

Efficacy of Reflexology on First Stage Labour Pains

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The research is financed by Asian Development Bank. No. 2006-A171(Sponsoring information)

Abstract

Reflexology is one of the non-pharmacological pain relief methods. It is a non-invasive, inexpensive and applicable technique that can be used by a skilled and trained midwife. This study aims to identify the efficacy of reflexology on first stage labour pain. In this quasi-experimental study, 60 labouring women attending Maternity Hospital at Al-Madinah Al-Munawarah – the King of Saudi Arabia for Vaginal delivery were selected through non-probability sampling technique and then randomized in two groups (Intervention group has two sessions of reflexology and control group). Data collection tools were the demographic data questionnaire, physiological and behavioral response to pain sheet and behavioral pain intensity scale (VAS). Physiologic & behavioural response to pain and behavior pain intensity were assessed before the Reflexology session and after the two sessions of reflexology. There was no significant difference between the two groups before the intervention while there was a significant difference between two groups after the intervention $P= 0.0001$. There was also a significant decrease in the physiological and behavioural response among the intervention group after the reflexology sessions. Reflexology can lead to decrease in the labour pain. Therefore, because of the safety of this technique, it can be utilized as an alternative for pharmacological methods.

Keywords: Reflexology, first stage labour pain, complimentary therapy

1. Introduction 1

Labour is the series of events by which uterine contractions and abdominal pressure expel the fetus, placenta and membranes out of the uterus through the birth canal. During it a woman instinctively knows she is engaging in one of the most important tasks she will ever do. So it requires the woman to use all of the available psychological and physical coping methods (Bennett & Brown 2008, Olds et al 2008).

The first stage of labour, which is much longer than the second and third stages of labour combined has been divided into three phases. The latent or preparatory phase that begins at the onset of regularly perceived uterine contractions and ends when rapid cervical dilatation begins, the active phase begins from cervical dilatation of 4 to 7 cm. The transition phase begins from cervical dilatation of 8 to 10 cm (lowdermilk & Perry 2009).

Pain is a physiological component of labour and birth. Pain is an unpleasant sensation of distress resulting from stimulation of sensory nerves. During the first stage of labour, pain results primarily from cervical dilatation and secondarily from the uterine contractions themselves. Painful sensations travel from the uterus via visceral afferent (sympathetic) nerves that enter the spinal cord through the posterior segments of thoracic spinal nerves. The areas of referred pain include the lower abdominal wall, the area over the lumbar region and the upper sacrum (Alber 2009, May & Elton 2009).

Management of pain in labour has a beneficial effect on both mother and fetus. The methods used for the management of labour pain is divided into two groups: pharmacological and non-pharmacological methods (Alber 2009). The pharmacological methods include analgesia, which reduces or decreases awareness of pain and anesthesia which causes partial or complete loss of sensation, but such drugs has many adverse effects. They may cause maternal hypotension that decreases blood flow to the placenta resulting in foetal hypoxia and acidosis. Drugs may also slow labour progress if given too early before labour is well established. (Gorrie et al 2007)

The non-pharmacological methods include counter pressure, therapeutic touch, walking, rocking, application of heat and cold, transcutaneous electrical nerve stimulation (TENS), showers, breathing techniques, listening to music, imaginary, childbirth education and reflexology (Pillitteri 2007).

Reflexology is a science that deals with the principle that there are reflexes or zones running along the body which terminate in the feet and hands. All systems and organs of the body are said to be reflected on the surface of the skin in particular on the hands and feet. Thus, by applying gentle pressure to these areas properly can help in relieve stress and muscular tension, induce deep relaxation, and promote the nature functioning of the body. Reflexology is a serious advance in the health field and should not be confused with massage (Box 2006).

Reflexology is not new, it has its origins in ancient Egypt, China and India. There are drawings on the wall of a pyramid in Egypt showing people having their hands and feet (worked). In the ancient texts of China and India, reference is made to working areas of the feet (Blunt 2006).

Reflexology offers a wide range of potential benefits for practicing within a multidisciplinary team in

all health sectors. Therapeutic benefits include pain relief in acute and chronic states (Tong 1994), control of anxiety, Relief of tension in Alzheimer's disease (Han 1994), strengthening immune system, improve sleep (Gao 1996), wound healing, preventive measure as part of health promotion, and relaxation in pregnancy & labour (Kunz and Kunz, 2011). It plays an important role during labour. It stimulates the release of oxytocin hormone that starts uterine contractions and helps to keep the body relaxed & calm (Wright & Hons 2002).

A Swedish study; revealed that reflexology is beneficial to women during labour. Reflexology can give women a better, easier and less painful delivery than they would have had otherwise (Firoozi 2009). These findings were supported by a further study carried out by Dr. Gowri Motha at the Jerani on the effect of reflexology on labour outcome (Motha & McGrath 1993). However, this study is the first to be carried out in Arabic countries.

Therefore, such researches are urgently needed. They will try to test the value of using reflexology in labour at Saudi Arabia on Saudi women who deliver much number of children so they wish to pass this experience with less pain. Such information may pave the way to the introduction of reflexology in midwifery practice in Arab world. It may also enrich midwife's approaches to pain relief in labour and add to women's positive experience.

2. Aim of the study

The study aims to identify the efficacy of the reflexology on first stage labour pains.

3. Subject and Methods

This is a quasi-experimental research design. Where the effect of an independent variable (reflexology) on a dependent variable (lab our pains) will be determined. Both manipulation and control will be utilized in the research design. Although, randomization will not be followed in the sampling technique, yet random assignment will be considered.

3.1 Setting

The study was carried out at Al- Madinah Al-Munawarah- The king of Saudi Arabia.

3.2 Subject

The study subjects were selected through non probability sampling technique, where convenience sample of 60 labouring women were recruited. Each laboring woman who will meet the following criteria during the data collection period will be included:-

1. Primigravida
2. Early in the first stage of labour (0-3 cm)
3. Age 20-30 years
4. Free from any medical, gynecological and mental health disorders.
5. Has normal pregnancy.
6. Having normal labour with regular uterine contractions, minimum 3 contractions per 10 min (proper in terms of intensity, duration and the number of contractions so that the duration be < 30 seconds and > 60 seconds)
7. Willing to participate in the study

The 60 women were randomly assigned to two equally groups: intervention group (N=30) and control group (N=30).

3.3 Tools

Three tools were used to collect the relevant data.

3.3.1 Tool (1)

An interview schedule to collect basic data; socio-demographic characteristics, women's information / expectations about labour process in general and labour pain specifically. This tool was used during the latent phase (0-3 cm. of cervical dilatation).

3.3.2 Tool (2)

Physiological and behavioral responses to pain sheet (Sao paulo 2001-2005).

Physiological responses to pain included: - Vital signs (blood pressure, pulse and respiration), gestational tract responses (nausea and vomiting) and skin responses (skin color and diaphoresis).

Behavioral responses to pain including: -

Posture, gross motor activity, facial expression and verbalization.

3.3.3 Tool (3)

Behavioural pain scale to assess pain intensity. It is a self-reported device, which represents a continuum of intensity and has verbal anchors at opposite ends representing no pain to sever pain as it could be. In between

these two phrases, words like mild pain, moderate pain, and severe pain (Mateo, OM., & Krenzischeck, DA. 1992) & (Young J, 2006).

3.4 Methods

Tools were adopted / adapted and tested for validity and reliability (Aissaoui Y, et al. 2005). The research collected Data through six months starting from November 2009 to April 2010, three successive days per week from 9 am to 12 noon. 152 cases enter for delivery 69 cases meet the criteria & 60 cases had the criteria of the study and accepted to participate in the study. After explanation the purpose of the study and giving some information about the reflexology session that has no side effects on the women but may benefit them, the approval consent was collected. Each Saudi woman in the two groups was individually interviewed during the latent phase (0-3 cm) for dual purpose. The researcher used tool (1) to collect basic data and tool (2) & (3) to measure pain intensity. Control Group had received routine hospital care beside the researcher's physical presence while intervention group received foot care and two sessions of reflexology. The reflexology sessions were conducted twice for each woman for 30 minutes on each foot.

The reflexology sessions were conducted as the following: caring out reflexology for 30 minutes on each foot (60 minutes in total) as general reflexology including 15 stages, 1 solar plexus, 2&3, areas related to the digestive viscera, 4 pelvic area, 5 pituitary, 6 sinuses, 7 upper and lower extremities (external sides of the feet), 8 spinal cord (inner sides of the feet) 9 lungs, 10 fallopian tubes; and the specific reflexology including the areas related to labour pain such as liver, spleen, kidney, pituitary, solar plexus and uterus Fig.1 Reflexology Chart. Specific reflexology was performed during the first period (3-4 cervical dilatations) and again for the second time (7-8 cervical dilation after that the woman has changed her place to the delivery room) by emphasis on specific points for at least five minutes. In the control group, routine care was done as the following: recording foetal heart rate and uterine contractions every 15 minutes and recording vital signs every 1 hour. For all women in the two groups the researcher re-assessed pain intensity during (7-8 cm.) cervical dilatation by using:-

- Physiological responses to pain sheet: In which vital signs values were checked and recorded before and after the nursing intervention (reflexology). As regards the other responses, the researcher checked each for either presence or absence response before and after the interventions
- Behavioural responses to pain sheet: in this tool will be used twice for the subject five estimation of women's pain intensity during both the latent phase (0-3cm) & active phase (>3 -< 8 cm)
- Behavioural pain scale: in this tool the researcher observe the patient for 10 minutes. Assess the patient on four behaviors (non-to severe). Obtain a pain score based on the highest behavior observed. The difference between initial & later pain intensity was calculated in the two groups. Then it was compared to determine whether the reflexology played a role or not in minimizing pain intensity during first stage of labour.

3.4.1 Statistical analysis

The collected data were organized, tabulated and statistically analyzed using SPSS software statistical computer package version 16. For quantitative data, the range, mean and standard deviation were calculated. For quantitative data, comparison between two groups and more was done using Chi-square test (X²). For comparison between means of two groups of parametric data, student t-test was used. For comparison between percents of change, testing of proportion was done (Z test). Comparison between findings before and after session was done using paired t-test. Significance was adopted at p<0.05 for interpretation of results of tests of significance (Dawson &Trapp 2001).



Figure 1 Reflexology chart (Technology therapy group, 2012)

4. The discussion

Pain in labour can be intense, where tension, anxiety and fear make it worse. Many women would like to give birth without using drugs such as narcotics or epidurals, and turn to complementary therapies to help them manage the pain of labour. Many complementary therapies are tried and in this review, we have looked to see if reflexology is effective. Reflexology is a gentle manipulation or pressing on certain parts of the foot to produce an effect elsewhere in the body. It helps women relax and so reduces the tension, which increases pain in labour (Smith et al 2012).

The results of the present study showed that mean respiratory rate in the intervention group was lower

than that among the control group. This may be due to decrease of stress and anxiety consequently induced comfort. This effect was also stable over time. Respiratory rate reduced along with increase of relaxation of the mother in the intervention group; specifically the researcher conducted on breathing reflex points, so there was clearly statistical significant decrease among the intervention group when compared to the control group.

Also mean pulse rate, systolic & diastolic BP in the intervention group was lower than the control group and this was due to general relaxation that created in the body. Following this relaxation, stress stopped and sympathetic nervous system activity would decrease. Therefore, there is an assumption that the women who receive reflexology, due to reduction of their anxiety and stress level, have lower blood pressure, heart rate and respiratory rate than those who do not receive it.

In a study by Valiani M. et al (2010) which was done to review the effect of reflexology on the pain and certain features and outcomes of the labour on the primiparous women in Isfahan hospitals has showed that systolic and diastolic blood pressure, respiratory and pulse rate in the study subjects was lower the control groups (Valiant 2012). Also McVicar et al (2007) in their study about the effect of reflexology on the vital signs and other body organs; reflexology had reduced the stress of the volunteers. Vicar by measuring of cardiovascular parameters (pulse and blood pressure) showed that reflexology had been effective on reducing these parameters (Mc Vicar AJ et al 2007).

While the study of Mirzai et al (2009) that reviewed the effect of reflexology on the primiparous women in the Afzalipour Hospital in Kerman found no statistical significant difference in relation to systolic and diastolic blood pressure of the mothers in the case and control groups. The reason of the difference between these results and the present study may be due to the method of implementing the technique (Mirzai 2009).

The present study had showed that there was a significant decrease in systolic blood pressure but no significant decrease in diastolic pressure in the intervention group compared to the control group this may due to the difference between systolic and diastolic blood pressure known with the pulse pressure, which affected with concomitant factors other than reflexology. This result is congruent a the study done by Park HS & Cho GY (2004), about the effect of foot reflexology on essential hypertension patients, where Thirty-four subjects were assigned to an experimental group (18) and control group (16). Foot Reflexology administered twice a week for 6 weeks and self-feet Reflexology was administered twice a week for 4 weeks on the experimental group. There was a significant decrease in systolic blood pressure but no significant decrease in diastolic pressure in the experimental group compared to the control group (Park 2004).

Women's experience of nausea and vomiting in the present study had decreased after the application of reflexology sessions. This is due to the decreased of labour pain. Where labor pain as other acute pains leads to an increase in sympathetic tone and catecholamine secretion, which in turn lead to decreased gastrointestinal motility and function. Consequently, delayed gastric emptying, nausea and vomiting are experienced. Yet, reflexology seems to reduce the presence of nausea and vomiting among laboring women in the present study. Specifically the researcher conducted reflexology on stomach reflex points Stimulating this point signals the brain to release neurotransmitters such as serotonin, dopamine, and endorphins, which block the chemical reactions that cause nausea, and vomiting.

This result is congruent with the study done by Yang JH (2005) In Korea about the effect of foot reflexology on nausea, vomiting and fatigue of breast cancer patients undergoing chemotherapy. There was a statistical significant decrease in nausea and vomiting in the experimental group has reflexology session compared to the control group over two different times (Yang 2005).

Physiologically, the activity of the sympathetic nervous system expected to increase in response to labour pain, resulting in pallor and sweating (Lowdermilk 2000). The results of this study revealed that there was a statistical decrease in pallor among the intervention group when compared to the control group while there was no significant decrease in sweating in the intervention group. This suggested the effectiveness of reflexology in minimizing such physiologic response.

Again, reflexology certainly shown to have profound physiological effects, which may be partly attributed to the relaxation derived from the placebo effect, the therapeutic interaction and the impact of touch (Bement et al 2010). However, immediate, short-term responses to Reflexology are also frequently reported, including localized or distal pain and tenderness, perspiration and skin flushing, shivering, pallor, increased heart rate and respiration, nausea and emotional release. Many of these clinical features do not commonly occur with touch alone, suggesting that reflexology may be having a more significant effect, possibly at a deeper level than simple massage. Reflexology also induces, in some patients, a deep fatigue and a desire to sleep, thus possibly reducing stress related conditions (McNeill 2006). As with massage, skin-to-skin contact triggers the release of endorphins and enkephalins, which assists in relieving pain, thereby improving the sense of well-being. Additionally, analgesia may be achieved with pressure of specific reflex points, which effectively intercepts pain neural pathways via the gate control mechanism (Tiran 2006).

The study also revealed a change in the behavioral response to labour pain after application of reflexology. In labour, most authors had delineated the behavioral responses to labor pain in four main groups:

changes in posture, gross motor activity, facial expression and verbalization (Stright 2001).

The present study revealed that there was a significant decrease in relation to behavioral response to labour pain among the intervention group when compared to the control group. This is due to the use of a compression massage technique on the feet or hands, release blocked energy or pain from organs, glands, as well as release toxin build up in the body. Reflexology relaxes the muscles, allowing the joints to gain mobility and release tight tension. In addition, anxiety is another factor that may increase pain, generally and during labour as well. Excessive anxiety triggers “fight-or-flight” response, which, in turn, may amplify painful stimuli from the uterus and the cervix and make pain more intense. Fear of pain may be one component of labour-related anxiety and has a high correlation with pain levels reported during first-stage labour (Bement et al 2010). The potential positive effects from reflexology relieve muscle spasm, distract from pain, provide a sense of relaxation and reduce anxiety (Thorlby 2002).

Facial expressions is one parameter of behavioral response to labour pain contribute substantially to judgments of sufferer's pain but have not been rigorously described (Saito & Gualda 2002). As labour progress, communication usually takes the form of facial expression. These facial expressions may provide the birth attendant with very useful information in his/her assessment (Chapman 2000). The present has showed that there was a significant decrease between the intervention and control group in relation to facial expression. This result is congruent with Belal (2006) who found that acupressure was significantly related to decrease in frowning or grimacing.

The present study also revealed that there was a significant difference between the two (intervention and control) groups in term of labour pain intensity. In the intervention group, the results indicated a significant reduction in the labour pain intensity after the reflexology sessions. This is due to touching and skin contact during reflexology can cause the release of endogenous endorphins of the body and would reduce the stress; therefore, with stress reduction, the pain would consequently reduce and the opposite is also true, and the second reason is that reflexology can remove the fatigue and anxiety (Peterson 2006).

This result is consistent with the results of valiant (2010) McNeill (2006) & Firzoozi (2003) that indicated a significant reduction of labour pain after the reflexology session.

Furthermore, Quinn et al (2008) in their study found that reflexology was effective in reducing the low back pain.

5. Limitations of the study

The first limitation of the study is the small sample size, which weakness the generalizability of the findings beyond the sample that was involved. Due to the small sample used, results can only illuminate the problem, but cannot be generalized widely although they could possibly be generalized to women in similar circumstances. For example, it could be argued that the results could be generalized to those attending the same hospitals and attended by the same midwives.

The second limitation of the study is medical intervention such as per vaginal examination may interrupt reflexology sessions so it was repeated or elongated.

6. Conclusion and Recommendations

According to the results of the present study and the mentioned studies it can be conducted that:

- ❖ Reflexology sessions have positive effect on physiological and behavioral response to labour pains.
- ❖ The intensity of labour pains had decreased after the reflexology sessions. Accordingly the following recommendation were suggested:
- ❖ Wider application of midwifery staff and also educational and care planning in promoting women's health during labour by using the new techniques of complementary therapy.

7. Limitation of the study

Because of the new methods of reflexology as a complementary therapy in the Middle East, I faced some difficulty to persuade the cases to accept participation in the study, in addition to interference some hospital routine care with the reflexology setting.

8. The Reviewer

Prof. Dr. Amany Ahmed Gamal EL-Deen Mahmoud, Prof. of Maternity and Gynecological Nursing, Faculty of Nursing - Alexandria University

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Table (1): Socio-demographic characteristics of the study subjects.

Socio-demographic characteristics	Control group (n=30)		Intervention group (n=30)		χ^2 P
	n	%	n	%	
•Age (years): Range Mean ± SD t-test P	20-30 25.23±3.00		20-30 26.03±2.98		
	1.036 0.304				
•Education: Illiterate & Read & write Primary/preparatory Secondary University or more	4 2 7 17	13.3 6.7 23.3 56.7	3 6 8 13	10.0 20.0 26.7 43.3	2.74 0.432
•Occupation: House wife Employee	21 9	70.0 30.0	22 8	73.3 26.7	0.08 0.776
•Residence: Rural Urban	22 8	73.3 26.7	14 16	46.7 53.3	3.40 0.065

Table (1): The mean age of the control and the experimental groups were 25.23 and 26.03 years respectively and the mean age at marriage among the control and intervention groups were 24 and 24.47 years respectively. About more than half of the control group 56.7 % compared to 43.3 % of the intervention group were university graduated. Nearly three quarters (73.3 %) of the control group compared to nearly half (46.7 %) of the intervention group were from rural areas. There was no statistically significant difference between the two groups in term of demographic characteristics.

Table (2): Expectation of labour pain among the study subjects (intervention and control groups).

Expectation of labour pain	Control (n=30)		Intervention (n=30)		χ^2 P
	n	%	n	%	
•Severity of pain:					
Don't know	5	16.7	2	6.7	5.97 0.113
Mild	17	56.7	11	36.7	
Moderate	6	20.0	14	46.7	
Sever	2	6.7	3	10.0	
•Expected practices to overcome labor pain:					
Don't know	2	6.7	5	16.7	4.62 0.202
Reciting Quran	9	30.0	11	36.7	
Presence of support person	7	23.3	9	30.0	
Others	12	40.0	5	16.6	
•Expectation about effectiveness of reflexology:					
Don't Know	8	26.6	7	23.3	0.280 0.945
Not effective	5	16.6	6	20.0	
moderately effective	8	26.6	9	30.0	
Very effective	9	30.0	8	26.6	

Others: Cold compresses, listening to music and showering

Table (2): Shows Expectation of labour pain among the study subjects. More than half (56.77%) of the control group 56.7 % compared to 36.7 % of the intervention group had expected mild labour pain. While 20.0 % and 46.7 % of the control and intervention groups respectively, had expected moderate degree of labour pain. Few of control intervention group 6.7 % and 10.0 %, respectively, had expected severe degree of labour pain.

In relation to expected practices to overcome labour pain 30.0 % and 36.6 % of control and intervention group, respectively, reported reciting Quran could relieve labour pain. While 23.3 % and 30.0 %, of the control and intervention groups respectively will need, the presence of support person and most of control group 40.0 % compared to 16.6 % of the intervention group reported other practices to overcome labour pain such as cold or warm compress, acupuncture and listening to music.

Regarding expectation about effectiveness of reflexology, the table shows that 26.0 % and 23.3 % of the control and intervention groups, respectively, did not know the effectiveness of reflexology in management of labour pain. Whereas 16.6 % of the control group compared to 20.0 % of the intervention group expected reflexology would be not effective while 26.6 % and 30.0 % of the control & intervention groups, respectively, reported that it might be mild effective 30.0 % and 26.6 % of the control and intervention groups, respectively, expected that reflexology will be very effective.

Table (3): Physiological responses to labour pain before and after reflexology session among the study subjects.

Physiological response to labour pain	Intervention group (n=30)		Control group (n=30)		t-test P					
	At 3-4 cm before reflexology session	At 7-8 cm after reflexology session	At 3-4 cm	At 7-8 cm	At 3-4 cm	At 7-8 cm				
	Range Mean±SD	Range Mean±SD	Range Mean±SD	Range Mean±SD						
•Respiration	15-33 21.67±4.98	12-26 18.30±4.15	15-33 22.23±5.17	16-35 23.40±4.89	0.432 0.667	4.358 0.0001*				
Paired t-test P	11.319 0.0001*		5.065 0.0001*							
•Pulse	65-95 78.10±8.47	65-90 74.47±6.60	65-95 78.83±8.83	67-96 80.30±8.17	0.328 0.744	3.043 0.004*				
Paired t-test P	5.688 0.0001*		4.135 0.0001*							
•Systolic B.P	90-140 116.33±14.38	90-132 111.67±12.27	90-140 117.00±15.01	95-140 120.00±12.59	0.176 0.861	2.596 0.012*				
Paired t-test P	4.914 0.0001*		3.844 0.001*							
•Diastolic B.P	60-90 77.67±9.17	58-90 78.83±17.39	60-90 78.00±9.43	65-90 79.50±7.81	0.842 0.890	0.192 0.849				
Paired t-test P	0.458 0.651		3.071 0.005*							
	n	%	n	%	n	%	χ^2 P			
❖ Vomiting:										
- Absent	12	40	5	83.3	11	36.6	8	26.6	0.07	17.24 0.0001*
- Present	18	60	25	16.6	19	63.3	22	73.3	0.792	
χ^2 P	10.15 0.001*		0.09 0.770							
•Nausea:										
- Absent	8	26.6	4	86.6	9	30	7	23.3	0.08	21.82 0.0001*
- Present	22	73.3	26	13.3	21	70	23	76.6	0.776	
χ^2 P	19.62 0.0001*		0.09 0.770							
•Skin color:										
- Normal	15	50	10	66.6	13	43.3	11	36.6	0.07	4.27 0.039*
- Paler Flashed	15	50	20	33.3	17	56.6	19	63.3	0.796	
χ^2 P	1.10 0.295		0.07 0.792							
•Sweating:										
- Absent	14	46.6	12	60	16	53.3	12	40	0.07	1.67 0.197
- Present	16	53.3	18	40	14	46.6	18	60	0.796	
χ^2 P	0.60 0.437		0.60 0.437							

*Significant (P<0.05)

Table (3): Shows physiological response to labour pain before and after reflexology session among the study subjects. There was no statistically significant difference before the session between both of control and intervention groups. While after reflexology sessions in the intervention group and routine care in control group there was significant difference in relation to respiration, pulse, systolic blood pressure, and nausea, vomiting and skin color. In relation to diastolic blood pressure and sweating, there was no statistically significant difference between both groups.

Table (4): Behavioural response to labour pain at 3-4 cm. and at 7-8 cm among the study subjects.

Behavioral response to labour pain	Intervention group (n=30)				Change %	Control group (n=30)				Change %	Z test	P
	At 3-4 cm before reflexology session		At 7-8 cm after reflexology session			At 3-4 cm		At 7-8 cm				
	n	%	n	%		n	%	n	%			
•Verbalization: -Talking in normal tone or no sound -Sighs, Gross Moan softly -Groan, Moans loudly -Cries out or sobs χ^2 P	15	50.0	3	10.0	↓40.0	16	53.3	3	10.0	↓43.3	0.08	0.774
	8	26.6	13	43.3	↑16.7	3	10	4	13.3	↑3.3	9.39	0.002*
	3	10	10	33.3	↑23.3	6	20	13	43.3	↑23.3	0.00	1.000
	4	13.3	4	13.3	0.00	5	16.6	10	33.3	↑16.7	16.46	0.0001*
	12.96 0.005*					13.28 0.004*						
•Facial expression: -Normal frowning Grimacing -Slight frowning Grimacing -Moderate Frowning, grimacing -Constant Frowning grimacing χ^2 P	7	23.3	9	30.0	↑6.7	9	30.0	0	0	↓30.0	19.30	0.0001*
	15	50	9	30.0	↓20.0	10	33.3	2	6.6	↑35.7	15.14	0.001*
	5	16.6	5	16.6	0.00	4	13.3	15	50.0	↑36.7	42.98	0.0001*
	3	10.0	7	23.3	↑13.3	7	23.3	13	43.3	↑20.0	1.31	0.253
	3.35 0.341					22.50 0.0001*						
•Posture: -Relaxed -Slight Tenseness -Moderate Tenseness -Extreme Tenseness χ^2 P	13	43.3	13	43.3	0.00	13	43.3	0	0	0.00	-	-
	6	20	7	23.3	↑3.3	6	20	7	23.3	↑3.3	0.00	1.000
	6	20	8	26.6	↑6.6	7	23.3	14	46.6	↑23.3	38.58	0.0001*
	5	16.6	2	6.6	↓10.0	4	13.3	9	30	↑16.7	18.45	0.0001*
	1.65 0.648					17.33 0.0006*						
•Gross motor Activity:- -Quiet -Slightly Restless -Moderate Restless -Very Restless χ^2 P	11	36.6	13	43.3	↑6.7	12	40.0	0	0	0.00	5.33	0.021*
	8	26.6	6	20.0	↓6.6	6	20.0	8	26.6	↑6.6	8.25	0.003*
	4	13.3	9	30.0	↑16.7	6	20.0	12	40	↑20.0	0.13	0.716
	7	23.3	2	6.6	↓16.7	6	20.0	10	33.3	↑13.3	17.35	0.0001*
	5.15 0.161					15.29 0.001*						

*Significant (P<0.05)

Table (4): Shows behavioral response to labour pain at 3-4 cm. and at 7-8 cm among the study subjects (intervention and control groups). There was no statistically significant difference between both intervention and control group at 3-4cm. While after the reflexology session (at 7-8 cm), there was a significant decrease in behavioral response among the intervention group when compared to the control group.

Figure (1): labour pain as measured by behavioural pain scale before and after Reflexology session among the study subjects.

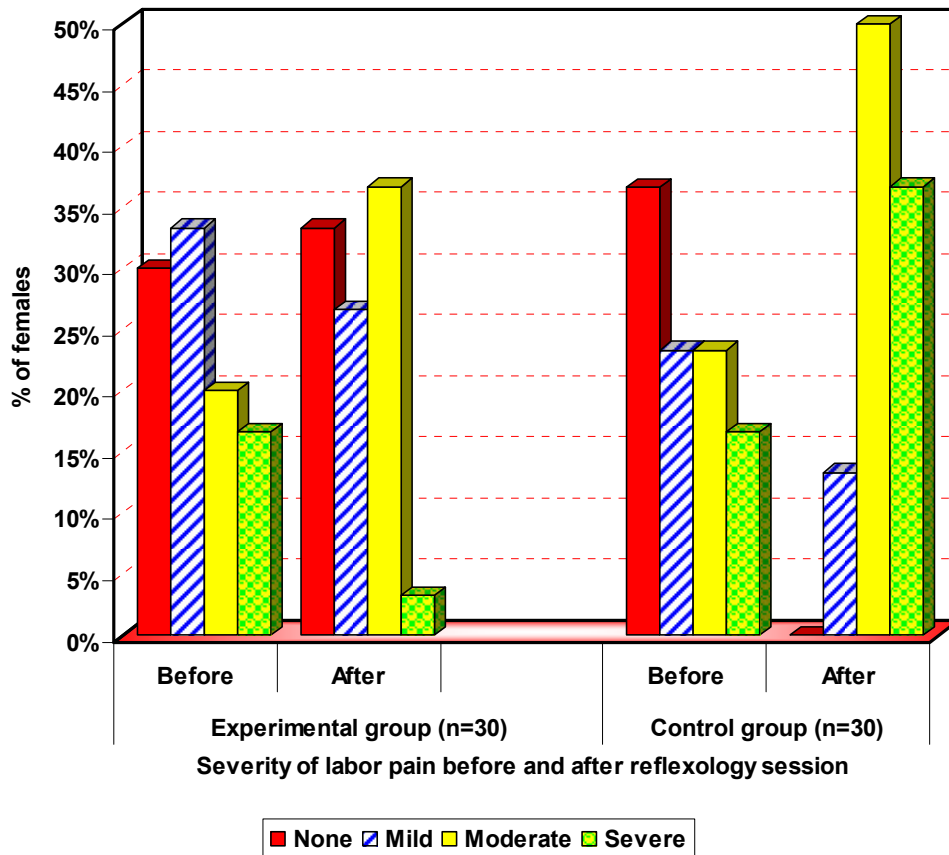


Figure (1): Shows labour pain as measured by behavioral pain scale after reflexology session among the study subjects. More than half (56.7 %) of the control group compared to 36.7 % of the intervention group had mild labour pain. While 20.0 % and 46.7 % of the control and intervention groups, respectively, had moderate degree of labour pain. Few (6.7 %) and (10.0 %) of control & intervention groups, respectively, had sever degree of labour pain.

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