PHILIPPINE NURSES ASSOCIATION, INC.

Research Article

Hand Reflexology's Effect on Level of Pain among Postpartum Mothers

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Abstract

In every 10 seconds, there is a woman who is giving birth around the globe and what binds them is the pain that goes through with the birthing process. This study aims to determine effects of hand reflexology in reducing postpartum pain as measured by comparing pain level between control and study group after establishing comparability of the two groups based on age, parity, income and work status. Furthermore, this study explores the experiences of mother's postpartum pain after receiving an intervention. The results should give nurses an alternative means in decreasing postpartum pain. This study makes use of a pretest and posttest control group design with a qualitative data on the experience of pain after receiving an intervention obtained through interview among mothers within 24 hours post-delivery. Respondents were randomly selected wherein study groups (n=10) received a 10 minute hand reflexology massage (ROM, pressure, thumb walking) while the control group (n=10) received no intervention. Pain level was measured using a numeric pain scale rating. Chi-square and pooled t-test was used to infer study findings. No significant difference was noted on the demographic profile in terms of age (p-value of 0.31), parity (0.36), income (0.65), and work status (0.61) between the study and control group thus variability of the respondents profile was controlled thereby reducing extraneous variables to affect study findings. Pain decreased significantly before and after in the study group (p value 0.01) but not in the control group (p value 0.21). Likewise, comparing study and control group did show significant result (p value 0.01). Qualitatively, a linear transition emerges from experiencing discomfort to comfort. Quantitatively, this study supports empirical evidence that hand reflexology massage is effective in reducing postpartum pain. Overall, respondents were satisfied and comforted with hand reflexology as an intervention. Further research on its longitudinal effect on relieving postpartum pain needs to be established after receiving an intervention.

Key words :*Hand reflexology, massage, postpartum pain, experimental, maternal and child nursing, nursing intervention, Philippines*

Introduction

Pain is an experienced that every person encounters throughout their lifetime. It is a concept that is so abstract thus is hard to quantify. Despite its universality, it is still elusive and complex (Taylor et. al, 2005). McCaffery (1979) define pain as "whatever the experiencing person says it is, existing whenever she (he) says it does". Thus, pain is a highly individualized experience that is very subjective in nature. The binding force of any kind of distress is manifested through the symptoms of pain and birthing is one of them.

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Globally, the world crude birth rate in 2012 registered 19.14 births per 1000 population (World Birth Rate – indexmundi). This could mean that in every second, 4.3 women are giving birth or 255 births per minute. In the Philippines, although the birth rate is declining dramatically, we are still above the global rate accounting for 25.09 births per 1000 population (World Bank Indicators) in 2010 and 24.90 in 2012. It was estimated that 3,000 Filipino babies are born every day (Gonzales, 2008). What binds these women around the globe apart from the privilege of giving forth a life is the pain that goes with it. Data reveal that 92% who delivered vaginally complain of significant pain in the perineum, on the day after normal spontaneous delivery (Andrews et. al, 2008). More so, almost half (48%) of mothers with vaginal births (68% among those with instrumental delivery, 63% with episiotomy, 43% spontaneous vaginal birth with no episiotomy) reported experiencing a painful perineum, with 2 percent reporting the pain persisting for at least 6 months (Declereq et.al, 2008)

Clinically, nursing actions given to reduced postpartum pain can include pharmacological and non-pharmacological modalities. Multiple studies on pharmacological intervention (Jones et. al, 2009; Asti et. al, 2011; Jangsten et. al, 2011) and non-pharmacological one (Borup, 2009; Eogan, Daly, & O'herlihy, 2006, Oliviera et. al 2012) appears to be effective in reducing pain. However, alternative and complimentary treatment is gaining grounds as a means of managing pain. One of the promising aspects that need to be looked into is the use of hand reflexology. Previous researches have shown that 20 minutes foot and hand massage showed a positive reduction in relieving pain (Carlson, 2006; Wang and Keck, 2004). It is a massage on the pressure point that stimulates the mechanoreceptors that will activate the "non-painful" nerve fibers, thus, preventing pain transmission from reaching consciousness. These statements was further supported by an integrative review conducted by Steenkamp (2009) indicating that reflexology is clinically significant in the reduction of pain in patients with cancer and fibromyalgia syndrome and in turn increases their overall well-being and quality of life. Unfortunately, the effectiveness of 10 minute hand reflexology has not been tested if it can also be applicable in reducing the level of pain among postpartum mothers and the meaning that they attached to pain experienced after receiving hand reflexology, thus the researcher becomes interested to explore both the concept and phenomena. Basically, this study aims to determine the effects of hand reflexology in reducing postpartum pain measured by comparing postpartum pain between the study and control group after establishing comparability of the two groups based on age, parity, income and work status. Furthermore, this study explores the experiences of mother's postpartum pain.

Methodology

Research Design

The study utilized a quasi-experimental method as its research design. Polit and Beck (2008) define quasi-experimental as a design for an intervention study in which subjects are not randomly assigned to treatment conditions. In this study, the researcher still makes use of randomization without blinding. Ten respondents randomly selected were assigned as the control group of which no treatment was given pre and posttest whereas; another 10 randomly picked respondents were assigned to the study group of which data were collected prior to an intervention which served as the pretest then hand reflexology were rendered for 10 minutes after which data were collected again to serve as the posttest. Qualitative data was added to get a clearer picture of the phenomena being studied by viewing it from a different perspective known as data triangulation (Bachman and Schutt, 2008). Data triangulation involves the use of multiple data sources for validating conclusions, which can enhance the credibility results of the study. Likewise, triangulation also helps to capture a more complete picture of the phenomenon under study (Polit and Beck, 2004). The researcher triangulates the data by asking respondents in the study group about their experience on postpartum pain after receiving the intervention.

Population and Sampling

Twenty (n=20) respondents were recruited for the study. According to Roscoe (1975), in simple experimental research with tight controls research may be conducted with samples as small as 10 to 20. The researcher established the eligibility criteria as follows: (a) 18-45 years of age, (b) undergone normal spontaneous delivery, (c) within 24 hours post-delivery, (d) complaint of postpartum pain, (e) did not take any analgesics or pain medications during postpartum period and (f) are willing to participate. However, excluded in the study were (a) age greater than or less than 18 and 45 years of age, (b) underwent caesarean section, (c) patients without pain, (d) had taken analgesics or pain medications during postpartum period.

Research Instrument

The researcher used a numeric pain scale rating wherein 0 being no pain while 10 being the highest level of pain (McCaffery & Beebe, 1993) to measure the intensity of pain experienced by postpartum women within 24 hours after delivery. According to Kelly (2011) reviewers recommend the use of numeric pain scale for estimating the patient's pain intensity for it is easy to administer and simple enough to be used at the point of care. Likewise, the researcher also makes use of an interview guide semi-structured instrument to explore the experience of pain 24 hours after childbirth after receiving 10 minute hand reflexology. This is to triangulate the subjectivity of numeric pain scale to determine its congruency with their experience. The researcher jot down the respondents responses, subject the statement to validation then data were encoded using a software program to help facilitate data analysis.

Data Collection Procedure

A self-report through interview schedule was used as the method for collecting data. The researcher first secures a written approval for conducting the study both from the Institute and the hospital for ethics review. After approval had been sought, the researcher started to recruit respondents' base on the eligibility criteria set. Once qualified, respondents were asked if they are willing to participate in the study. Those who agree were asked to sign an informed consent after the purpose of the study and its content had been explicitly explained. Confidentiality on the data was also emphasized. Fish bowl technique was utilized to allocate respondents to be either in the study or control group in order to ensure that selection of respondents were unbiased as well as to equalize the characteristics of respondents through counterfactual method. Before picking a paper from the box, respondents were informed that she could either be in the study or control group. Names were coded to observed confidentiality. Intervention protocol consisted of 10 minutes hand reflexology. Each hand received a 5 minute massage consisting of the following procedure (a) range of motion (15 seconds); (b) applying pressure on the digitalis of each hand (1 minute); (c) thumb walking on the palmar part of the hand (2 minutes); (d) applying pressure in between the metacarpal bones of the dorsal part of the hand (30 seconds); (e) applying pressure in the arm (1 minute) and (f) range of motion (15 seconds). Hand reflexology was administered by nursing students who underwent training and seminar with certification from Technical Education and Skill Development Authority, a DOH accredited institute. While those in the non-intervention group or control received no intervention. Level of pain through the numeric pain scale was collected pretest and after 10 minutes posttest for both the control and study group. However after collecting the posttest data from both groups, those in the study group were further interviewed using semi-structured guide questions for qualitative data to explore the experiences of mother's postpartum pain after receiving the intervention.

Data Analysis

For statistical treatment, percentage and frequency distribution, a chi-square test and pooled t-test were used to infer quantitative study results. For qualitative aspect, the researcher analyzed the subjective data extracted from the interview guided by the principle of Giorgi's methodology. The researcher first read the statement several times to get a sense of the whole. Significant statements from respondents' utterances were highlighted. Those highlighted statement were clustered after formulation of a meaning unit until themes emerges.

Results

Frequency and percentage distribution, Student's t-test, and chi-square test were used for the quantitative analysis. Giorgi's method of data analysis was also used to analyze qualitative data. The following tables show the results of the data to answer the research problems under study.

Demographic profile

Table 1 shows the frequency and percentage distribution of respondents when grouped according to control and study group.

Table 1: *Demographic profile of control and study groups*

Demographics	Control Group	Study Group
	n (%)	n (%)
Age		
Young Adult	10 (100%)	9 (90%)
Middle Adult	0 (0%)	1 (10%)
Parity		
Nulligravida	3 (30%)	5 (50%)
Multipara	7 (70%)	5 (50%)
Income		
Low Class	6 (60%)	5 (50%)
Middle Class	4 (40%)	5 (50%)
Work Status		
Employed	3 (30%)	2 (20%)
Unemployed	7 (70%)	8 (80%)
Total	**10 (100%)**	**10 (100%)**

Data show that in terms of age, majority of the respondents belong to young adult that typically ranges between 20-40 years of age for both the control (100%) and study group (90%) respectively.

In terms of parity, data revealed that multiparous postpartum mothers tend to account for a 70% as compared to 30% for first time mothers who gave birth in the control group. However, an even distribution of percentage (50%-50%) was noted in the study group.

The income of the family in the control group shows a 60-40% breakdown that constituted from low to middle class status respectively whereas an even 50-50% class status was again noted in the study group.

Lastly, majority of the respondents (70% of the control and 80% in the study group) were unemployed.

Table 2 shows the computed statistical test for significance difference when grouped according to age, parity, income, and work status.

In terms of age, result appears to show a p-value of 0.30 which is greater than the level of significance of 0.05, thus the null hypothesis was supported. Therefore, there is no significant difference in age group between the control and study group. This could only mean to show that the characteristics of age group between two groups were similar. Looking into table 1, majority of the respondents were young adult ranging from the age group of 20-40.

In terms of parity, a p-value of 0.36 was obtained which is greater than the significance level of 0.05, thus the null hypothesis was supported. Therefore, parity is not statistically different. Data revealed that the distribution of number of pregnancy between the control and study group were likewise similar in characteristics. Those who gave birth for the first time and those with several births are almost equal in terms of their distribution as a result from randomization.

Income shows a p-value result of 0.65 which is again greater than the significance level of 0.05, thus supports the null hypothesis. Income therefore is not significant statistically. This can be deduced from the data that most of the respondents are well distributed between low income and middle income family group as reflected in Table 1.

Table 2: *Comparison of demographic profile of control and study groups*

Variables	Chi-square value	p-value	Decision
Age	1.05	0.30	No significant difference
Parity	0.84	0.36	No significant difference
Income	0.20	0.65	No significant difference
Work Status	0.26	0.61	No significant difference

Lastly, in terms of work status a 0.61 p-value was obtained which is greater than the significance level set at 0.05 thus no significance difference was noted. Majority of the respondent for both the control and study group were unemployed. Data suggest that majority of the respondents are plain housewife.

Overall, as can be analyze the variables age, parity, income and work status were being distributed almost consistently between the study and control group as a result from randomization or random assignment. Thus, the researcher can confidently say that two were alike and could play a major role in the credibility of study findings.

Pain Level

Table 3: *Comparison of pain level difference between control and study group*

	Difference of Level of Pain Pre and Post test	
Respondents	Control group	Study group
1	0	4
2	0	4
3	2	3
4	0	4
5	0	3
6	-1	5
7	0	1
8	3	1
9	1	2
10	0	2
Mean	0.5	2.9
SD	1.18	1.37

Table 3 illustrates difference in the pretest and posttest between the control and study group. As can be gleaned from Table 3, a 0.5 difference in the level of pain between the pre-test and the posttest were recorded in the control group after receiving no intervention whereas, a markedly difference of 2.9 in the level of pain was registered among the study group after receiving the 10 minute hand reflexology between the pretest and posttest.

Table 4: *Comparison of the pain level pretest and posttest in the control group*

Control Group	Mean	SD	p-value (2-tailed)	Conclusion
Pretest	5.9	1.60	0.21	No significant Difference
Posttest	5.4			

α = 0.05; df=9

Table 4 shows pooled t-test (dependent t-test) on the difference between pretest and posttest without intervention. Looking at the table, the mean score obtained on the pretest was 5.9 and 5.4 for the posttest. T-test shows a p-value of 0.21, which is greater than the level of significance set at 0.05; thus the null hypothesis was rejected. No significant difference was found. This could indicate that the pain is consistent or stable between pretest and posttest. It means patient really suffers from postpartum pain and that nurses really need to manage them. The results are confirmatory of the study of Declereq (2008) that 48% of women who delivered vaginally suffer from postpartum pain.

Table 5: *Comparison of the pain level pretest and posttest in the study group*

Study Group	Mean	SD	p-value (2-tailed)	Conclusion
Pretest	6.7	2.65	0.01	Has significant Difference
Posttest	3.8			

α = 0.05; df=9

This table shows the result of pooled t-test (dependent t-test) on the difference between pretest and posttest within study group. As presented on the table, since the p-value of 0.01 is less than the alpha set at 0.05, the null hypothesis is rejected thus there was a significant difference between pretest and posttest in the study group. This could indicate that the intervention received by the patient appears to help in reducing the level of postpartum pain felt by the mothers. This can be related to the stimulation of the hand that helps to block pain transmission through the mechanoreceptors. The result confirms the study of Carlson (2006) which reveals that a 20 minute foot and hand massage showed positive result on reducing pain.

Table 6: *Comparison of pain level between control and study group*

Category	Mean Score	SD	p-value (2-tailed)	Conclusion
Control Group	5.4	2.26	0.01	Has significant difference
Study Group	3.8			

α = 0.05; df=18

This table shows the result of pooled t-test (independent t-test) on the difference between control and study group. As can be gleaned from the table, since the p-value of 0.01 is less than the alpha set at 0.05, the null hypothesis is rejected thus a difference was statistically significant. This could indicate that a ten (10) minute hand reflexology appears to provide empirical evidence in reducing the level of pain among postpartum mothers. Ten (10) minute stimulation on the pressure point can already trigger the mechanoreceptors to activate the "non-painful" nerve fibers, this in turn, prevents pain transmission from reaching consciousness. The result supported the integrative review on the effectiveness of reflexology conducted by Steenkamp (2009) that shows a clinically significant reduction of pain in patients. Likewise, the study of Wang and Keck (2004) on foot and hand massage decreases pain intensity (from 4.65 to 2.35; p=<.001).

Table 7: *Themes and examples that represent meaning of experiences felt by postpartum mothers before and after receiving intervention of hand reflexology*

Themes	Examples of Experiences
Experience of Discomfort	"may pumipintig yong sakit sa puson" (the pain seems to be pulsating in my loins area) "Makirot parang hinihiwa o tinutusok" (it is painful, it seems like it is being cut or stab) "humihilab, pasulpot sulpot" (on and off contractions) "makirot ang tahi ko, lalo na pag gumagalaw" (it is painful specially when moving)
Experience of Comfort	"Wala ako naramdamang sakit, nakakaantok" (no more pain, I just feel sleepy) "Parang nawala kasi namasahe na" (seems like the pain is gone after being massage) "Nawawala yung sakit at kirot" (the pain is gone) "Mas okay na ngayon. Mahapdi nalang" (I feel fine, the pain is tolerable)

Understanding postpartum pain experience

Two themes emerge from the pain experienced by postpartum mother before and after receiving the 10 minute hand reflexology in the study group.

Theme 1: Experience of Discomfort

Almost all of the women before the intervention in the study group were experiencing diverse intensity of pain that ranges from mild to severe. Pain is commonly felt by mothers who underwent a birthing process. This could be related to the pushing during labor as well as from the episiotomy. As one mother have stated, "makirot ang tahi ko, lalo na pag gumagalaw" (it is painful specially when moving). Another mother replied, "Makirot parang hinihiwa o tinutusok" (it is painful, it seems like it is being cut or stab). Postpartum mothers complaint of diversity of pain ranging from stabbing, to sharp pain, to severe pain. Results suggest to confirm that 92% who delivered vaginally complain of significant pain in the perineum, on the day after normal spontaneous delivery (NSD), of which the frequency and duration of perineal pain are related to the degree of trauma or tearing of the perineum that occurred during childbirth, or use of an episiotomy, a surgical procedure that widens the birth canal (Andrews et. al, 2008).

Theme 2: Experience of Comforting

Majority of the women felt being comforted after the intervention (10 minutes of hand massage) was provided. Research study shows that a 20 minute foot and hand massage on subjects who were recovering from a variety of surgeries including gynecological surgeries showed a positive result on reducing pain. It demonstrated that foot and hand massage is a very effective and inexpensive way to help people manage pain, even following surgery (Carlson, 2006). Moreover Wang and Keck (2004) stated that foot and hand massage has the potential to assist in pain relief as these stimulate the mechanoreceptors that activate the "non-painful" nerve fibers, preventing pain transmission from reaching consciousness. This statement was clearly supported by the verbal account of the respondents. A mother stated, "Wala na ako naramdamang sakit, nakakaantok" (no more pain, I just feel sleepy), while another said "Parang nawala kasi namasahe na" (seems like the pain is gone after being massage), "nawawala yung sakit at kirot" (the pain is gone).

Discussion

Pain is the common denominator that every woman around the globe encounters during the birthing process. As can be noted from the study of Declereq (2008), 48% or almost half of women are suffering from postpartum pain. It was evidently shown from the data collected that mother do suffers moderate postpartum pain either from the control or study group. This type of pain according to McCaffery and Beebe (1993) can already affect activities of daily living and can likewise significantly interfere their quality of life (Breivik, 2008) therefore great concern from nurses must be undertaken to address the issue. Nurses had been using predominantly pharmacological intervention as prescribed by the physician to alleviate postpartum pain. Pain management among postpartum mother varies from institution to institution. Some doctor orders pain reliever on a round the clock basis while others on a PRN (when necessary) basis. As nurses, we are very much dependent on doctors for pharmacological intervention. This could partly be because that non-pharmacological nursing intervention seems to be scanty thus researches must be explored in order to give nurses a wider choice or alternative in providing nursing care. A ten (10) minute hand reflexology was tested to determine if this can be effective in reducing level of postpartum pain post-delivery that can served as an alternative choice of non-pharmacological nursing intervention. Although pain scale has been widely accepted as a tool to measure pain objectively, however, there are still factor that cannot be accounted for such as pain tolerance which is highly individualized. Another consideration is the adequacy of sampling subjects used in the study and tight control such as blinding. Thus, in order for the study findings to be credible, the researcher triangulates the data in order not to confound the results such as randomization, comparability on profile variables between the control and study group, and narrative data. The study groups were given a 10 minute hand reflexology through a massage. Massaging both hands can essentially serve as an inhibitory impulse that would trigger the gate to close thus, pain is not felt (Melzack and Wall 2000). Lewis (2010) likewise stated that pain can be controlled by reflexology. It encourages the release of endorphins that can inhibit the transmission of pain signals to the spinal cord. Finding from the study revealed that a 10 minute hand reflexology reduces the level of postpartum pain. Several studies are in consonance with the study finding such as those of Steenkamp (2009), Wang and Keck (2004)

and Carlson (2006) which all reveal that foot and hand massage showed positive result on reducing pain. The result was further strengthened by the participants' verbal accounts in terms of the comfort that the ten minute hand reflexology gave them apart from the fact that respondents from both groups were indifferent in terms of their characteristics. Thus, this intervention can give us a vivid insights that ten minute hand reflexology may be an alternative of choice in reducing postpartum pain.

Conclusion

Qualitatively, a linear transition emerges from experiencing discomfort to comfort. Quantitatively, empirical evidence shows that ten (10) minute hand reflexology massage is effective in reducing postpartum pain. Overall, respondents were satisfied and comforted with hand reflexology as an intervention.

Recommendation

Practical and theoretical implications based on the conclusion of the study, the researcher makes the following suggestions:

1. Nurse clinician should consider using this as an alternative intervention (10 minute hand massage) in order to relieve or reduced the pain intensity felt by postpartum mothers.
2. Longitudinal effect of postpartum pain must be established.
3. Further research can be undertaken using tight control method such as blinding.
4. Nurse educators should teach nursing students about the usefulness of 10 minute hand reflexology as a means of pain management.
5. A larger sample should be conducted in order to verify study findings
6. To determine if foot reflexology could likewise have the same result.

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