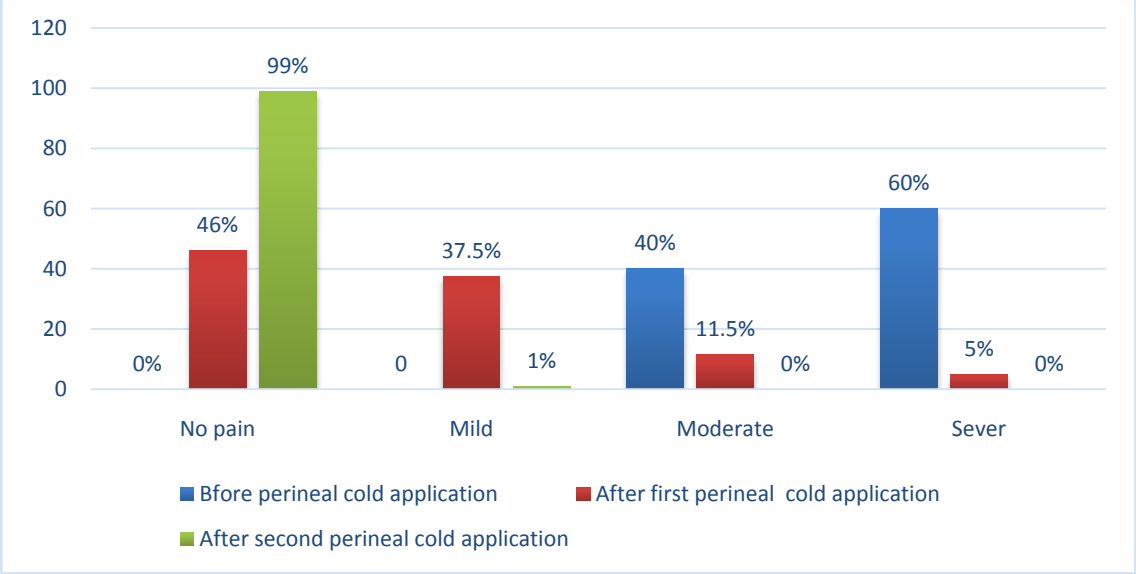

Figure 2. Pain Degree of the Postpartum Women before and after Perineal Cold Application by the Competent Nurses (N=200)

4. Discussion

A competent nurse performs an important function in the postpartum care and can independently manipulate the care of healthy mothers and newborn all through the childbearing cycle Cheng, et al., [18]. Hence, the current study aimed to investigate developing competencies of maternity nurses on relieving postpartum perineal pain using cold application.

Regarding the socio-demographic characteristics of the study nurses; the findings of the present study specified that the mean age of the total sample was 25.5 ± 8.99 years old. Half of them had deploma. The results of the present study come in the same line with the findings mentioned by Sherwood & Barnsteiner [19] who studied a competency approach to improve the postpartum nurses' performance, and mentioned that the mean age of the total sample of nurses was 26.8± 5.8 years old.

Concerning the nurses' knowledge regarding the postpartum perineal cold application, the present study findings showed that all nurses had a poor level of knowledge in pre-intervention compared to post-intervention. While, there was a notable and substantial increase in the number of nurses who were classified at good knowledge in post-intervention compared to pre-intervention. This increase in the percentage of nurses classified within the good level continued over the post-intervention. These findings suggested that the competency intervention applied by the researchers benefit the nurses in increasing their level of knowledge. The nurse's knowledge is also acquired through learning in competency intervention sessions, and through mentoring (observation and receiving feedback from the researchers). This comes in accordance with findings mentioned by Elshafie [20] who studied the effect of the educational competency program on the level of nurse's knowledge regarding postpartum perineal pain in Emirates and revealed that, before applying the competency program, less than half of the study nurses had poor knowledge, but after applying the competency program, there was an enhancement of nurses' knowledge score. They also found that, the mean knowledge score in the post-intervention were been

considerably higher after competency program application compared to their values at pre-intervention in all variables.

These findings supported the first study hypothesis, which mentioned that, the maternity nurses who are subjected to competency intervention will have higher level of knowledge about relieving the postpartum perineal pain by using cold application after the competency intervention than before. These study findings that showed a positive effect of the competency intervention on increasing the nurse's knowledge about the perineal cold application for the postpartum women.

The finding of the current study clarifies that, more than three fourth of the studied nurses have adequate practice score in the post-competency intervention. Added to that, there was a statistically significant difference in the nurse's practice in pre and post competency intervention. According to the researcher's point of view, the goal of competency practice is to evaluate the nurses' performance for effective application of knowledge and skill in the practice setting. Competency evaluation methods address affective, cognitive, and psychomotor domain. Competencies can be generic to clinical practice in any setting and have to be significant at maternity health service.

These results come in accordance with the findings reported by Sherwood and Barnsteiner [19] who studied the impact of competency training program regarding perineal cold application on scientific competence of the nurses working at the postpartum unites in Taiwan and founded that, the nurses extensively increased in their competency after finishing the competency program. The preceding results agreed with a study executed through Bifftu, et al., [21] that aimed to evaluate the perceived scientific competence program amongst the nurses for relieving the perineal pain to the postpartum primipara mothers and they found that, more than half of the study contributors perceived themselves as competent. There are numerous factors that can account for the significant increase in the nurse's knowledge and overall performance after implementing the competency intervention technique. It is feasible that the nurses were strongly enthusiastic to learn and apprehend the material and activities provided via the competency intervention technique. The nurses also determined that, these material and activities are interesting. These findings supported the second study hypothesis that the maternity nurses who are subjected to competency intervention will have high competent practice score toward relieving the postpartum perineal pain by using cold application after the intervention than before. These study findings that showed a positive effect of the competency intervention in increasing the nurses' competency and adequacy of practice in using cold application for relieving the postpartum perineal pain.

Regarding the socio-demographic characteristics and the neonatal health related data of the studied postpartum women, the results of the current study clarified that the mean age of the total sample was 25.6± 5.4years old. Half of them were housewives. The mean gestational age was more than thirty-eight weeks of gestation, and the birth weight of their newborns was within normal range. The results of the present come in the same line with the findings of Navvabi et al., [22] who studied the effectiveness of cooling gel pads and ice packs on perineal pain, they found that most of the mothers had gestational age within thirty-six to forty weeks. Birth weight of their newborns was within two to three kilograms in both groups. Sameness was seen in terms of obstetric variables related to the period of gestation and the newborn birth weight.

According to the literature of different references, episiotomy wound can be a mediolateral or midline. The present study findings represented that, all participant women had a mediolateral episiotomy. In addition the nurses reported that the women had about four skin stitches on the perineum and about three of episiotomy wound length. The results of the present study come in accordance with Ahmed A. and Mahmed S [23] who reported in their study which conducted in Egypt about the effectiveness of cold application therapy on episiotomy pain and wound healing, and mentioned that most of the participants had a mediolateral episiotomy and the majority of them had about five episiotomy stitches.

Regarding the postpartum comfort questionnaire (PCQ) scores of the postpartum women before and after perineal cold application the current study clarified that the competent nursing intervention regarding postpartum perineal cold application have an effect in increasing the mean score of the physical and psycho- spiritual comfort to the postpartum women in the first and second cold application. The outcomes of the present study come in arrangement with the findings mentioned by Petersen [24] who discovered that, the psycho-spiritual comfort mean scores were found to be higher in the experimental group (1.89 ± 0.27) than the control group (2.10 ± 0.23). This difference is thought to be associated with the reduction in the perineal pain after cold application in the experimental group. In addition, throughout another study accomplished by Derya, and Pasinlioglu, [25] who reported that, physical comfort mean scores were 3.19 ± 0.30 in the experimental group and 2.94 ± 0.31 in the control group, and this difference was statistically significant. Physical comfort is affected by physical perceptions and includes physiological factors such as resting and relaxation and reactions to the postpartum pain.

As regards to pain degree of the postpartum women before and after perineal cold application, the current study findings reported that more than half of the postpartum women suffered from severe pain before cold application while the majority of women reported no pain in the second cold application. The researchers suggested that the competency intervention technique applied to the nurses helped them to be competent and had adequate practice regarding the postpartum perineal cold application. These results come in accordance with findings reported by Oliveira, et al. [26] who mentioned that several studies have shown that, cold application was effective in decreasing the perineal temperature by 10-15°C, but parity, type of birth, severity of perineal trauma, duration of the application, and possible side-effects should be taken into consideration. In addition, the cold application duration is longer than the recommended may lead to disruption of the circulation and tissue damage because of oxygen and nutrition deficiency. It is recommended in the literature that the cold application should be performed at 2-hour intervals and for 15-30 minutes although it varies based on the method of the application.

In the same line Shirvani MA and Ganji Z [27] supported these findings and stated that, the level of

perineal pain experienced by the postpartum mothers is more than half before intervention, but after being applied a perineal cold compresses the level of pain was reduced to mild pain in seventy five percent of the cases. Moreover Leventhal et al ., [28] in their study stated that treating perineal pain by ice packs applied for 20 minutes between 2 and 48 hours postpartum were effective in pain control, with effects ranging from 40 minutes to 2 hours after the end of the therapy. Ice packs are more effective in reducing laceration perineum pain, and can be used as alternative technique to treat laceration perineum pain without side effects. These findings supported the third study hypothesis which mentioned that, the postpartum women who are received competent perineal cold application will have less postpartum perineal pain after the intervention than before.

The present study findings emphasized that there is important evidence concerning the positive effects of the competency intervention in increasing the nurses' knowledge and competency of practice for perineal cold application in relieving postpartum perineal pain and increasing the women comfort which supported our research hypotheses.

5. Conclusion

Competency intervention was highly effective in increasing the nurses' knowledge and developing the competency of nursing practice regarding the postpartum perineal cold application. The maternity nurses who are subjected to competency intervention had higher level of knowledge and competent practice on relieving the postpartum perineal pain using cold application after the intervention than before. Also, the postpartum women who received competent perineal cold application are experienced less postpartum perineal pain after the intervention than before.

6. Recommendations

1- Governmental hospitals should provide adequately planned in-service training programs for developing nurses' competency regarding the postpartum perineal cold application in order to develop their best competency practice.

2- Maternity hospitals should established protocols for prescribing perineal cold application as pain relief methods.

3- Further studies are also needed to assess the women satisfaction regarding the postpartum perineal cold application as a pain relief.

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