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Effect of Back Massage and Reflexology on Labor Pain Reduction and Vital Signs During First Stage of Labor at Sohag University Hospital

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Abstract
Background: Labor is a normal physiological process, which while should be an occasion for rejoicing, it also accompanies it with lots of pain, agony, and discomfort and certain risks. **The aim of the study** was to assess the effect of back massage and reflexology on labor pain reduction and vital signs during first stage of labor. **Subjects and Methods:** Quasi-experimental design was used to conduct this research .This study was carried out at obstetric emergency department at Sohag University Hospital. **A purposive Sample** of 150 women. **Tools** used in this study, Tool I: Patient assessment sheet. Tool II: Visual Analogue Scale. Tool III: Hemodynamic stability. **The main results:** showed that there are statistically significant differences regarding pain reduction before and after applying back massage and reflexology during first stage of labor and no statistically significant differences regarding vital signs before and after applying them . **Conclusion:** Both back massage and reflexology have effect on pain reduction and don't have effect on vital signs during first stage of labor. **Recommendation:** Further studies of efficacy as well as effectiveness are needed to determine the clinical applicability of back massage and reflexology in a large sample.

Keywords: Back massage, First stage, Labor, Reflexology & Vital Signs.

Introduction
Child birth is a natural phenomenon, painful and stressful event in a woman's life. Pregnant women commonly worry about pain during labor and birth. (**Mansour & Nomani, 2016)** Labor is divided into four stages; First stage begins from the onset of true labor pain and ends with full dilatation of cervix. It is in other words, the cervical stage of labor **(Adel & Ahmed, 2017)**

Pain during labor is caused by contractions of the muscles of the uterus and pressure on the cervix , bladder and bowels by the baby's head. This pain may be felt as strong cramping in the abdomen, groin, and back, as well as an achy feeling **(Zohreh, et al., 2016).** The expanding of labor pain duration induces anxiety that would affect the function of respiratory and circulation system which may increase dystocia and labor manipulation **(Janssen., et al., 2015).**

Labor pain is not under control, mothers can face certain risks like feeling of fear, anxiety, helplessness, and loss of control throughout the birthing process**. (Simkin & Hull, 2012)** Labor pain and loss of control are the two most frequently cited unpleasant experiences of childbirth that may directly affect woman's satisfaction about childbirth**.(Lee, et al., 2013)**.

Many pharmacological and non-pharmacological methods are used during labor. However, palliative drugs have many harmful side effects for both mother and fetus. Thus, non-pharmacological methods such as muscle relaxation, breathing techniques, acupressure, aqua therapy, music therapy, touch therapy and massage therapy are preferred over pharmacological methods. These methods are non-invasive, minimize complications for mother or fetus, provide support and enhance the cooperation among mothers and their therapists.**(Hajiamini, 2018)**.

Massage therapy inhibits the transmission of the pain to the brain. Moreover, it motivates endorphin release, increases serotonin and inhibits the transmission of noxious nerve signals to the brain **(Smith, et al., 2018).**

Massage stimulate the body to release endorphin, which are natural pain killing substances and stimulates for the production of oxytocin, decreases stress hormones and neurological excitability. The individual cells of body are dependents on abundant supply of blood and lymph because these fluids supply nutrients, oxygen and carry waste and toxins. Hence, these can be achieved by massage**.(Deepika & Seema, 2017)**

Reflexology was developed in the early part of the 20th century by American medical professionals, Dr. William Fitzgerald MD, Dr. Shelby Riley MD and physiotherapist Eunice Ingham. While there is evidence of therapeutic foot and hand work over a multitude of cultures and time periods, Reflexology

as developed, named and practiced is of American medical origin and is not an Asian Bodywork Therapy **(Tournaire & Theau-Yonneau, 2016).**

Reflexology as one of the branches of the complementary medicine is a gentle art and an individual healing form and type of a prospective comprehensive treatment which believes the individual and the disease cannot be divided into separate treatable parts, but should be considered and treated as a whole person which consists of body, mind, emotions, spirit and feelings which each of them are influencing and contrasting the other. **(Warrineret al., 2014)**

In fact, reflexology affects the physiological and psychological stimulation points. Reflexology in the pregnancy period, labor and postpartum period can be usable for treating many physiological conditions such as nausea, pregnancy vomiting, constipation, headache and low back pain even in the breastfeeding period.**(Mahboubeh, et al., 2017)**

In the reflexology, with massage and skin contrast, enkephalins and endorphins are secreted and can reduce the anxiety and pain. This technique can bring about the sense of wellbeing and healthy. In addition, analgesia may be established by pressure on the specific reflex points. Generally, reflexology techniques would stop the neural transmission of the pain message to the brain and subsequently the perception of pain relief through control gate**.(Mohammaditabar et al., 2014)**

Reflexology is a noninvasive and non-pharmacological method. It is based on a system of zones and reflex areas on the feet and palms that reflect an image of the entire body (including muscle, nerve, gland and bone) in exactly the same order and position as in the body.**(Dolatian et al., 2015)**

Doctors are keep to incorporate such therapies as they consider them safe, compatible with the patient centred approach and the natural nature of pregnancy and childbirth and that complementary and alternative medicine(CAM) "can enhance their own professional autonomy" **(Hall, et al., 2012).** Likewise, women use complementary and alternative medicine (CAM) therapies during pregnancy as they also consider them safe, natural and offer them control over their pregnancy and labor.(**Kalder, et al., 2010)**

The nursing management of labor is a major goal of intrapartum care helps the women to ventilate all their doubts by interpersonal interactions, helps the women in labor to select the appropriate modality for effective pain relief, effective application of alternative modalities of pain relief during first stage of labor. and there by reduce incidence of complication for women. **(Abdulaziz, 2017**)

Significance of the study

It has been observed that nurses pay a little attention to control labor pain and they go about their routine nursing care as hourly vital signs assessment and hourly fetal heart rate monitoring without attention to labor pain. They see labor pain as natural phenomena occur to each woman. **(Abdel Fadeel, 2015)**.

The perception of labor pain as bad pain can cause a lot of problems, for example: it increases maternal catecholamine secretion which contributes to emotional stress and in consequence has a negative influence on women's mental health.**(Santana, et al., 2016)** Furthermore, the fear of pain evokes frequent request of cesarean section . The most common approach to labor pain is to offer management to parturient in order to decrease pain **(Beigi., et al., 2019)** The most effective method of pain relief is neuraxial analgesia, but it is associated with certain side effects. In contrast, non-pharmacological techniques emerge to be easily applicable, cheap and safe.**(Klomp, et al., 2016)** In Assiut Women Health Hospital, the biggest tertiary hospital in Upper Egypt, the fear of pain and lack of pain relief during labor affects a woman's request to Caesarean section, so the present study conduct to assess effect of back maasage and reflexology on pain reduction during first stage of labor.

Aim of the study

The aim of this study was to assess the effect of back massage and reflexology on labor pain reduction and vital signs during first stage of labor at Sohag University Hospital.

Research Hypothesis

To fulfill the aim of this study the following research hypothesis is formulated:-

- Women in first stage of labor will demonstrate pain reduction with the use of back massage and reflexology.
- Vital signs such as (blood pressure , pulse, respiration , temperature) in first stage of labor will be affected (decrease) with the use of back massage and reflexology.

Subjects & Method

Design: Quasi-experimental designs was used in the study.

Setting: This study was conducted at emergency of obstetric department at Sohag University Hospital.

Sample: A purposive sample of 150 participants divided into two groups: Group (A) control group consisted of 50 participants who received routine hospital care and then group (B) study group consisted of 100 participants which divided into two groups : group (1) consisted of 50 participants who received back massage and group (2) consisted of 50 participants who received reflexology with a precision of 5%,α=0,05 and power of 95%.

Inclusion criteria: No or low risk women admitted in labor room and in first stage of labor with vertex presentation and full term pregnancy and willing to participate in the study.

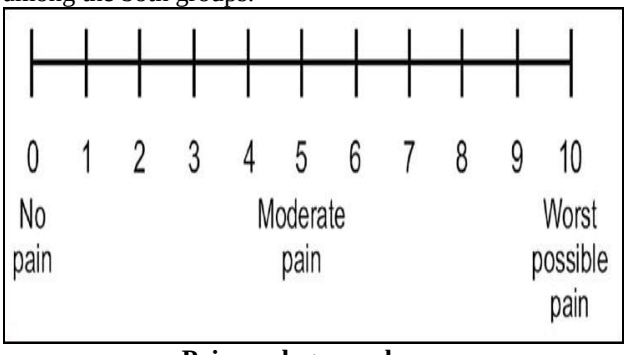
Exclusion criteria: High risk pregnant women with any medical condition such as pregnancy-induced hypertension, gestational diabetes mellitus etc, women
getting epidural or any pain relieving medication, presence of dermatologic conditions that would contraindicate the application of massage and during the study incidence of any non-diagnosed dystocia.

Tools of data collection: Data were collected using three tools. It was developed by the investigator based on literature review and all tools were filled by the investigator.

Tool I*:*- Patient assessment sheet

This tool was developed by the investigator and used to assess the studied participants regards the socio-demographic data, menstrual history and obstetric history. It divided into three parts 1-**Personnal data** includes participant's age, level of education, occupation and resident **2-menstrual history 3-obstetric of history**.

Tool II: Visual Analogue Scale: This scale is adopted from Gift (1989) and consists of a blank line (10 cm) that describes the extremes of pain. Commonly used are "no pain" and "severe pain" (worst possible pain). The woman is asked to place a mark on the line that best indicate the pain being experienced. **Scoring system**: measuring from the end of the line to the mark made by the woman gives a numeric rating of the intensity of the pain. Score level (0-3 Mild pain which colored with green color ; 4-6 Moderate pain which colored with orange color and 7-10 Sever pain which colored with red color) The women were asked to point on the three types of colored categories the perceived level of pain she felt among the both groups.



Pain analogue scale

Tool II: Hemodynamic stability of participants This tool included blood pressure, pulse, respiration, temperature and it is used to determine if there is any change in vital signs of participants before and after intervention when cervical dilatation was (3-5 cm – 6-8 cm and 9-10 cm).

The Validity was tasted for content by jury of five experts in the field of Obstetrics' and Gynecological Nursing Specialty to ascertain relevance and completeness; reviewed the questionnaire and the intervention for content and face validity (r = 0. 89). Their comments were reviewed and the necessary modifications were done.

Methods

Ethical considerations

An official permissions was obtained to carry out the study from Dean of the Faculty of Nursing, Director of University Hospital, Sohag University.

Research proposal was approved from Ethical Committee in the Faculty of Nursing, Assiut University. **Written consent** was obtained from women that are willing to participate in the study and had the right to refuse without any rational. **Confidentiality and anonymity** was assured,

Pilot study

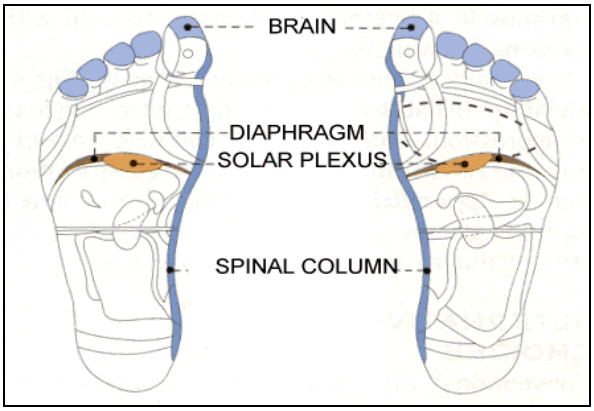
A pilot study was carried out before data collection to test the feasibility and clarity of the study tools. It was done on 10% of the sample (15 participants), the analysis of pilot study was done to define the modification required in the tool used, and The participants in the pilot study were excluded from the actual study.

Intervention

- Assessment sheet is used before delivery to collect data related to socio-demographic characteristics and obstetric profile. The investigator met the participants at the obstetric emergency department where they came for delivery. She asked questions in simple Arabic language and recorded the answers in the sheet. The investigator consumed about 20 minutes for each participant. In labor room of the obstetric emergency department, participants of the study were met separated if it was available.
- Data collection are done by the investigator from March to December 2018 and the sample was divided into two groups Group (A) control group consisted of 50 participants who received routine hospital care where investigator went to obstetric emergency department three days per week in the first 3 months (from March to June) to collect data from this group and then group (B) study group consisted of 100 participants which divided into two groups : group (1) consists of 50 participants who received back massage were collected in the second 3 months (from July to September) and group (2) consisted of 50 participants who received reflexology were

collected in the last 3 months (from October to December)

- After obtaining written consent, the investigator explained to participant how to mark her pain intensity at the present moment using Visual Analogue Scale. The experimental group received massage from investigator at the beginning of the active phase of labor during the period of 3–5 cm of cervical dilation and duration of uterine contractions for 30 minutes. The technique was applied between midclavicular line (T10) and spinal segment(S4), which corresponds to the path of the hypogastric plexus and the pudendal nerve, responsible for innervation of the paravertebral ganglia, delivery canal, and perineum. The massage consisted of rhythmic, ascending, kneading hand movements and a return with sliding through the lateral region of the trunk in association with sacral pressure. The participants were also instructed to choose their preferred position for receiving massage, ie, sitting, lateral decubitus, or standing with the trunk bending forward.
- For the reflexology session, participants position was sleeping on their back and thumb and index fingers were used to work on the feet. First mild massage was given on all feet and then pressure was applied on concerned and specified regions. As Figure(1) showed, these areas were: 1) Pituitary gland, in the center of the thumb; 2) Solar plexus, almost four fingers width below the base of the fingers of the feet, located in the center (middle of diaphragm); 3) Lumbar and sacral spine (spinal cord region) and 4) Genital area, below the ankle.



Reflexology session, feet areas (**Kunz & Kunz, 2003**)

(Kunz, Kunz, (2003). Reflexology health at your fingertips, USA, Newyork, Uk publishing; pp. 68-74.)

Evaluation phase

In this phase, information about the effectiveness of massage and reflexology on labor pain was assessed by using Visual Analogue Scale to be easily understood by the laboring participant and to achieving accurate scoring, the scale was categorized by the investigator into 3 colored categories (green, orange& red). Green color and its degrees (0-3 cm) for mild pain, orange color and its degrees (4-6 cm) for moderate pain and red color (7-10 cm) for severe pain. The participants were asked to point on the three types of colored categories the perceived level of pain she felt among the both groups also mother's satisfaction regarding the effect of massage and reflexology on relieving labor pain were also assessed and the effectiveness of massage and reflexology on vital signs(blood pressure, pulse, respiration and temperature) was assessed if they increased or decreased after applying them.

Statistical analysis

Analyses were conducting by using SPSS 20.0 software. The categorical variables were described by number and percent (N, %) where continuous variables described by mean and standard deviation (Mean, SD).Chi-square test used to compare between categorical variables where compare between continuous variables t-test.

Results

The current study was aimed to evaluate effect of back massage and reflexology on labor pain reduction and vital signs during first stage of labor at Sohag University Hospital.

Table (1): Personal-Demographic Status of Participants

Variables		Group A Routine care		Group B Back message		Group B Reflexology		P.value
		N=50	%	N=50	%	N=50	%	
Age(years)	Less than 25	13	26.0	7	14.0	17	34.0	0.045*
	25 – 30	27	54.0	25	50.0	26	52.0	
	More than 30	10	20.0	18	36.0	7	14.0	
Occupation	Housewife	46	92.0	34	68.0	40	80.0	0.011*
	Employee	4	8.0	16	32.0	10	20.0	

Level of significance at p< 0.05 **Statistically significant difference*

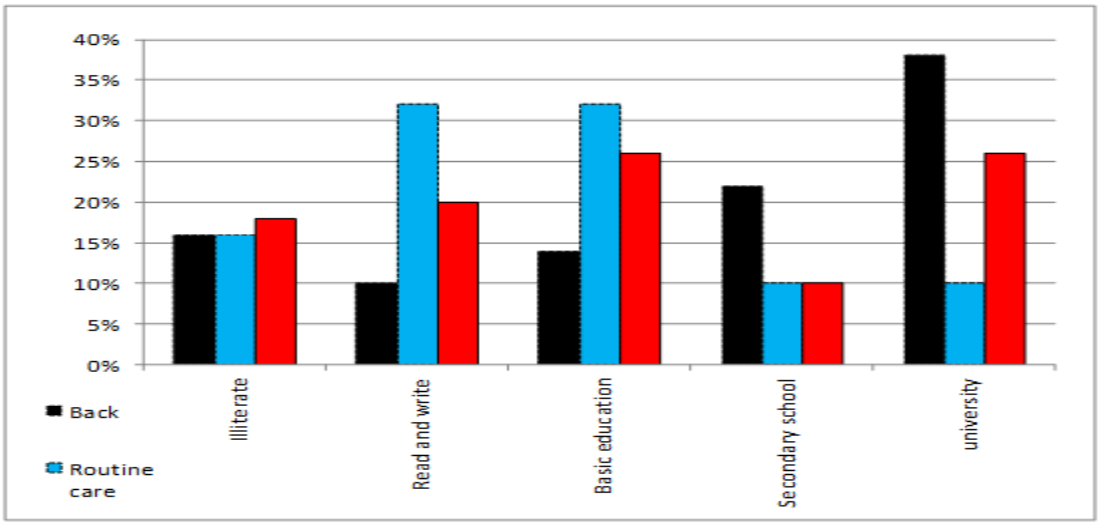


Figure (1): Distribution of the participants by their (Level of education)

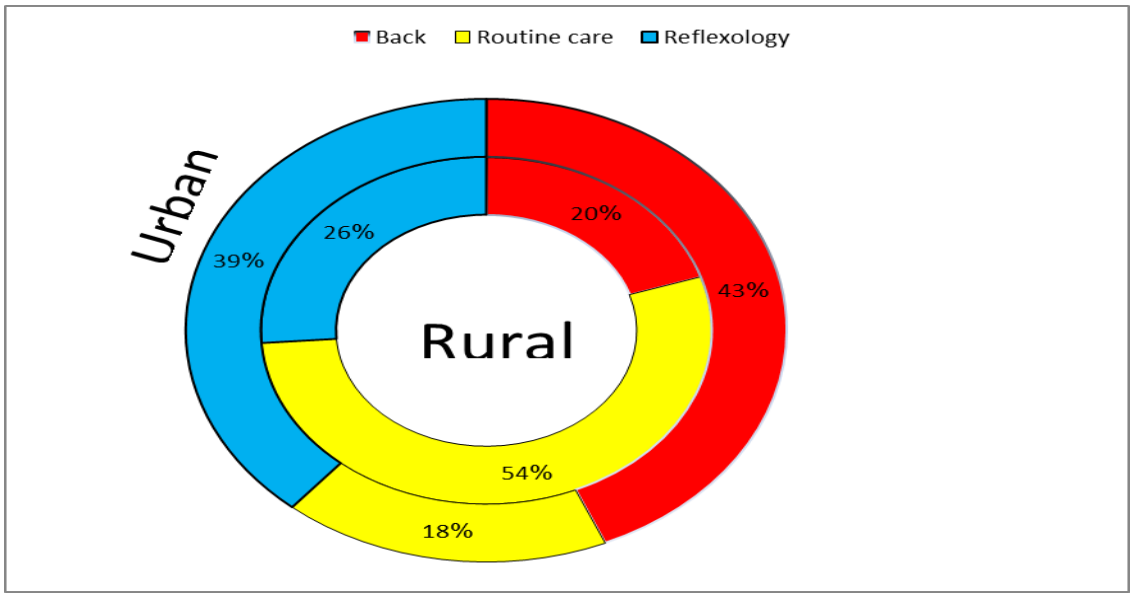


Figure (3) : Distribution of the participants by their (Residence).

Table (2): Comparison of labor pain scores at the first stage of labor before and after applying routine care of the hospital (n=50).

Cervical Dilatation	Before	After	P value
	Mean ± S.D	Mean ± S.D	
3-5 centimeters	.3200 ±.47121	.1400 ±.35051	.002*
6-8 centimeters	.9800 ±.31880	.6400 ±.52528	.000*
9-10 centimeters	1.8600 ±.35051	1.5000 ±.50508	.000*

*Level of significance at p< 0.05 *Statistically significant difference*

Table (3): Comparison of labor pain scores at the first stage of labor before and after applying back massage (n=50).

Cervical Dilatation	Before	After	P value
	Mean ± S.D	Mean ± S.D	
3-5 centimeters	.6000 ±.57143	.0400 ±.19795	.000*
6-8 centimeters	1.3200 ±.51270	.4600 ±.50346	.000*
9-10 centimeters	1.8800 ±.32826	.9400 ±.23990	.000*

*Level of significance at p< 0.05 *Statistically significant difference*

Table (4): Comparison of labor pain scores at the first stage of labor before and after applying reflexology (n=50).

Cervical Dilatation	Before	After	P value
	Mean ± S.D	Mean ± S.D	
3-5 centimeters	.3000 ±.46291	.0000 ±.00000	.000*
6-8 centimeters	1.1400 ±.35051	.1600 ±.37033	.000*
9-10 centimeters	1.9600 ±.19795	.9600 ±.19795	.000*

*Level of significance at p< 0.05 *Statistically significant difference*

Table (5): Comparison of vital signs before and after applying routine care of the hospital at first stage of labor.

Cervical Dilatation	Variable	Before	After	P value
		Mean ± S.D	Mean ± S.D	
3-5 centimeters	- Systolic blood pressure mm/Hg	103.60 ±10.45105	103.80 ± 10.47641	.322
	-Pulse b/m	80.9000 ±2.8177	79.8520 ± 6.74864	.224
	-Temperature C	37.4284 ±.14258	37.1200 ±2.18641	.328
	-Respiration c/m	19.6600 ±2.95966	19.6000 ±2.93466	.917
6-8 centimeters	- Systolic blood pressure mm/Hg	107.80 ±9.10035	107.60 ±9.16070	.322
	-Pulse b/m	83.1100 ±6.97319	83.7800 ±2.39293	.473
	-Temperature C	37.1020 ±2.32796	37.4320 ±.14205	.322
	-Respiration c/m	21.1800 ±3.02162	21.4800 ±1.23288	.442
9-10 centimeters	- Systolic blood pressure mm/Hg	118. 60 ±9.69115	118.40 ±9.97139	..322
	-Pulse b/m	87.7600 ±2.19981	87.7000 ±2.23379	.182
	-Temperature C	37.4300 ±.14033	37.4325 ±.14166	.234
	-Respiration c/m	23.6600 ±1.27151	23.2200 ±3.16415	.278

Level of significance at p< 0.05

Table (5): Comparison of vital signs before and after applying back massage at first stage of labor

Cervical Dilatation	Variable	Before	After	P value
		Mean ± S.D	Mean ± S.D	
3-5 centimeters	- Systolic blood pressure mm/Hg	112.20 ±12.00170	110.80 ± 10.84962	.033
	-Pulse b/m	80.1600 ±4.00693	79.46 ± 3.72093	.324
	-Temperature C	37.1800 ±.25951	37.1760 ±.25279	.322
	-Respiration c/m	20.3200 ±1.46301	20.0400 ±1.45630	.129
6-8 centimeters	- Systolic blood pressure mm/Hg	115. 40 ±11.28662	113.60 ±8.98070	.004*
	-Pulse b/m	82.7800 ±2.77224	82.2000 ±2.85714	.000*
	-Temperature C	37.1880 ±.26468	37.1720 ±.24993	.146
	-Respiration c/m	21.4600 ±1.69284	21.0600 ±1.70725	.003
9-10 centimeters	- Systolic blood pressure mm/Hg	122. 00 ±9.03508	117.20 ±7.57008	.000*
	-Pulse b/m	87.1800 ±2.48004	83.7600 ±2.78890	.000*
	-Temperature C	37.1980 ±.27292	37.1780 ±.25974	.274
	-Respiration c/m	23.1800 ±1.49407	22.000 ±1.85146	.000*

Level of significance at p< 0.05 **Statistically significant difference*

Table (6): Comparison of vital signs before and after applying reflexology at first stage of labor.

Cervical Dilatation	Variable	Before	After	P value
		Mean ± S.D	Mean ± S.D	
3-5 centimeters	- Systolic blood pressure mm/Hg	106.00 ±10.69045	101.00 ± 10.02544	.031*
	-Pulse b/m	79. 8200 ±3.79414	79. 5400 ±3.98574	.033*
	-Temperature C	37. 2460 ±.24512	37. 2480 ±.24180	.322
	-Respiration c/m	20.0600 ±1.37633	20.1600 ±1.34559	.229
6-8 centimeters	- Systolic blood pressure mm/Hg	111. 00 ±10.35098	110.60 ±10.06915	.322
	-Pulse b/m	83.0000 ±2.94161	82.5800 ±3.04450	.245
	-Temperature C	37.2540 ±.24177	37.266 ±.24462	.323
	-Respiration c/m	21.2400 ±1.22157	21.1200±1.23949	.083
9-10 centimeters	- Systolic blood pressure mm/Hg	119. 00 ±11.24132	116.00 ±8.94655	.344
	-Pulse b/m	87.4200 ±2.80735	85.9600 ±2.56694	.175
	-Temperature C	37.2600 ±.23647	37.2560 ±.22960	.159
	-Respiration c/m	23.1200 ±1.17178	22.4600 ±1.40277	.275

Level of significance at p< 0.05 **Statistically significant difference*

Table (1): Showed that the mean age for the participants was (29.75 ± 5.59), the most women were at age 25-30years in back massage , routine care and reflexology group (50.0% , 54.0% , 52.0% respectively) and the most women were house wife (68.0%, 92.0%, 80.0% respectively) and there was no statistical significant difference regard age and residence between control and study groups.

Figure (1): Represented comparison groups who receiving back massage, routine care and reflexology as regard level of education, in back massage group the most women had university education(38.0%) followed by women had basic education then who read and write in routine care (32.0%) and finally women had basic education and university education in reflexology group(26.0%).

Figure (2): Represented comparison between groups who receiving back massage, routine care and reflexology group as regard residence more than half of women from urban in back massage and reflexology group (74.0%, 66.0%) and about (70.0%)

Table (2) Illustrated that there was significant differences on pain reduction after applying routine care of the hospital compared with before intervention when cervical dilation was 3-5 cm (.1400 ±.35051, p=0.002) and at 6-8 cm dilation (.6400 ±.52528P=0.000) and 9-10 cm (1.5000 ±.50508, P=.000).

Table (4): Showed that there was significant differences on pain reduction after applying back massage on study group compared with before intervention when cervical dilation was 3-5 cm (.0400±.19795, p=0.000) and at 6-8 cm dilation (.4600±.50346 P=0.000) and 9-10 cm (.9400±.23990, P=.000).

Table (3): Showed that there was significant differences on pain reduction after applying reflexology on study group compared with before intervention when cervical dilation was 3-5 cm (.0000±.0000, p=0.000) and at 6-8 cm dilation (.1600±.37033,P=0.000) and 9-10 cm (.9600±.19795, P=.000).

Table (4): Illustrated that there were no statistically significant differences regarding vital signs before and after applying routine care of the at the first stage of labor when cervical dilatation is (3-5 cm , 6-8cm, 9-10 cm) .

Table (5): Showed that there were no statistically significant differences regarding vital signs before and after applying back massage when cervical dilatation is 3-5 cm while there were statistically significant differences regarding(blood pressure , pulse , respiration) when cervical dilatation is (6-8cm) with P=.004, P=.000, P=.003)respectively and when (9-10 cm) with P=.000).

Table (6): Showed that there were no statistically significant differences regarding vital signs before and after applying reflexology when cervical dilatation is 3-5 cm , 6-8cm, 9-10 cm) .

Discussion

When a woman faces the childbirth process, she often feels anxiety because coping with labor pain is usually viewed as an anxious moment and can affect hemodynamic stability **(Gallo, et al., 2013)**.

The labor pain is the most severe experience in women, hence, several methods have been applied to labor pain relief comprising massage therapy and reflexology. In the present study, massage therapy and reflexology during the first stage of labor significantly decreased the pain intensity in women. **(Zohreh, et al., 2016).**

The current study was aimed to assess the effect of back massage and reflexology on labor pain reduction and vital signs during first stage of labor at Sohag University Hospital.

In the present study there was statistical significant difference before and after applying back massage during first stage of labor in labor pain scores this was similar to results reported by **Zohreh, et al., (2016)** who performed their study about "The impact of manual massage on intensity and duration of pain at first phase of labor in primigravid women"the study was conducted at Amiralmomenin Hospital in Zabol, Iran, which concluded that there were significant differences before and after applying massage in study groups. This may related to the same sample size.

In the present study there was statistical significant difference before and after applying reflexology during first stage of labor in labor pain scores this was similar to results reported by **Dolatian, et al., (2011)** who performed their study about "The Effect of Reflexology on Pain Intensity and Duration of Labor on Primiparas" which concluded that there were significant differences before and after applying reflexology between study groups and control group.

In the present study as regards vital signs of participants there was no statistical difference before and after intervention of reflexology this was disagree to results reported by **Mirzaei, et al., (2017)** who performed their study about " Effect of Foot Reflexology on Duration of Labor and Severity of First-Stage Labor Pain" which concluded that there were statistical significant difference in blood pressure, temperature and pulse rate between the study groups. This may be related to different in applying reflexology technique in present study.

In the present study as regard vital signs of participants there were statistical significance difference on blood pressure, pulse and respiration

before and after applying back massage when cervical dilatation (6-8cm and 9-10cm) this was agree to results reported by **Kamalifard & Allahverdi, (2012)** who performed their study about "The efficacy of massage therapy and breathing techniques on pain intensity and physiological responses to labor pain" which concluded that there were statistical significant difference in vital signs.

In the present study more than half of women were 25-30 years old ,this results were similar to **Gallo., et al., (2013)** who performed their study about "Massage reduced severity of pain during labor" participants age ranged between 20-30 years old and it is similar to **Mahmoud (2014)** who performed their study about " Effect of Heat and Cold Therapy during the First Stage of Labor on Women Perception of Birth Experience: A Randomized Controlled Trial "which concluded that participants age ranged between 18- 35years old.

In the present study more than half of women were house wives in study group this was close to results of the study reported by **Mansour & Nomani (2016)** about "The Effect of Aromatherapy Massage Using Lavender Oil on the Level of Pain and Anxiety During Labor Among Primigravida Women" which concluded that about more than half of women were house wives.

The educational level in present study participants revealed the following more than one-third had university education in study group and this was almost similar to results reported by **Mansour & Nomani (2016)** who performed their study about " The Effect of Aromatherapy Massage Using Lavender Oil on the Level of Pain and Anxiety During Labor Among Primigravida Women" which concluded that about more than one-third of participants had university education. This due to more advanced level of the country.

In the present study as regard residence , more than half of participants from urban and less than half of participants from rural area this was close to results reported by **Mohamed, et al., (2015)** who performed their study about " Effectiveness of Aromatherapy with Lavender Oil in Relieving Post Caesarean Incision Pain" which concluded that about more than half of women were urban.

In my opinion in present study there wasn't any statistical difference in vital signs when cervical dilatation (3-5cm) before and after intervention because pain is less and uterine contraction is mild. There was a little researches which talked about effect of non- pharmacological methods on vital signs and present study was the first discuss this topic in Sohag University Hospital.

Conclusion

Based on the finding of the present study, It concluded that there were statistically significant differences on pain reduction before and after applying back massage and reflexology during first stage of labor and no statistically significant differences regarding vital signs before and after applying them.

Recommendation

Based on the findings of the current study, the following recommendations are suggested

- Educate and train all nurses in obstetrics department about back massage and reflexology to be able to provide the knowledge and application correctly and completely including how to deal with any changes associated with labor in every stage.
- Further investigations are necessary to replicate the beneficial finding of back massage and reflexology in a large sample.
- The comparative study can be conducted between effectiveness of reflexology and back massage and other alternative therapy on labor pain management and on vital signs during first stage of labor.

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