

# Effect of Reflexology and Nursing Management Protocol versus Hospital Routine Care on Pain Intensity among Post Cesarean Section Primipara

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**Abstract:** it was to examine the effect of Nursing Management Protocol and Reflexology versus Hospital Routine Care on pain intensity among post cesarean section primipara. **Research Design:** A randomized clinical trials design was used. **Sample Size:** A total of 90 participants were divided into three groups after getting their acceptance. G1 received both Nursing Management Protocol and Reflexology, G2 received Nursing Management Protocol only and G3 received Hospital Routine Care. **Settings:** The postpartum unit of the Teaching Hospital, and University Hospital at Menoufia Governorate were selected. **Instruments:** A Structured Interview Questionnaire, a VAS and an SF-MPQ were used. **Method:** Post cesarean section pain level was measured four times using a subjective post cesarean section pain scales, NRS and an SF-MPQ were used before and after intervention; 2hrs, 6hrs, 12hrs and 18hrs after delivery. **Findings:** There was a highly statistically significant difference in group (1) regarding pain scores after intervention; 2hrs, 6hrs, and 18hrs after delivery where P values were .001, .0001, .396 respectively but there was a statistically significant difference after intervention; 12hrs after delivery. There was a statistically significant difference in group(2) regarding pain scores after intervention at 6hrs after delivery while non significant difference regarding pain scores before and after intervention; 2hrs, 12hrs, 18hrs in group(3). **Conclusions:** It was concluded that reflexology and nursing management protocol decreased pain intensity among women in group(1) more than those who of group (2) and group (3). **Recommendation:** Foot Reflexology by a specialist should be added to the Nursing Management Protocol for management of postpartum pain.

**Keywords:** Nursing Management Protocol, Reflexology, Hospital routine Care, Post Cesarean Section Pain, Primipara, NRS and an SF-MPQ.

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## 1. INTRODUCTION

Cesarean section (CS) is a major surgical procedure in which a fetus is delivered through an incision in the mother's abdomen and uterus to preserve the life of the mother with obstructed labor and newborn<sup>1</sup>. Pain management post cesarean section is necessary for mothers for medical reasons. Good pain relief improves mobility and woman's ability to breastfeed and take care of her infant. It is necessary for pain relief to be safe, effective, not interfere with the mother's ability to move around and care for infant, and has no adverse neonatal effects while breast feeding<sup>2</sup>.

Recently, many complementary therapies such as Music, Transcutaneous Electrical Nerve Stimulation (TENS), Massage, Relaxation and Reflexology are effective in managing post cesarean section pain<sup>3</sup>. Reflexology is a massage, which uses finger pressure specific zones of the feet. It is easy for patients to learn how to incorporate them into their treatments to achieve relaxation and reduce stress<sup>4</sup>. It emerges to be a practical therapy in the field of pain management. It is a restorative process of pain relief and health promotion via provoking feet's reflex points<sup>5</sup>.

Nursing management protocol includes ongoing and comprehensive pain assessment and documentation of prompt and effective pain management interventions. It also includes documentation of systematic evaluation of treatment effectiveness and knowledge of pain management, encompassing assessment strategies, pain medications, non pharmacological interventions, and patient and family education<sup>6</sup>. On the other hand, Hospital Routine Care means the medical treatment provided for pain management in hospital<sup>7</sup>.

**The purpose of the current study** is to examine the effect of Reflexology and Nursing Management Protocol versus Hospital Routine Care on pain intensity among post cesarean section primipara.

#### **Hypotheses:**

**H1:** There is less pain among post cesarean section primipara who undergo both nursing management protocol and reflexology than those who undergo hospital routine care only.

**H2:** There is less pain among post cesarean section primipara who undergo both nursing management protocol and reflexology than those who undergo nursing management protocol only.

**H3:** There is less pain among post cesarean section primipara who undergo nursing management protocol only than those who undergo hospital routine care.

#### **Significance of the Study**

According to the Demographic and Health Survey (2014), cesarean section rates in Egypt rose from 4.6% to 51.8% of women<sup>20</sup> such a rate is 3.5 times higher than it should be considering the World Health Organization has set the target CS rate at 15 percent<sup>21</sup>.

Post-cesarean section pain is characterized as acute, because it is related to the damage caused to the tissue due to the inflammatory reactions derived from a traumatic process. This pain interferes with other's daily activities, breastfeeding and routine baby care<sup>10</sup>.

Thus, the present study was conducted to examine the effect of nursing management protocol and reflexology versus hospital care on pain intensity among post cesarean section primipara as applied by trained nurse.

## **2. METHOD**

**1-Research Design:** A randomized clinical trial.

**2-Research Setting:** This study was conducted at two settings; namely; Menoufia University Hospital and Shihin El-Kom Teaching Hospital at Menoufia governorate.

**3-Sampling:** A convenient sample of 90 primipara was taken post cesarean section and selected from the previously mentioned hospitals. The desired sample size was determined based on using power and sample size calculator after revising previous literature. Accordingly, 90 primipara post cesarean section were recruited to the study and divided into three groups. The number of selected cases at Menoufia University Hospital was 55 cases while the number of selected cases at Teaching Hospital was 44 cases based on the statistical annual report (2018) of the previously mentioned hospitals.

**First,** The study groups and the control group were selected from the women who received hospital routine care from the previously mentioned hospitals. Subject assignment to different groups was done using block randomization method. Computer software was used to generate the list for block randomization.

**Second,** The selected women were monitored during the fourth stage of labor, 6hrs, 12hrs and 18hrs post cesarean section and exposed to pain intensity tests to determine the pain scale before and after intervention categorized as both nursing management protocol and foot reflexology in G1, or nursing management protocol only in G2 or hospital routine care in G3.

**Inclusion criteria:**
**The inclusion criteria included the following:**

- 1- Primipara post cesarean section.
- 2- Women with intact foot skin and free from any skin problems.
- 3- Women who did not have medical problems & any severe post cesarean maternal complications.

**Instruments:**

Throughout the course of the present study, three instruments were used as follows:

**Instrument I:** It was a constructed interview questionnaire. It consisted of sociodemographic characteristics of women as name, age, education, occupation,....etc.

**Instrument II:** It was a numerical rating scale. Each participant was asked to mark a spot on the line corresponding to the intensity of their pain at that particular time on a possible scale of 0 to 10. First, the subject rated verbally the intensity of pain ranging from "No pain" to "severe". Responses of participants were scored as follows:(0) means "No pain", (1-3) means "Mild pain" in which the mother expressed verbally low level pain which comes to awareness only when attention paid to it, (4-6) means "Moderate pain" in which mother expressed verbally that pain exists. But, the subject can continue performing all the tasks she would normally carry out. Finally, (7-10) means "Severe pain", in which the mother expressed verbally that there are concentration difficulties, but could perform the task.

**Instrument III: A Short form version of the McGill Pain Questionnaire (SF-MPQ):** was used to describe the participants' sensation to pain before starting the study. Each subject was asked to choose the expression that described her pain from the list (e.g. Throbbing, Stabbing, Sharp, Burning, Aching, Heavy, Cutting).

**Procedures:**

- 1- An approval was obtained from the ethical research and Hearing committee on Tuesday 9/12/2014 in the Faculty of Nursing-Menoufia University. Two formal letters were issued from the dean of Faculty of Nursing, Menoufia University to obtain an official approval from the directors of the hospitals to conduct the study. Three formal letters were issued from the Faculty of Nursing, Menoufia University to obtain an official approval from the administrators of the hospital where data would be collected to conduct the study. The letters identified the researcher, the title of the study and the purpose of the study. The purpose of the study was explained to each woman in the sample. The researcher approached each woman, giving her an overview of the study.
- 2- Data collection instruments: They were developed after reviewing the past and current, local and international related literature including books, articles, periodical and magazines. This was done to get acquainted with various aspects of the research problem and to acquire the needed knowledge to conduct the study and prepare the necessary instruments.
- 3- Validity of the instruments: The validity of the instruments were ascertained by a group of subject area experts (one from Faculty of Medicine, two staff members from Faculty of Nursing). The experts reviewed the instruments for content and internal validity. They were also asked to judge the items for completeness and clarity (content validity). Suggestions were incorporated into these instruments and modifications were made.
- 4- Test-retest reliability: It was applied by the researcher for testing the internal consistency of each instrument. It was done through the administration of the same instrument to the same participants under similar conditions on two or more occasions. Scores from the repeated testing were compared and "r" was computed.
- 5- Piloting the instruments: It was conducted to test the applicability of the instruments, the feasibility of the study and to estimate the time needed for data collection. It was conducted on 10% of the total participants (9 primipara women) who were not included in the study participants. On the basis of the piloting results, the researcher rephrased some questions and sentences, then, set the final fieldwork schedule.
- 6- Ethical considerations: A written informed consent was assigned by each woman to participate in the present study before inclusion in the study participants. She was also informed that participation in the study was totally voluntary, and she could withdraw from the study whenever she decides. Total confidentiality of the obtained information as well as respect of the subjects' privacy was ensured. No harm could take place for participants.

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7- Data collection: Data were collected over a period of six months starting from July, 2017 to December, 2017.

8- Study Maneuvers:

The researcher interviewed all participants before the first intervention immediately after cesarean section to construct the initial assessment and collect the data related to sociodemographic characteristics, total participants' sensation regarding pain immediately post cesarean section. She also assessed pain intensity before and after intervention (both foot reflexology and nursing management protocol or nursing management protocol only or post cesarean section hospital routine care) during the 1<sup>st</sup> 2hrs, 6hrs, 12hrs and 18<sup>th</sup> hours after delivery.

Nursing management protocol involved the review of medical history, physical exam, and laboratory and diagnostic tests in order to understand the sequence of events contributing to pain. Present pain, including intensity, character, frequency, pattern, location, duration, and precipitating and relieving factors was assessed. Also, she assessed pain regularly and frequently, but at least every 4 hours and monitored pain intensity after giving medications to evaluate effectiveness.

Reflexology involved the application of pressure to each person's feet in order to affect physical change to the body. Placement of pressure is based on the system of zones and reflex areas that correspond to other parts of the body.

Reflex zone therapy for the treatment of post cesarean section pain was divided into general and specific treatments; General treatment of the whole body took place through rolling the two feet on specifically designed long, wooden or plastic roller for 20 minute. Specific treatment incorporated an applied pressure for the representation of female genital organs on feet including a band around the front of ankle.

### The reflexology technique was conducted according to the following steps:

- The mother's foot was elevated by supporting it with a pillow. The sole was spread and rubbed by the researcher's fingers.
- The thumb was used to make circles over the entire sole of the foot. Then, the researcher rubbed the sole with an up-and-down motion.
- The heel and ankle was pressed between the researcher's thumb and forefinger. This is done to lukewarm the skin of the foot generating rest and increasing blood flood.
- The mentioned kneading was applied to each foot for 10 minutes, then, reflexology is done through acupressure, applying the Proper amount of pressure to the sphere of the foot, according to the following points:

**Two Yin Crossing:** This point is situated three inches widths over the ankle. Pressing this point assists in overall healing of disorders related to the lower abdomen.

**Great Rushing:** This point is positioned in the girdle between the large and the second toes. Stimulating this spot aids in reducing abdominal pain. •The pillow support was removed to finish the massage. Using (SF-MPQ) and (NRS) to assess

pain intensity for the study and control groups two times: once before applying the session and the 2nd time immediately after it at the first 2hrs, 6hrs, 12hrs & 18hrs after delivery. on the other hand, the control group received hospital routine care only including the administration of analgesic as Ketolac amp/12hrs for 48hrs and Profined suppository if needed.

**Evaluative Phase:** Evaluation of the implementations phase was accomplished by determining the pain scale before and after intervention "both nursing management protocol and foot reflexology" or "nursing management protocol only" versus "hospital routine care". It started within the first two hours immediately postpartum and continued every 6hrs up to 18 hrs on the first postpartum day.

### Data analysis:

Upon the completion of data collection, each answered sheet was coded and scored. The researcher coded the data into a coding sheet so that data could be prepared for computer use. The data collected were tabulated & analyzed using Statistical Package for The Social Science (SPSS) Software, version 20 on IBM compatible computer. Qualitative data were expressed as numbers and percentages (No&%) and analyzed by applying Chi-square test. In qualitative data one cell of table has expected a number less than 5 fisher's exact test was applied. Level of significance was set as P value <0.05for all statistical tests.

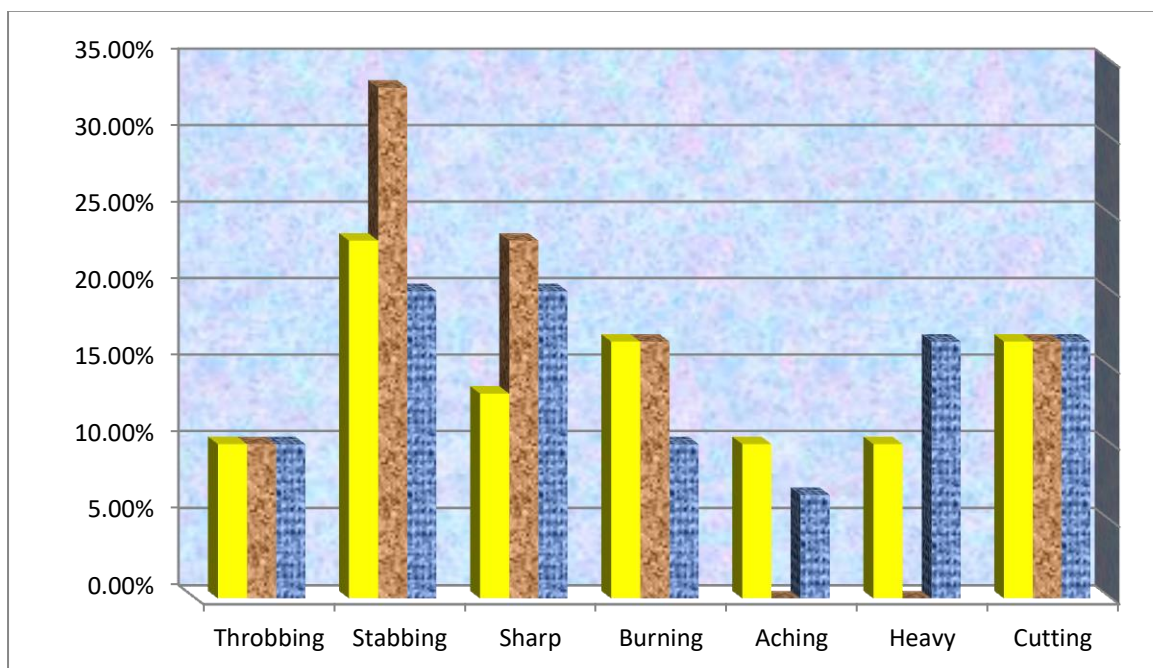
### 3. RESULTS

Regarding the socio-demographic characteristics of the study and control groups, there was no statistically significant difference regarding the socio-demographic characteristics of the study and control groups. Their age ranged from 20 to 35 years with nearly three quarters of the total participants were rural residents and nearly half of the total participants had university education. (Table, 1) .

**Table (1): Socio-demographic Characteristics of the Three Groups**

Variables	G 1		G 2		G3		$\chi^2$	P –value
	No	%	No	%	No	%		
<b>Maternal Age</b>								
from 20-25 years	9	30.0%	16	53.3%	11	36.7%	<b>5.16<sup>ns</sup></b>	<b>.271</b> <b>&gt;0.05</b>
from 26-30 years	20	66.7%	12	40.0%	16	53.3%		
from 31-35 years	1	3.3%	2	6.7%	3	10.0%		
<b>Residence</b>								
Urban	9	30.0%	7	23.3%	14	46.7%	<b>3.90<sup>ns</sup></b>	<b>.142</b> <b>&gt;0.05</b>
Rural	21	70.0%	23	76.7%	16	53.3%		
<b>Level Of Education</b>								
Read and write	7	23.3%	4	13.3%	6	20.0%	<b>2.10<sup>ns</sup></b>	<b>.716</b> <b>&gt;0.05</b>
Secondary education	8	26.7%	10	33.3%	6	20.0%		
University education	15	50.0%	16	53.3%	18	60.0%		
							<b>No statistics are computed</b>	

Regarding the pain sensation immediately post cesarean section using Modified McGill Pain Questionnaire Short Form, there was no statistically significant difference regarding the total participants' pain sensation immediately post cesarean section, with nearly one sixth of the total participants had pain as burning, heavy, and cutting sensation, (Fig.1). While there were no statistically significant difference regarding the severity of pain among the three groups before intervention, (Fig.2)



**Fig.(1)Total participants' Sensation Pain Immediately Post Cesarean Section Using Modified McGill Pain Questionnaire Short Form**



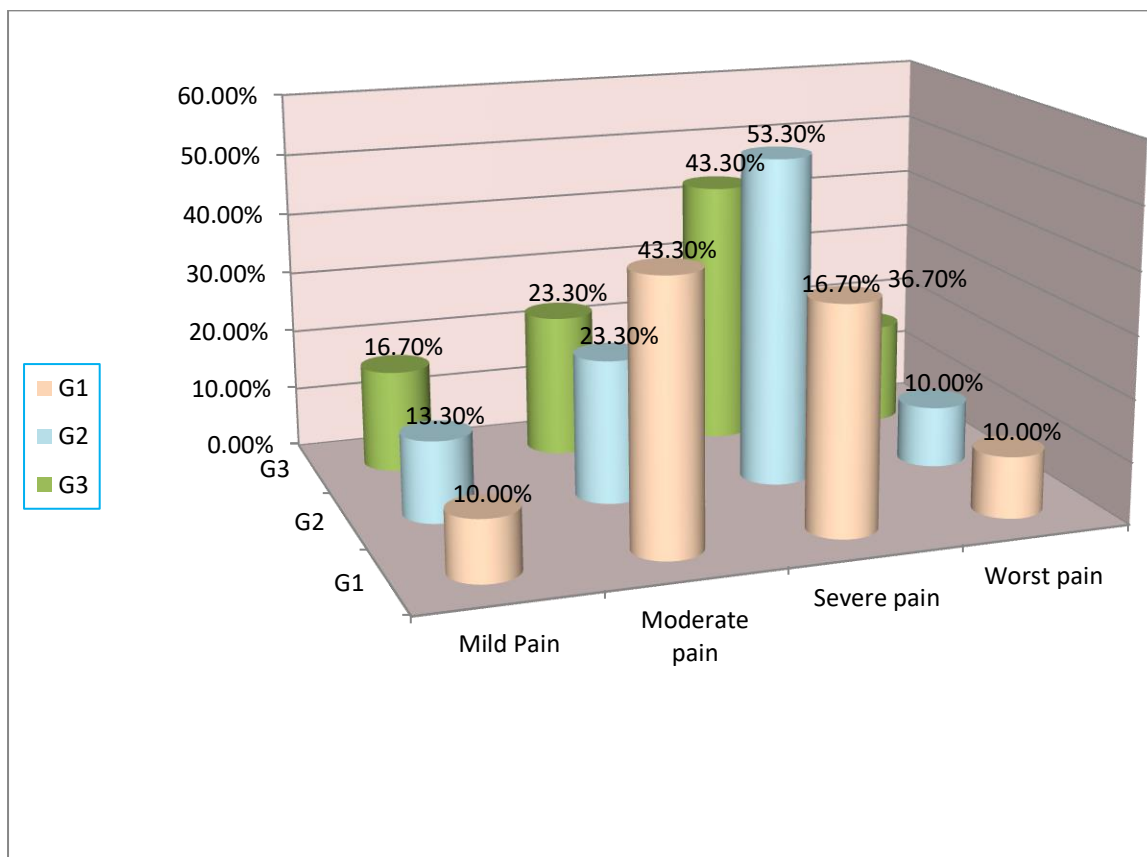


Fig.(2)Severity of Post Cesarean Section Pain

Regarding the effect of pain on breast feeding and ability to rest and sleep for the three groups(N=90). Regarding initiation of breast feeding, Most of the control group were greatly affected, while nearly half of G1 were greatly affected and about third of G2 were greatly affected. Regarding ability to rest and sleep, more than half of the total participants were greatly affected (Table 2, Fig. 3).

Table (2). Effect of pain on Breast Feeding and Ability to Rest and Sleep (N=90)

Variables	G 1		G 2		G3		χ <sup>2</sup>	P –value
	No	%	No	%	No	%		
<b>Initiation of breast feeding</b>								
Not affected	2	6.7%	3	10.0%	1	3.3%	5.63 ns	.228
Slightly affected	12	40%	9	30.0%	5	16.7%		
Greatly affected	16	53.3%	18	60.0%	24	80.0%		
<b>Ability to rest and sleep</b>								
Not affected	2	6.7%	3	10.0%	2	6.7%	.582 ns	.965
Slightly affected	11	36.7%	9	30.0%	11	36.7%		
Greatly affected	17	56.7%	18	60.0%	17	56.7%		

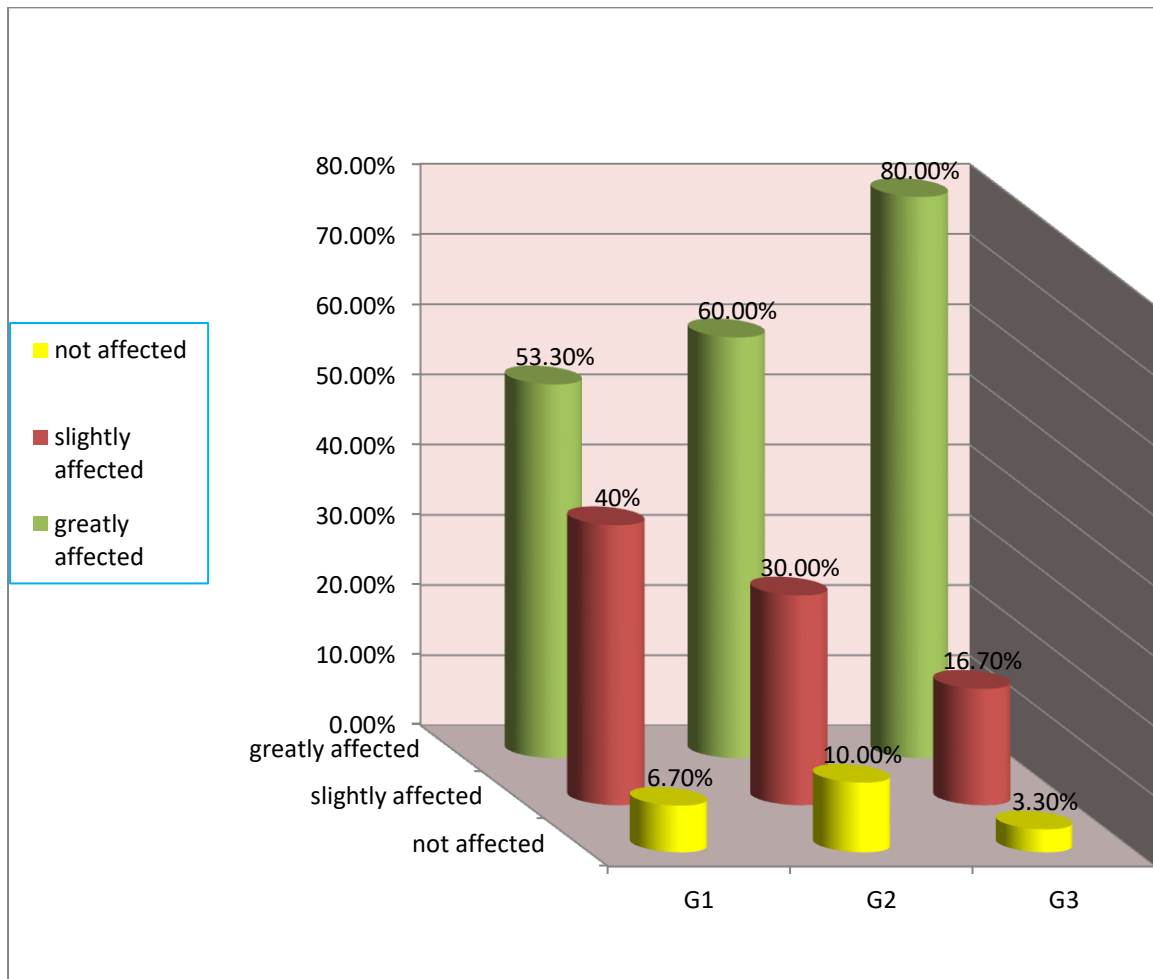


Fig.(3)Initiation of Breast Feeding

Concerning the pain scores as assessed by using the numerical rating scale before and after intervention, 2hrs after delivery, there was a statistically significant difference in G1 whereas in G2 and G3, there was no statistically significant difference. Nearly half of G1 participants had moderate pain before and after intervention, whereas nearly half of G2 had severe pain before and after intervention (Table 3, Fig. 4).

Table (3). Comparison of Pain Scores before and after intervention during the first 2hrs after delivery for the total participants (N=90) as assessed by the Numerical Rating Scale .

Variables	G 1		G 2		G3		
	No	%	No	%	No	%	
Pain score during the first two hours after delivery before intervention.	Mild pain	3	10.0%	4	13.3%	5	16.7%
	Moderate pain	13	43.3%	7	23.3%	7	23.3%
	Severe pain	11	36.7%	16	53.3%	13	43.3%
	Worst pain	3	10.0%	3	10.0%	5	16.7%
Pain score during the first two hours after delivery after intervention.	Mild pain	14	46.7%	7	23.3%	3	10.0%
	Moderate pain	13	43.3%	8	26.7%	11	36.7%
	Severe pain	3	10.0%	13	43.3%	10	33.3%
	Worst pain	0	.0%	2	6.7%	6	20.0%
$\chi^2$	14.23**		6.95 ns		1.67 ns		
p-value	.001		.073		.643		

(\*\*) High statistically significant difference.

(<sup>ns</sup>) No statistically significant difference

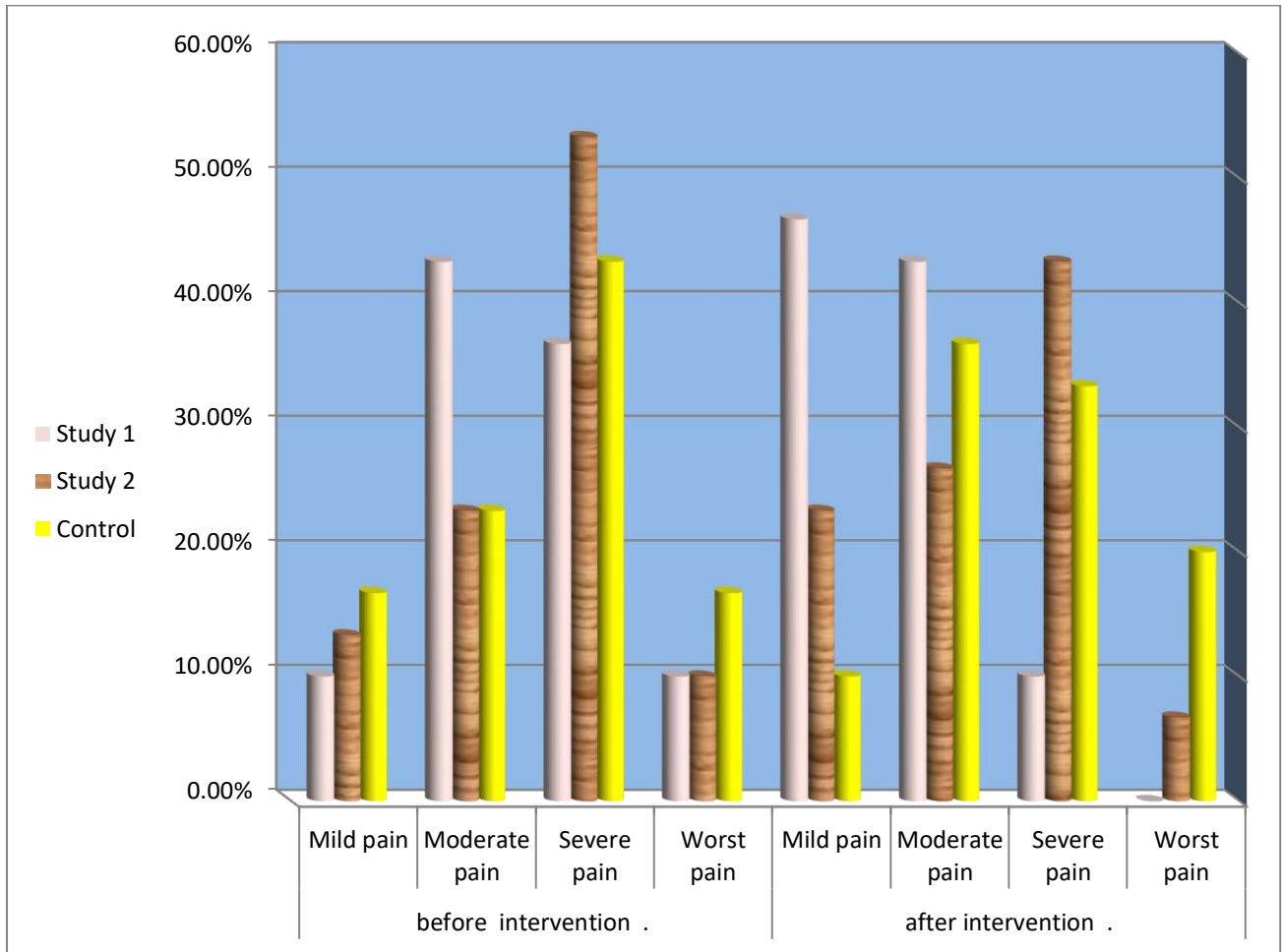


Fig.,(4) Pain scores during the first two hours after delivery

There was a high statistically significant difference regarding the pain scores during the first 6 hrs after delivery before and after intervention in G1 (**P value;.000**). There was a statistically significant difference regarding the pain scores during the first 6 hrs after delivery before and after intervention in G2 (**P value;.016**) whereas there was no a statistically significant difference regarding the pain scores during the first 6 hrs after delivery before and after intervention in G3 (Table 4 and Fig. 5).

Table (4). Comparison of Pain Scores before and after intervention during the first 6 hrs after delivery of the total participants (N=90) as assessed by the Numerical Rating Scale.

Variables		G 1		G 2		G3	
		No	%	No	%	No	%
Pain score at the first six hours after delivery before intervention. .	Moderate pain	9	30.0%	6	20.0%	5	16.7%
	Severe pain	13	43.3%	14	46.7%	15	50.0%
	Worst pain	8	26.7%	10	33.3%	10	33.3%
Pain score at the first six hours after delivery after intervention. .	No pain	2	6.7%	0	.0%	0	.0%
	Mild pain	13	43.3%	5	16.7%	0	.0%
	Moderate pain	7	23.3%	12	40.0%	7	23.3%



	<b>Severe pain</b>	7	23.3%	7	23.3%	18	60.0%
$\chi^2_{11}$		<b>22.49**</b>		<b>10.33*</b>		<b>2.27 ns</b>	
<b>p-value1</b>		<b>.000</b>		<b>.016</b>		<b>.321</b>	

(ns) No statistically significant difference

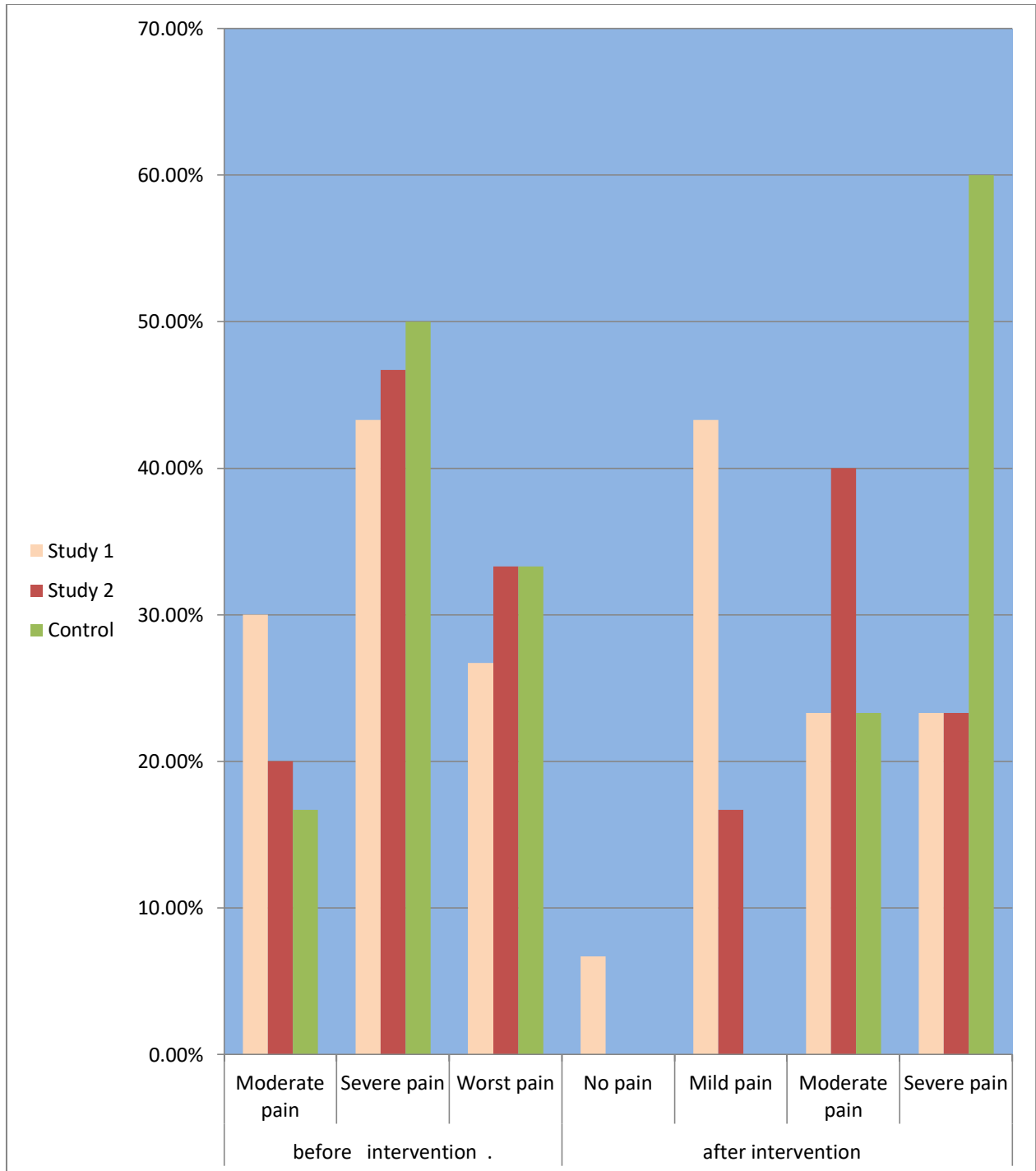


Fig.(5) Comparison of Pain Scores before and after intervention during the first 6 hrs after delivery of the total participants (N=90) as assessed by the Numerical Rating Scale.

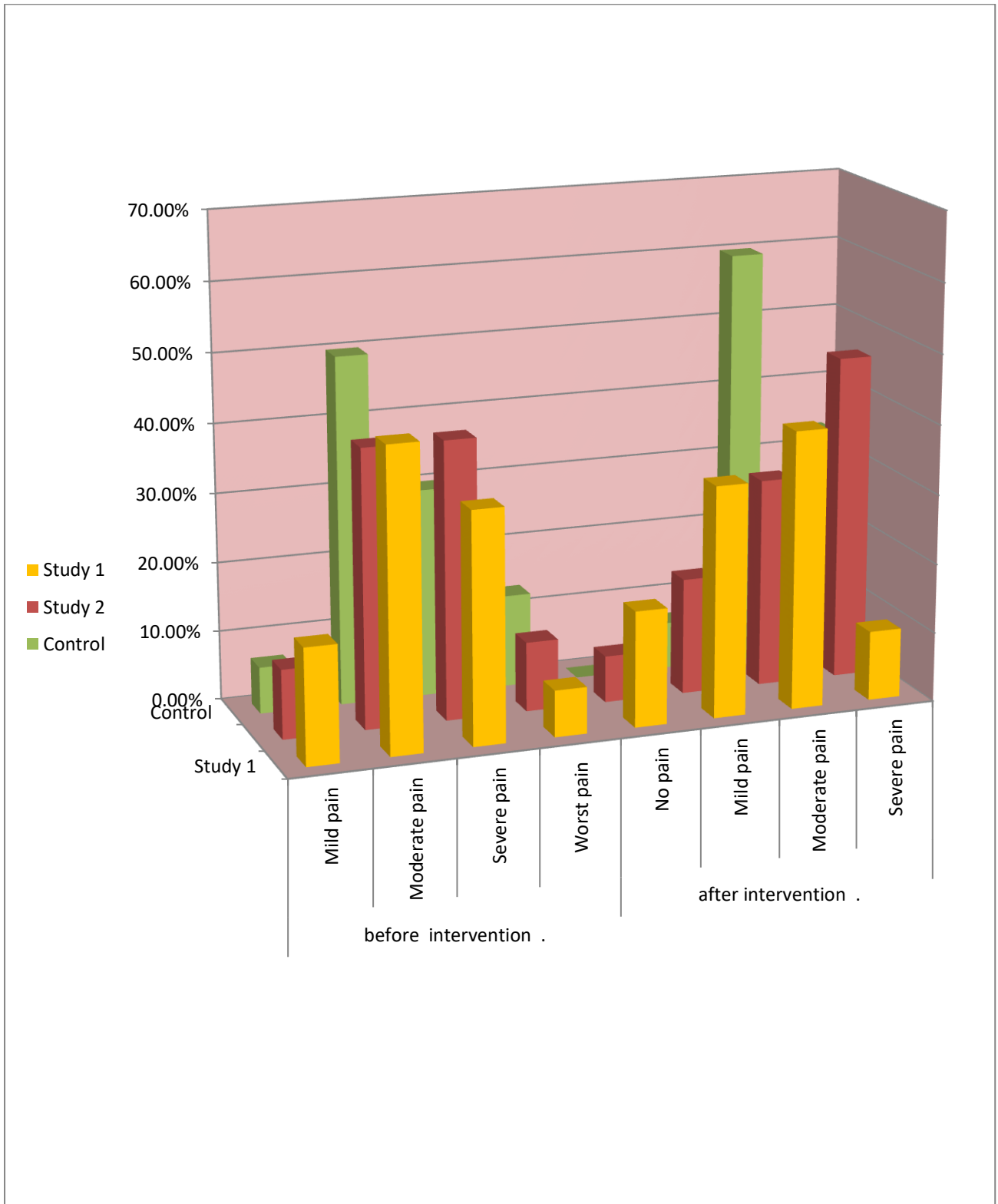
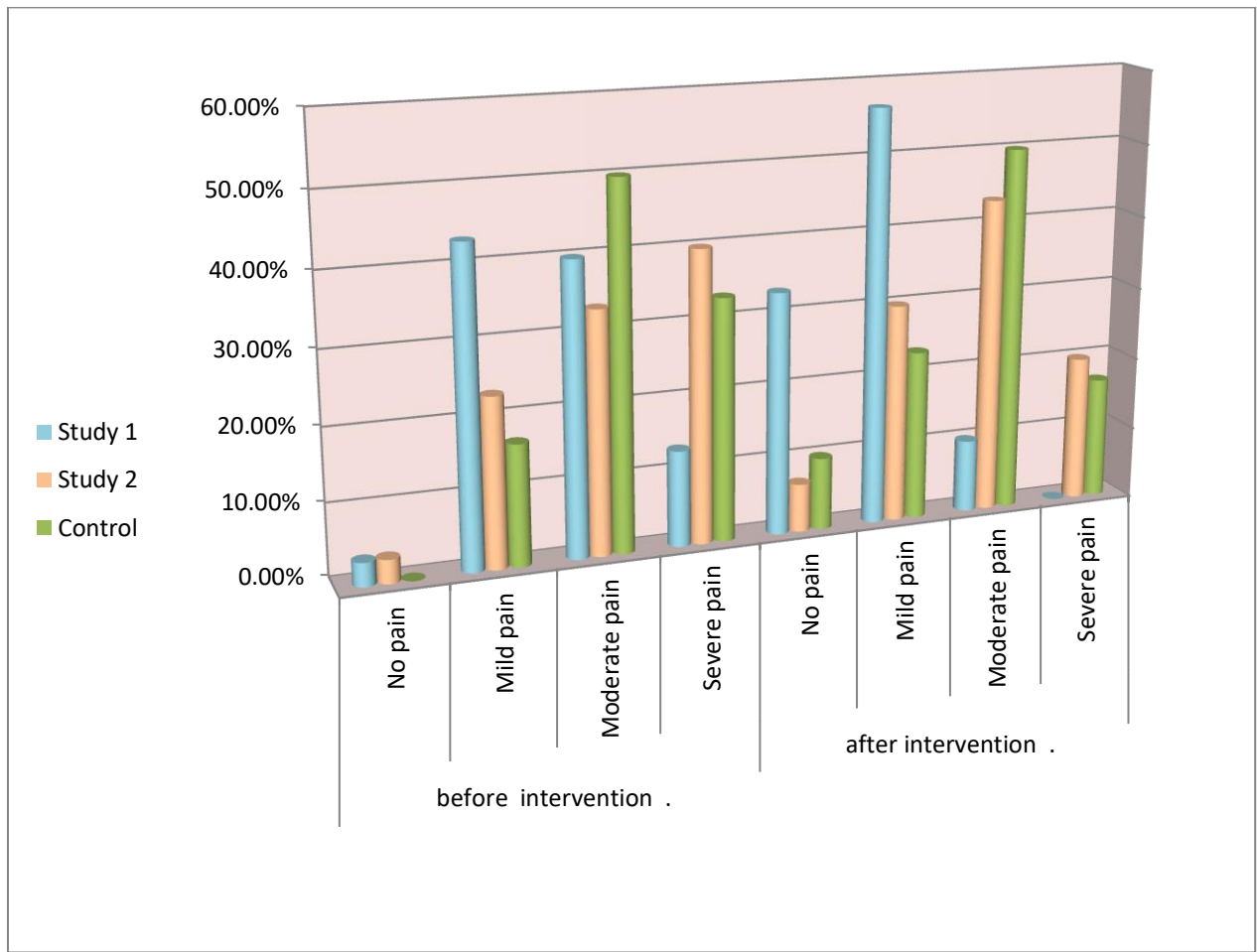


Fig. (6). Comparison of Pain Scores before and after intervention during the first 12 hrs after delivery of the total participants (N=90) as assessed by the Numerical Rating Scale.



**Fig., (7) Comparison of Pain Scores before and after intervention during the first 18 hrs after delivery of the total participants (N=90) as assessed by the Numerical Rating Scale.**

#### 4. DISCUSSION

Regarding the pain scores after cesarean section, the findings of the present study revealed that there was a high statistically significant difference regarding the pain scores, 2hrs, 6hrs and 18hrs after intervention in G1 (both foot reflexology and nursing management protocol). There was a statistically significant difference regarding the pain score during the first 12hrs after intervention, Whereas there was no statistically significant difference regarding the pain scores during first 2hrs, 6hrs, 12hrs and 18hrs before intervention. This means that foot reflexology when added to nursing management protocol provided better relief of pain than without it.

These findings can be explained through the effect of Massage in stimulating large nerve fibers and layers of dermatomes that contain tactile receptors and pressure. The receptor, then, sends nerve impulses to the central nervous system. The gate control system on the dorsal horn is activated through an inhibitory interneuron, thus closing the gate. Then, the brain does not receive a message of pain<sup>8</sup>. Besides, gentle suppression of the hands and feet can stimulate the endorphin hormone which gives a relaxing effect on the body<sup>9</sup>. The present study, in addition to many others, indicates that effective post-operative pain control can be achieved through foot reflexology.

The findings of the present study were supported by **Baby & Babu, (2014)<sup>11</sup>** who investigated the effectiveness of music therapy versus foot reflexology on pain among postoperative patients and reported that foot reflexology was more effective than the music therapy.

They are also consistent with the findings of **Irani et al (2015)<sup>12</sup>** that investigated "The effect of Reflexology on Post-Cesarean Pain and Anxiety". Their findings revealed that the mean score of pain and anxiety in the two groups were not

significantly different before the intervention, but after the intervention the mean score of pain showed a significant difference and decreased among the intervention group immediately, 60 and 90 minutes after the intervention.

Furthermore, the findings of the present study are in agreement with the findings of **Jipi, (2014)**<sup>13</sup> who conducted "A Randomized Control Trial to Determine the Effect of Foot Reflexology on the Intensity of Pain and Quality of Sleep in Post Caesarean Mothers". The findings revealed a statistically meaningful distinction between pain intensity scores before and after foot reflexology. This means that the researcher's hypothesis was conventional; mothers who received foot reflexology showed decreased post-caesarean pain intensity than those who do not receive the intervention.

This is in line with **Bhagya, (2017)**<sup>14</sup> who investigated Foot reflexology: Effect on pain and anxiety in postoperative patients. The findings revealed that foot reflexology is an efficient non-pharmacological nursing intervention used for pain management in post-operative patients.

The present study findings are relatively consistent with **El- Shehata et al (2016)**<sup>15</sup> who investigated the Effect of foot massage on pain level among patients after abdominal surgery. Their findings revealed that there was a statistically significant decrease of subjective pain score among the study group participants rather than the control group after interference.

They are also in agreement with the study of **Kaur et al, (2013)**<sup>16</sup> that investigated the Effectiveness of Hand-Foot massage on the post operative pain among Open Heart Surgery Patients: A Randomized Control Trial. Their findings revealed decreased pain scores based on numerical pain scale and observational checklist for behavioral response to pain. Thus, it is disguised that foot reflexology is effective in the diminution of post operative pain.

Furthermore, they are in congruent with the study carried out by **Sadizaker, (2011)**<sup>17</sup> who investigated The effect of foot and hand massage on postoperative cardiac surgery pain. The findings revealed significant differentiation in pain intensity between the control and the intervention groups.

Regarding pain score after intervention, the findings of the present study revealed a statistically significant difference, 2hrs, 6hrs, 12hrs and 18hrs after intervention among group 2 (Nursing management protocol only). Nursing management protocol prevented pain through developing a written pain treatment plan prior to cesarean section, helping the mother to set realistic pain treatment goals, and documenting the goals and plan. This also could take place through assessing pain regularly and frequently to facilitate appropriate treatment, anticipate and aggressively treat for pain before, during, and after painful therapeutic treatments, administering analgesics 30 minute prior to activities and educating mothers, families, and other clinicians to use analgesic medications prophylactically prior to and after painful procedures.

The results of the present study were in line with **Naqib et al.,(2018)**<sup>18</sup> who investigated the quality improvement scheme to improve postoperative pain with a clinical pathway and nursing education program. Their findings revealed that after the combined intervention of a clinical pain pathway and interactive teaching workshop, they noted shortened length of stay at hospital, reduced time to reach pain control, and improved overall patient satisfaction.

As regard pain scores after intervention, the findings of the present study revealed a non statistically significant difference among participants of group 3 (hospital routine care only). Postoperative pain relief and satisfaction were still inadequate in some patients because of the individual variability and limitation from the side effects of analgesic drugs or techniques.

The findings of the present study were ascertained by **Ismail et al, (2012)**<sup>19</sup> who conducted an observational study to investigate the effectiveness of postoperative pain management of patients undergoing elective cesarean section. Their findings revealed that the regime for postoperative pain management was mostly started and followed by the obstetric team at the hospital. Although the postoperative pain management was adequate in terms of patients' safety, it was not effective according to the goal set by Joint Commission on Accreditation of uniformly low pain score of not more than 3 out of 10 both at rest and with movement.

They were also in line with **Villar et al., (2006)**<sup>20</sup> whose study purposed to assess caesarean delivery rates and pregnancy outcomes. Their findings revealed that parturients consider pain during and after cesarean section as their most important concern. Despite advances in postoperative pain management, postoperative pain relief and satisfaction were still inadequate in some patients because of the individual variability and the limitation from the side effects of analgesic drugs or techniques.

## 5. CONCLUSIONS

Based on the findings of the present study, it can be concluded that there was no statistically significant difference regarding the pain score before intervention among the three groups. But, after intervention, 2hrs, 6hrs, 12hrs, and 18hrs after delivery, the study groups showed a statistically significant difference as follows:

**Group (1)**, there was a highly statistically significant difference regarding pain scores after intervention only, 2hrs and 6hrs after delivery. This supported the first hypothesis stating that " there is less pain among post cesarean section women who undergo both nursing management protocol and foot reflexology.

**Group (2)**, there was a statistically significant difference regarding pain scores after intervention only, 6hrs after delivery. Thus, the second hypothesis stating that there is less pain among post cesarean section primipara who undergo both nursing management protocol and reflexology than those who undergo nursing management protocol only is supported.

## 6. RECOMMENDATIONS

In light of the study findings the following recommendations were proposed:

- 1-Encouraging women to use non-pharmacological methods as foot reflexology to help them cope with postpartum pain without any side effects and no safety precautions.
- 2-Reflexology could be added to nursing management protocol and is advocated as a non-pharmacological approach to the management of post-cesarean pain.
- 3-Nursing Management Protocol and Reflexology could be recommended in hospital protocols for the management of post-cesarean pain.

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