

The Influence of Three Delivery Positions on Pain Intensity and Feto-Maternal Outcomes During The First Stage of Labor among primi-gravidae Mothers, Comparative Study.

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Abstract

Background: labor pain is the result of a complex and subjective interaction of multiple physiologic and psychosocial factors on a woman's individual interpretation of labor stimuli. **Aim of study:** to compare the intensity of delivery pain through different childbirth positions in the first stage of delivery among primigravidae mothers. **Setting:** The study was carried out at Prince Sultan Military Medical City Hospital, Riyadh. **Sample:** This is a clinical trial conducted on 93 primiparous pregnant women randomly selected through convenient sampling from those who were hospitalized in the hospitals of Prince Sultan Military Medical City. Women with a gestational age of 37–42 weeks, singleton pregnancy, who had passed the first labor stage through physiologic process, and with cephalic presentation were selected. The subjects were randomly allocated to be in the groups were equally divided into three matching groups (walking, setting and recumbent). An Interviewing Assessment Sheet, Partograph, Visual analogue pain intensity scale (VAS) was used. Position changes implemented during first stage of labour and intensity of pain assessed by Visual analogue pain intensity scale tool. **Results:** Mean score of pain severity in Latent phase was (4.33) in Semi-Recumbent position, (5.06) in Lateral position, (3.45) in Sitting position and (4.13) in walking group. In Active phase the mean was (6.67) in Semi-Recumbent position, (7.5) in Lateral position, (5.71) in Sitting position and (5.29±2.3) in walking group. However, only Active phase showed significant differences between labour position groups (P=0.009). The labour positions during first stage of labour doesn't influence their risky for cesarean section but the walking group reported significantly less incidence of CS than the other two groups. More over ventous delivery showed high incidence in recumbent position than other. As regard to degree of laceration, Lateral or semi recumbent position, compared to sitting position or walking position, increase the risky of second degree laceration. As regard to episiotomy, the three position not reduce. **Conclusion and Recommendation:** Change positions during active phase of first stage of labor appeared to have a remarkable effect on labor pain intensity. In service training programs for nurses in labor units about the utilization of non-pharmacological approaches is recommended.

keywords: *Position changes, Labor Pain, Primigravida, Progress of labour, Recumbent, Sitting & Walking.*

Introduction

Experiencing pain constitutes the main aspect of the labor process, and individual variations in pain can affect women's labor experience. Labor pain is a personal and subjective experience, varying from one woman to another and within the same woman through the same laborious process. Labor pain is caused by uterine contractions, cervical dilatation, and vaginal and pelvic floor stretching. It is one of the most intense forms of pain (Kaçar & Keser, 2021). Also, during labor, conflicting emotions such as fear and anxiety are present, which are usually coupled with anticipation and gladness. This conflict contributes to women's perception of pain and affects their labor and birth experience (Aziato, et al., 2017) The available labor pain control methods are categorized under several known approaches such as pharmacological and non-pharmacological methods,

which can reassume women and increase their control perception. One of the non-pharmacological methods proven by research evidence for its effectiveness in reducing labor pain is walking and changing positions during the first stage. Upright positions (sitting, kneeling, squatting, and standing) are preferred among women while giving birth until 250 years ago. These positions maintain flexion at the hip joint and somewhat straighten the pelvis (Salameh et al., 2020) Despite the fact that women should be encouraged to assume any position of woman's choice including upright position (WHO, 2020), many labor and birth facilities claim that all women are allowed to adopt any position of comfort during their labor and birth. However, many women still spend their labor and birth time on their backs (Gizzo et al., 2014). The use of an upright or lateral position, compared with supine or lithotomy positions, may reduce the

length of the first stage of labor, the duration of the second stage of labor, the number of assisted deliveries (vacuum and forceps), episiotomies and perineal tears, and contribute to fewer abnormal fetal heart rate patterns. Also, increased comfort, reduced requests for pain medication, and an enhanced sense of control by the mother can alter the shape and size of the pelvis, which assist in descent and assist gravity to move the fetus downward (Kibuka, & Thornton, 2017).

Nurses and midwives who care for women during various stages of labor and birth have a responsibility to support and advocate for the mother and provide high quality, evidence-based care to both mothers and fetuses (World Health Organization, 2021). Nurses and Midwives should understand the benefits and risks of different labor and birth positions that can facilitate the birthing process and improve maternal-infant outcomes (World Health Organization, 2015)

Significance of the study :

Worldwide measurable reports determine that around 210 million women get pregnant every year around the world. There are in excess of 130 million yearly births around the world, of which in excess of 4 million happen in the United States and about 120 million in less created nations. In Saudi Arabia 569,000 births per year. (General Authority for Statistics, 2016)

According to the Cochrane Database of Systematic Reviews (Lawrence, Lewis, Hofmeyr, Dowswell, & Styles, 2013) The review includes 21 studies with a total of 3706 women. Overall, the change position during the first stage of labour was approximately one hour shorter for women randomised to upright as opposed to recumbent positions (MD -0.99, 95% CI -1.60 to -0.39).also, Women randomised to upright positions were less likely to have epidural analgesia (RR 0.83 95% CI 0.72 to 0.96).

Change positions help in reduce aortocaval compression, make uterine contractions effective and to favour a better fetus alignment in the birth canal and to increase pelvic outlet diameters, reducing intrapartum maternal and neonatal complications. (Maputle, 2018) Evidence supports the benefits associated with alternative labor positions throughout the progression of labor as well as protecting the woman the baby during and after delivery. Although evidence supports the use of alternative labor positions, the lithotomy position continues to be most used. (Gaffka, 2016) Armed with knowledge about alternative labor positions, nurses can individualize care that will contribute to positive maternal and neonatal outcomes.

Problem Statement

Perceptions of labour pain intensity vary. Very occasionally women feel no pain in labour and give birth unexpectedly (Pratiwi et al., 2017). At the other extreme labour pain has been reported to be the most severe pain that a woman experiences in her lifetime (Ioannou., 2020). Many factors influence the physiological and psychological processes of birth and the extent to which women experience pain, including parity and the way labour is managed. The pattern of pain, for instance, appears to be different in nulliparous as compared with multiparous women. Typically, nulliparous women experience greater sensory pain than multiparous women during early labour (before 5 cm dilatation) (Karaman, et al ., 2019). The positions adopted by women and the extent of their mobility during labour may also significantly affect the perception of pain (Chan, et al., 2018). The time the health providers and midwives spend on application of technology is more than the time they can spend on mothers' peace and comfort. So, physiologic childbirth and its benefits are forgotten. (ROMANO., 2008) There are six golden standards in normal physiologic birth, which are labor simultaneous beginning, continuation of physical and mental support in labor, stopping routine interventions, mothers' freedom for movement during labor, spontaneous pushing with helping, and prevention of mother-infant separation to gain the chance of first breast feeding after birth. In most of the hospitals, mothers' position at the admission and entrance to labor room is bed rest regardless of their desire, and the movements are more restricted by the ending part of the second stage, the mothers are deprived from the possible benefits of position change despite the existing controversy in the clinical meaning of cervix complete dilatation. (Georgescu, et al ., 2020)

Theoretical framework:

The conceptual framework of this study is the gate control theory of pain. (McMahon, et al., 2013) The gate-control theory proposed that pain is a result of activity in two interacting neural nervous systems. Each of these nervous systems, peripheral and central, has different functions. In the gate-control theory, sensory information can pass from the peripheral nervous system to the central nervous system (CNS) only when the physiologic "gate" is open. When the gate is closed due to the release of inhibitory neurotransmitters, or endogenous opioids, then sensory information is blocked. This mechanism explains the effectiveness of both physical (e.g., rubbing, massage, transcutaneous electrical nerve stimulation [TENS], changing labour position, and water therapy) and psychologic (e.g., focus points,

breathing exercises, and encouragement) methods of pain relief. (Neiman et al., 2020)

The substantia gelatinosa of the dorsal horn functions as a gate and controls pain experience. The input of the peripheral nerve fibers is modified in the dorsal horn prior to transmission to the brain by descending control from higher nervous system activities. These central control activities include anxiety, past experience, attention and suggestion that can influence the opening or closing of the gate. Therefore, in the gate control theory, pain is explained as a physiological and psychological process that can be modified by cognitive and behavioral interventions. (Merighi, ., 2018)

However, the midwife should be wary of stereotyping clients or failing to adapt to individual clients. The midwife must be aware of and sensitive to individual variations in clients' choices for dealing with pain in labor and delivery. The client may choose to use pharmacologic methods, non-pharmacologic methods, or both, to meet her needs. The midwife must be able to teach, review, and assist the client to implement a variety of pain relief methods. The nurse also must respect the client's prerogative to choose, as long as the method chosen is safe for the mother and child at that time.

Aim of the study : To compare the intensity of labour pain through three childbirth positions in the first stage of labour among primigravida mothers at Prince Sultan Military Medical City. Further objectives were to compare the intensity of pain in relation of three different position assumed by women in the first stage of labour and the Relation between progress of labour and different childbirth positions.

Hypothesis:

- There will be a significant difference in the intensity of pain in relation to childbirth changed position assumed by women in the first stage of labour.
- There is no difference in the intensity of pain in relation to childbirth changed position assumed by women in the first stage of labour.

Conceptual and operational definitions:

Primigravidae: Woman who is becoming pregnant for the first time. In this study primigravidae is one who is becoming pregnant for the first time with the gestational age between 37-42 weeks without any complications and in labour with the cervical dilatation of 3 cm.

The first stage of labour: is from the onset of regular uterine contractions until full dilatation of the cervix. (Marshall & Raynor, 2014)

The partogram: is a composite graphical record of key data (maternal and fetal) during labour entered against time on a single sheet of paper. Relevant measurements might include statistics such as cervical dilation, fetal heart rate, duration of labour

and vital signs. The partogram is usually commenced when the woman is in established labour. (Streiner, Norman, & Cairney, 2015)

Visual Analogue Scale (VAS): Is tool widely utilized clinical and research pain assessment tool in labour setting in this research, Labour pain level were obtained using graphic. the mother place a mark on the line that represented their perception and assessment of pain intensity. VAS scores were 10cm line that was used to categorize pain as either no pain (0cm), mild pain (1-3cm), moderate pain (4-7cm) and severe pain (8-10cm) to compare the pain intensity in different positions among mothers in labor. (Streiner et al., 2015)

Different labour positions :

Different upright positions including walking, sitting versus recumbent positions (semi-recumbent and lateral) for women in the first stage

Upright position:

- Sitting positions: the mother sat on the labor bed in such a way that her lumbar spines were completely straight and the hip and knee joints were at the same level.
- Walking position: the mother walking for 20-30 minutes in labour ward.

Recumbent position:

- Semi-Recumbent position: the pregnant is lying on her back, above the bed at an angle up to 45 degrees
- lateral position : the mother lied on the left side in a modified left lateral position; the upper leg is flexed at hip and knees, the lower leg is straight, and the upper arm rests in a flexed position on the bed.

Feto maternal outcomes :

Which include pain intensity, Progress of labour, Relevant measurements were cervical dilation, fetal heart rate, duration of labour, fetal head descend, , colour of liquor ,uterine contraction. Also, method of delivery, perineal injury were assessed.

Material and Methods

Research Design and Setting

This a clinical trial conducted on 93 primiparous pregnant women randomly selected through convenient sampling from those who were hospitalized in the hospitals of Prince Sultan Military Medical City compared the intensity of labor pain between three different childbirth positions during the first stage of labor among primigravida mothers. Furthermore, this study addressed whether there will be a significant difference in the intensity of pain in relation to childbirth changed position assumed by women in the first stage of labor. The study was conducted at the labor and birth wards of A military in Saudi Arabia , Riyadh .

Participants and Sampling

A convenient sample consisting 93 primigravida mothers aged 20-35 years (37-42 weeks of gestation)

in their first stage of labor with cervical dilatation of 3-4 cm, cephalic presentation, single viable fetus, admitted in the labor and birth rooms of Military hospital. Each participated woman was assigned randomly to one of three matched groups, 31 women in walking group, 31 women sitting group, and 31 women recumbent positions group (semi-recumbent or lateral), which is routinely used in hospital. The total number of normal delivery cases of primgravidae that conducted by midwives in 2020 was 2,320 cases. the sample were calculated by using The following formula (Chaokromthong & Sintao, 2021) applied to determine the sample Size: Where, (n) the sample size, (N) is the population size and e is precision level. At 10% precision level, the estimated sample size is 93 women.

$$n = \frac{N}{1+N(e)^2} \quad n = \frac{2320}{1+2320(10\%)^2} = 93$$

Study Measurements Tools

Structured self administered Questionnaire :

This tool was developed by the researcher based on literature review, it include data related to sociodemographic characteristics such as age, level of education, occupation, Marital status, Current place of residence, Monthly income of the family, type of antenatal classes taken during pregnancy, number of antenatal visits, obstetric characteristics, regularity of period, planning of pregnancy, acceptance of pregnancy, progress labor.

Partograph sheet

It is a standardized design done by WHO (1994) to help in the management of labor (progress of labour) It is basically a graphic representation of the event of labor plotted against time. Uterine contractions (intensity, duration and frequency in 10 minutes) assessed. Duration of the first stage of labor was explain as follows (cervix dilatation from 3cm till 10 cm). The fetus was monitored closely on the Partograph by regular observation of the fetal heart rate ,colour of liquor , head descend.

Visual analogue pain intensity scale (VAS)

VAS is a unidimensional measure of pain intensity. Tutar et al., 2020 & Hawker et al., 2011 used the scale to assess pain intensity: which represents pain along a continuum of 2 extremes, from no pain (a score of 0) to extreme pain (a score of 10). The pain scores recorded during intervention with different positions at first stage of labour when cervical dilatation at 3-4 cm , 5-7 cm and 8-10 cm, the mother who used antenox or any method of anesthesia is excluded. The pain VAS is self-completed by the women. The women asked to place a line perpendicular to the VAS line at the point that represent their pain intensity. Pain score from 1-3 considered mild pain, from 4-6 were be considered moderate pain and from 7-10 considered severe.

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Data Collection

To collect the required data, official approval was obtained from the administrators in the specified hospital. Upon receiving their approval, the questionnaires were hand-delivered in a paper format by the authors. A final of 93 completed questionnaires were collected over eight months (November 2020-June 2021). The researcher visits the hospital 3 to 4 visits per week until the predetermined sample size were collected, the data was collected by researcher. After reading the files of the participants , the mother that had criteria to be involved in the study were taken and the consent was taken from participant before starting data collection. For Sitting position; it is a position in which the mother sat on the bed, her back elevated to 60 degree to assume supporting sitting by simple backrest. The researcher were taken by using the backrest elevation measurement on the bed frame from 0 to 60 degree. (Hummel, Grap, Sessler, Munro, & Corley, 2000). Third recumbent position was routine hospital position, the pregnant women is lying on her back, raising the bed at an angle up to 45 degrees, or on her left side.

Each woman of three groups was individually interviewed during their active phase three times at cervical dilatation (3-4 cm , 5-7 cm and 8-10 cm). a numerical scale VAS was used to assess intensity of pain at each time. The point along the ruler that corresponds to the line the respondent has placed on the VAS indicates the score for that respondent painted already in sheet of data collection. Pain intensity and progress of labour was measured in three times at cervical dilatation of first stage. The researcher was stayed with each women till the end of second stage, approximately 6-8 hours .

Pilot study :

The study tools were pre-tested on a random sample of 10 % of women to check the clarity, applicability, any difficulties with their application, and to determine the time needed for completion of the tools. Modification of the tools was done according to the pilot study results. Subjects who shared in the pilot study were excluded from the study subjects. The study tools were translated into Arabic to suit the culture of the participants and tested for content validity along with the fluidity of the translation in the field of study by a jury of academic members. A minor modification was made in rewording few statements according to the received feedback. The study instruments were tested for internal reliability

using Cronbach's alpha correlation coefficient. The findings proved both tools as reliable tools, with correlation coefficient α of 0.81 and 0.91, respectively. Moreover,

Ethical Considerations

Approval was received from the Faculty of Nursing, King Saud University. KSU nursing college to conduct the study. The approval submitted to obtain permission from the director general of research committee in Prince Sultan Medical City. The researchers clarified to all participants the purpose of the study. Data privacy and confidentiality were maintained and ensured by obtaining informed consent. Participants were granted anonymity and the right to withdraw from the study at any time.

Data Analysis

Data were analyzed using IBM SPSS version 22. The normality of the data was obtained through

descriptive statistics of means, standard deviations, and frequencies. Data on the general features of women, VAS and Partograph are summarized using frequencies, percentages, mean, and standard deviations (SDs). For each subscale, the mean scores were added. Analyses of variance (ANOVA) was used to analyze variations in VAS and Partograph scores among hospitals and in relation to participants' individual. Pearson's correlation test was used to assess the relationship between the pain intensity and positions. The statistical significance point has been set at $p \leq 0.05$. The tool was piloted and reviewed by academic experts before the study to ensure the validity and reliability of the tool with Cronbach's Alpha (.814). Chi-square test and analysis of variants ANOVA and post hoc test to determine significant relationship between variables.

Results

Table (1): Comparison between different positions groups of study sample in terms of socio-demographic characteristic (N=93)

Demographic data	Labour positions						Chi-Square (Sig.)
	Sitting N=31		Recumbent N=31		Walking N=31		
	N	%	N	%	N	%	
Age							
less than 25 years	22	71.0	21	67.7	22	71.0	6.977 (.137)
from 25 to 30 years	5	16.1	5	16.1	7	22.6	
more than 30 years	4	12.9	5	16.1	2	6.5	
Educational level							
Primary	1	3.2	1	3.2	1	3.2	16.310 (.091)
Intermediate	1	3.2	0	0.0	1	3.2	
Secondary	8	25.8	9	29.0	9	29	
Post-secondary diploma	2	6.5	1	3.2	2	6.5	
Bachelor	19	61.3	19	61.3%	18	58.1	
Master	0	0.0	1	3.2%	0	0.0	
Occupation							
Employee	1	3.2	2	6.5	2	6.5	10.456 (.033)
House wife	26	83.9	25	80.6%	23	74.2	
Student	4	12.9	4	12.9	6	19.4	
Marital status							
Married	30	96.8	30	96.8	31	100	1.022 (.600)
Widowed	1	3.2	1	3.2	0	0.0	
Current of residence							
Riyadh	25	80.6	26	83.9	26	83.9	2.026 (.731)
Villages around Riyadh	5	16.1	5	16.1	5	16.1	
Outside Riyadh	1	3.2	0	0.0	0	0.0	
Monthly income							
Less than 3500 SR	2	6.5	2	6.5	3	9.7	.804 (.992)
3,500 to 6000 SR	10	32.3	9	29.0	11	35.5	
6500 to 12,000 SR	15	48.4	16	51.6	13	41.9	
More than 12,000 SR	4	12.9	4	12.9	4	12.9	

Demographic data	Labour positions						Chi-Square (Sig.)
	Sitting N=31		Recumbent N=31		Walking N=31		
	N	%	N	%	N	%	
Attending of antenatal classes							2.63 (.339)
Not attending	30	96.8	27	87.1	29	93.5	
Attending	1	3.2	4	12.9	2	6.5	
Type of antenatal classes							
Care and hygiene	0	0.0	1	3.2	1	3.2	
Healthy nutrition	0	0.0	1	3.2	0	0.0	
Gestational diabetes	0	0.0	1	3.2	1	3.2	
Eclampsia	0	0.0	1	3.2	0	0.0	
Pain management during labour	1	3.2	0	0.0	0	0.0	

Table (2): Comparison between different positions groups of study sample and their obstetric characteristic: (N=93)

Obstetric characteristic	Labour positions						Chi-Square (Sig.)
	Sitting N=31		Recumbent N=31		Walking N=31		
	N	%	N	%	N	%	
Age at menarche							6.787 (0.148)
less than 11 years	6	19.4	10	32.3	5	16.1	
from 11 to 13 years	17	54.8	8	25.8	16	51.6	
more than 13 years	8	25.8	13	41.9	10	32.3	
Regularity of period							0.168 (0.919)
Regular	26	83.9	27	87.1	26	83.9	
Irregular	5	16.1	4	12.9	5	16.1	
Planning for pregnancy							9.343 (0.155)
Unplanned	3	9.7	3	9.7	1	3.2	
Planned	28	90.3	28	90.3	30	96.8	
Acceptance of pregnancy							.097 (0.999)
Wanted	30	96.8	30	96.8	30	96.8	
Unwanted	1	3.2	1	3.2	1	3.2	
Number of antenatal clinic							5.560 (0.235)
> 3 visits during pregnancy	3	9.7%	0	0.0%	3	9.7%	
3 - 6 visits during pregnancy	2	6.5%	4	12.9%	6	19.4%	
< 6 visits during pregnancy	26	83.9%	27	87.1%	22	71.0%	

Table (3): Relation between progress of labour by PARTOGRAM and different labour positions (sitting, walking and semi recumbent or lateral) during first stage of labour among study samples: (N=93)

Progress of labour	Initial assessment						Chi-Square (Sig.)	After 4 hours						Chi-Square (Sig.)	another 4 hour						Chi-Square (Sig.)
	Labour positions							Labour positions							Labour positions						
	Sitting position N=31		Lateral or Semi Recumbent N=31		Walking N=31			Sitting position N=31		Lateral or Semi Recumbent N=31		Walking N=31			Sitting position N=31		Lateral or Semi Recumbent N=31		Walking N=31		
	N	%	N	%	N	%		N	%	N	%	N	%		N	%	N	%	N	%	
Cervical dilatation																					
latent phase(0-3) cm	23	74.2	28	90.3	25	80.6	3.100 (.541)	0	0.0	0	0.0	0	0.0	4.048 (.132)	0	0.0	0	0.0	0	0.0	3.207 (.201)
active phase(4-6) cm	7	22.6	3	9.7	5	16.1		8	25.8	5	16.1	12	38.7		0	0.0	0	0.0	1	3.2	
transition phase (7-10) cm	1	3.2	0	0.0	1	3.2		23	74.2	26	83.9	19	61.3		31	100	31	100	30	96.8	
Fetal heart rate																					
Normal(120-160) bpm	30	96.8	30	96.8	31	100	4.022 (.403)	27	87.1	24	77.4	26	83.9	2.582 (.630)	30	96.5	30	96.5	31	100	6.877 (.143)
Bradycardia (>120 bpm)	1	3.2	0	0.0	0	0.0		4	12.9	6	19.4	5	16.1		0	0.0	0	0.0	0	0.0	
Tachycardia(<160 bpm)	0	0.0	1	3.2	0	0.0		0	0.0	1	3.2	0	0.0		0	0.0	1	3.5	0	0.0	
Duration Uterine contraction in second- duration per second																					
less than 30	24	77.4	14	45.2	22	71.0	8.967 (.175)	6	19.4	1	3.2	7	22.6	13.738* (0.033)	0	0.0	0	0.0	0	0.0	2.524 (.640)
30 less than 60	5	16.1	14	45.2	8	25.8		18	58.1	11	35.5	14	45.2		0	0.0	0	0.0	0	0.0	
60 less than 90	1	3.2	2	6.5	1	3.2		6	19.4	18	58.1	10	32.3		1	3.2	1	3.2	2	6.5	
90 and more	1	3.2	1	3.2	0	0.0		1	3.2	1	3.2	0	0.0		30	96.8	30	96.8	29	94.5	
Uterine contraction - frequency in 10 minute																					
1-2 in 10 minutes	25	80.6	16	51.6	28	90.3	13.258* (0.010)	2	6.5	2	6.5	4	12.9	4.038 (.401)	0	0.0	0	0.0	0	0.0	4.306 (.366)
3 in 10 minutes	4	12.9	9	29.0	2	6.5		7	22.6	4	12.9	9	29.0		0	0.0	1	3.2	1	3.2	
4 in 10 minutes	2	6.5	6	19.4	1	3.2		22	71.0	25	80.6	18	58.1		31	100	30	96.5	30	96.5	
Intensity of Uterine contraction																					
Mild (20-40 seconds)	11	35.5	7	22.6	16	51.6	9.925* (0.042)	1	3.2	0	0.0	1	3.2	7.568 (0.029)*	0	0.0	0	0.0	0	0.0	3.556 (.169)
Moderate(40-60 seconds)	15	48.4	11	35.5	8	25.8		6	19.4	1	3.2	8	25.8		0	0.0	0	0.0	0	0.0	
Strong (90 seconds)	5	16.1	13	41.9	7	22.6		24	77.4	30	96.8	22	71.0		31	100	31	100	31	100	

Table (4): Comparison between Mean pain score according to women's position of first stage of labour by using (VAS) for the study sample: (N=93)

Different labour positions	Mean score of pain severity (0-10)					
	Latent phase Cervical dilatation at 3-4cm		Active phase Cervical dilatation at 5-7 cm		Transition phase Cervical dilatation at 8-10 cm	
	Mean	±SD	Mean	±SD	Mean	±SD
Semi-Recumbent N=15	4.33	2.32	6.67	2.02	9.33	1.23
Lateral N=16	5.06	2.54	7.50	2.31	9.75	0.68
Sitting position N=31	3.45	2.05	5.71	2.19	9.16	1.16
Walking N=31	4.13	2.06	5.29	2.30	9.19	1.49
F (p)	2.001 (0.120)		4.098* (0.009)		0.921 (0.434)	

F, p value for ANOVA with repeated measures test for comparing between the four positions

*: Statistically significant at $p \leq 0.05$

Table (5): Comparison between Mean pain score of sitting position v/s walking position in first stage of labour by using (VAS) for the study sample: (N=93)

Different labour positions	Mean score of pain severity (0-10)					
	Latent phase Cervical dilatation at 3-4 cm		Active phase 5 Cervical dilatation at 5-7 cm		Transition phase Cervical dilatation at 8-10 cm	
	Mean	±SD	Mean	±SD	Mean	±SD
Sitting position N=31	3.45	2.05	5.71	2.19	9.16	1.16
Walking N=31	4.13	2.06	5.29	2.30	9.19	1.49
P	0.616		0.880		1.000	

p: p value for ANOVA with repeated measures test for comparing between sitting position and walking

Table (6): Comparison between Mean pain score of sitting position v/s recumbent position in first stage of labour by using (VAS) for the study sample: (N=93)

Different labour positions	Mean score of pain severity (0-10)					
	Latent phase Cervical dilatation at 3-4 cm		Active phase Cervical dilatation at 5-7 cm		Transition phase Cervical dilatation at 8-10 cm	
	Mean	±SD	Mean	±SD	Mean	±SD
Sitting position N=31	3.45	2.05	5.71	2.19	9.16	1.16
Recumbent N=31	4.33	2.32	6.67	2.02	9.33	1.23
P	0.577		0.522		0.971	

p: p value for ANOVA with repeated measures test for comparing between sitting position and walking

Table (7) : Comparison between Mean pain score of walking position v/s recumbent position in first stage of labour by using (VAS) for the study sample: (N=93)

Different labour positions	Mean score of pain severity (0-10)					
	Latent phase Cervical dilatation at 3-4 cm		Active phase Cervical dilatation at 5-7 cm		Transition phase Cervical dilatation at 8-10 cm	
	Mean	±SD	Mean	±SD	Mean	±SD
Labour positions						
Walking N=31	4.13	2.06	5.29	2.30	9.19	1.49
Recumbent N=31	4.33	2.32	6.67	2.02	9.33	1.23
P	0.991		0.208		0.984	

p: p value for ANOVA with repeated measures test for comparing between sitting position and walking

Table (8): Comparison between Mean pain score in semi-recumbent position v/s lateral position first stage of labour by using (VAS) of the study sample: (N=93)

Different labour positions	Mean score of pain severity (0-10)					
	Latent phase Cervical dilatation at 3-4 cm		Active phase Cervical dilatation at 5-7 cm		Transition phase Cervical dilatation at 8-10 cm	
	Mean	±SD	Mean	±SD	Mean	±SD
Semi-Recumbent N=15	4.33	2.32	6.67	2.02	9.33	1.23
Lateral N=16	5.06	2.54	7.50	2.31	9.75	0.68
P	0.511		0.009*		0.462	

p value for ANOVA with repeated measures test for comparing between sitting position and walking

*: Statistically significant at $p \leq 0.05$

Table (9): Comparison between color of liquor and labour positions (sitting -walking- semi recumbent or lateral) of the study sample: (N=93)

Fetal outcome	Different labour positions						Total		Chi-Square (Sig.)
	Sitting position N=31		Lateral or Semi Recumbent N=31		Walking N=31				
	N	%	N	%	N	%	N	%	
Color of liquor during active phase 5-7 cm									
membrane intact	2	6.5%	2	6.5%	3	9.7%	7	7.5%	10.223 (.116)
clear liquor	28	90.3%	24	77.4%	25	80.6%	77	82.8%	
bloody liquor	1	3.2%	1	3.2%	3	9.7%	5	5.4%	
meconium liquor	0	0.0%	4	12.9%	0	0.0%	4	4.3%	

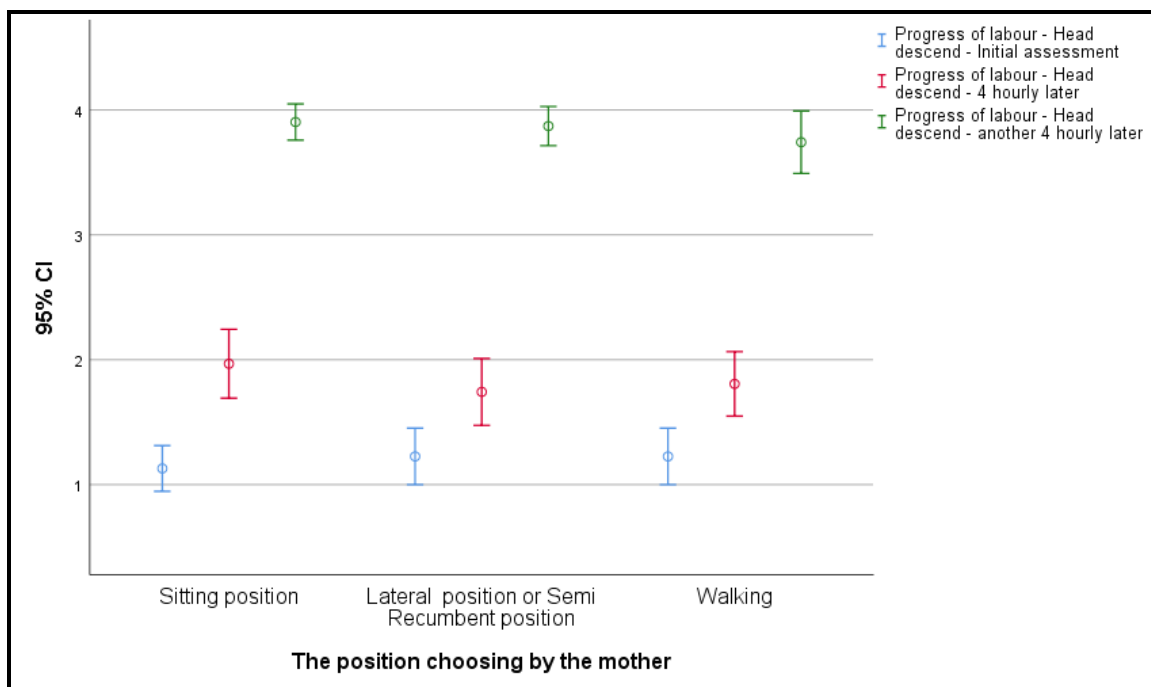


Figure (1) : Comparison between fetal head descend during 1st stage of labour and maternal positions

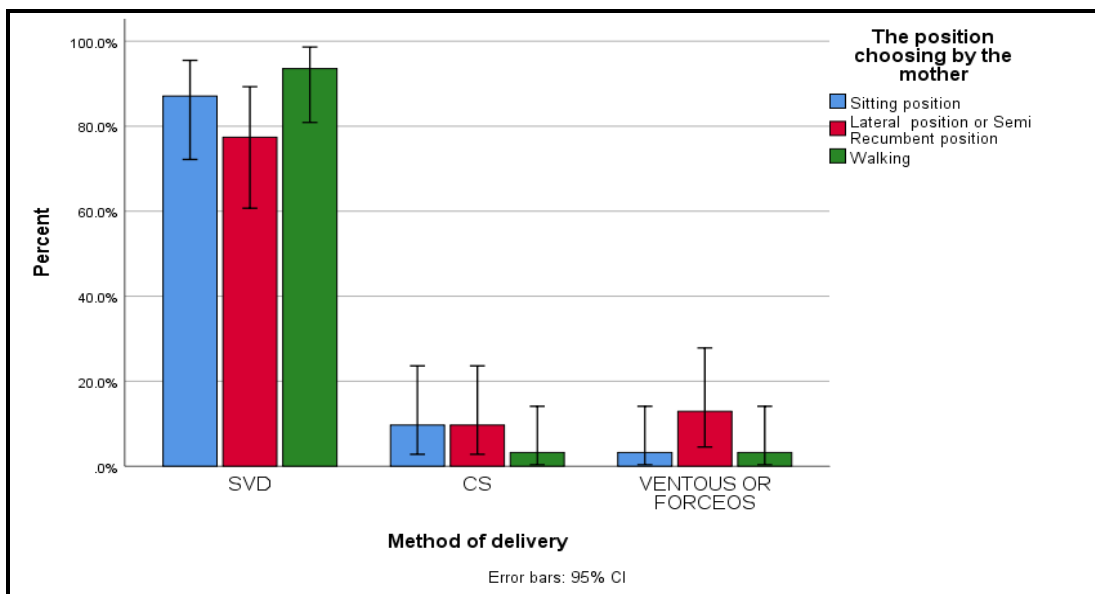


Figure (2): Maternal outcome (method of delivery) and different labour positions during labour and delivery

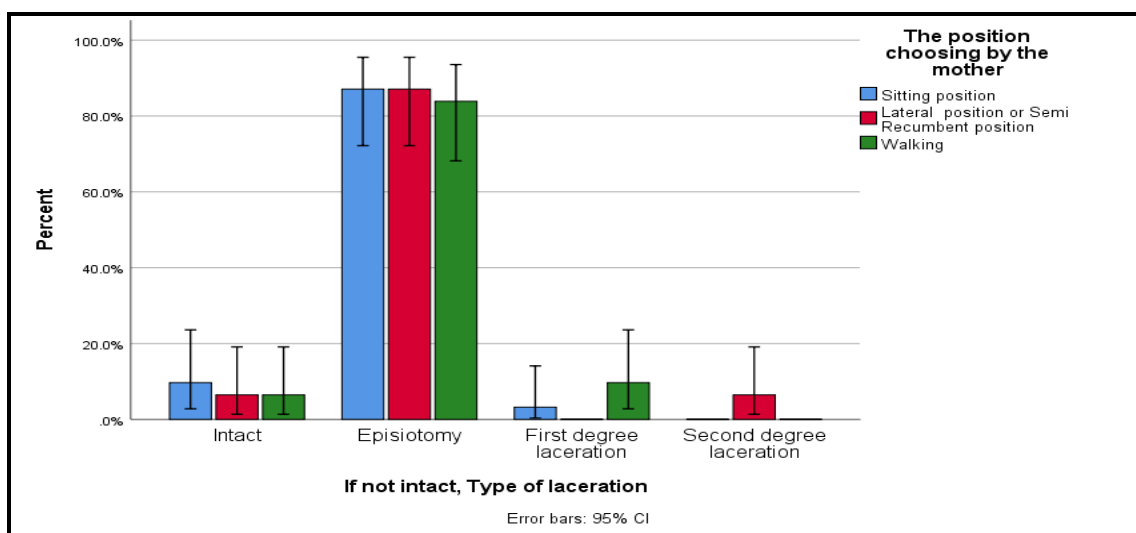


Figure (3) : Occurrence of perineal injury and maternal positions during labour and delivery

Table (1): Shows that, majority (80.6%) of mothers were less than 25 years; in Sitting position group (71%), in Lateral or Semi Recumbent group (67.7%), in Walking group (71%). Regarding Educational level, more than two thirds of studied mothers had Bachelor degrees. Furthermore, more than three group of studied mothers (79.6%) were Housewives, Moreover, most of studied mothers were Married (97.8%), Current place of residence for studied mothers mainly from Riyadh city (82.8 %).Regarding Monthly income of group studies about one half were for (6500 to 12,000 SR). The most of studied mothers (92.5%) did not Attended antenatal classes during pregnancy. There were no

significant difference in all three studied groups concerning mothers' demographic characters except for Occupation (P=0.033).

Table (2): Regarding Age at menarche , more than two fifth (44.1%) had menarch at age 11 to 13 years, Majority of studied mothers (84.9%) had regular period. Furthermore, Most of studied mothers (96.8%) had acceptance of the pregnancy. Regarding number of attended antenatal clinic (80.6%) of studied mothers had More than six visits during the pregnancy.

Table (3): Shows that, there were no significant correlations concerning cervical dilatation and Labour positions (P=0.541) for Initial assessment,

($P=0.132$) after 4 hours and ($P=0.201$) after another 4 hour. Although frequencies varies between labour positions regarding cervical dilatation, foetal heart rate after another 4 hour was normal except one tachycardia case within lateral or Semi Recumbent position group. According for abnormal fetal heart rate bradycardia we found in active stage 4 cases in sitting position, 5 cases in walking position and 6 cases in recumbent position. Furthermore, there were concerning fetal heart rate and Labour positions ($P=0.403$) for Initial assessment, ($P=0.630$) after 4 hours and ($P=0.143$) after another 4 hour. Although frequencies varies between labour positions regarding Fetal heart rate, no significant differences between all three studied groups.

Regarding Duration of Uterine contraction per second, after 4 hours showed significant differences between labour positions, post hoc test showed significant differences between sitting and lateral or Semi Recumbent position ($P=0.003$), and lateral or Semi Recumbent position with walking ($P=0.005$). Regarding frequency of Uterine contraction in 10 minutes, post hoc test showed significant differences between sitting and lateral or Semi Recumbent position ($P=0.009$), and lateral or Semi Recumbent position with walking ($P=0.001$).

Intensity of Uterine contraction showed significant differences with labour positions and after 4 hours ($P=0.029$). Post hoc test showed significant differences between lateral or Semi Recumbent position and walking ($P=0.016$) regarding initial assessment, significant differences between sitting and lateral or Semi Recumbent position ($P=0.048$), lateral or Semi Recumbent position and walking ($P=0.012$) after 4 hours assessment.

Data from table (4): Shows that, Mean score of pain severity in Latent phase was (4.33 ± 2.32) in Semi-Recumbent group, (5.06 ± 2.54) in Lateral group, (3.45 ± 2.05) in Sitting position and (4.13 ± 2.06) in walking group. In Active phase the mean was (6.67 ± 2.02) in Semi-Recumbent group, (7.5 ± 2.31) in Lateral group, (5.71 ± 2.19) in Sitting position and (5.29 ± 2.3) in walking group. While the mean score of pain severity in Transition phase (9.33 ± 1.23) in Semi-Recumbent group and (9.75 ± 0.68) in Lateral group, (9.16 ± 1.16) in Sitting position and (9.19 ± 1.49) in walking group. However, only Active phase showed significant differences between labour position groups ($P=0.009$).

Table (5): Presented ,Mean score of pain severity of sitting versus walking, in Latent phase was (3.45 ± 2.05) in sitting group and (4.13 ± 2.06) in walking group, in Active phase the mean was (5.71 ± 2.19) in sitting group and (5.29 ± 2.3) in walking group, while mean score of pain severity in Transition phase (9.16 ± 1.16) in sitting group and

(9.19 ± 1.49) in walking. However, no significant differences between sitting and walking group found. The results in table (6) shows Mean score of pain severity in Latent phase was (3.45 ± 2.05) in sitting group and (4.33 ± 2.32) in Recumbent group. In Active phase the mean was (5.71 ± 2.19) in sitting group and (6.67 ± 2.02) in Recumbent group, while mean score of pain severity in Transition phase (9.16 ± 1.16) in sitting group and (9.33 ± 1.23) in Recumbent. However, no significant differences between sitting and recumbent group found.

Table (7): Reveals that, Mean score of pain severity in Latent phase (4.13 ± 2.06) in walking group and (4.33 ± 2.32) in Recumbent group, in Active phase the mean was (5.29 ± 2.3) in walking group and (6.67 ± 2.02) in Recumbent group, while mean score of pain severity in Transition phase (9.19 ± 1.49) in walking group and (9.33 ± 1.23) in Recumbent. However, no significant differences between walking and recumbent group found.

Table (8): Show that mean score of pain severity in Latent phase was (4.33 ± 2.32) in Semi-Recumbent group and (5.06 ± 2.54) in Lateral group, in Active phase the mean was (6.67 ± 2.02) in Semi-Recumbent group and (7.5 ± 2.31) in Lateral group, while mean score of pain severity in Transition phase (9.33 ± 1.23) in Semi-Recumbent group and (9.75 ± 0.68) in Lateral group. However, only Active phase showed significant differences between Semi-Recumbent and Lateral group ($P=0.009$).

Table (9): Shows in comparison of fatal outcome colour liquor and different labour position ,regarding fetal outcome, the color of liquor during active phase (5-7 cm) was almost clear, (90.3%) in sitting position, (80.6%) in walking position, and (77.4%) in Lateral or Semi Recumbent. No significant correlations concerning color of liquor during active phase and Labour positions ($P=0.116$). Although frequencies varies between labour positions regarding color of liquor during active phase, no significant differences between all three studied groups.

Figure (1): Reveals that, Head descend in the first assessment showed that most of studied mothers were above 0 station, the highest percent was for Sitting position (93.5%) followed by Lateral or Semi Recumbent (87.1%) and Walking position group (87.1%). In addition, Head descend after 4 hours nearly half-studied mothers were at zero station; sitting position (45.2%), lateral or Semi Recumbent position (41.9%), walking position (48.4%). However, Head descend after another 4 hour most of studied mothers were delivered, (93.5%) for Sitting position, (96.3%) for Lateral or Semi Recumbent, and (83.9%) for Walking position. Furthermore, there were no significant correlations concerning

Head descend and Labour positions ($P=0.853$) for Initial assessment, ($P=0.760$) after 4 hours and ($P=0.787$) after another 4 hour. Although frequencies varies between labour positions regarding Head descend, no significant differences between all three studied groups.

Figure (2): As shown in Figure three above the labour positions doesn't influence their risky for cesarean section but the walking group reported significantly less incidence of CS than the other two groups. More over ventous delivery showed high incidence in recumbent position than other .

Figure (3): As shown in above, the women positions doesn't influence their risky of first degree and second degree of laceration. Lateral or semi recumbent position, compared to sitting position or walking increase risky of second degree laceration. As regard to episiotomy, the three position not reduce.

Discussion

Despite the growing evidence that reports the physical benefits for birthing women and their babies, most women still give birth lying on their backs. (Zhang et al., 2016) WHO (2017) shows no evidence to support the recumbent position during the first stage of labor. There is evidence that upright positions during the first stage of labor shorten the duration of labor and decreased intervention on mothers and fetus wellbeing

The available research shows the effect of upright versus recumbent position during the first stage of labor and pain intensity (Kibuka & Thornton, 2017). Therefore, this study compared the effect of different positions (upright: setting and walking and recumbent positions) during the first stage of labor among primipara on pain intensity. With respect to the relation between different labor positions for the current study, there was no significant correlation, however, there was an improvement in cervical dilatation after the first 4 hours of assuming the sitting position or recumbent position than in the walking. Zaky (2016) found that women who assumed the upright position during the first stage of labor had improved cervical dilatation than those who assumed the supine position, which is justified with the effect of the downward force of gravity. Uterine contractions are intensified in frequency, strength, and regularity .

The findings did not show a significant correlation between different positions during the first stage of labor and the descent of the fetal head. During the early stages of labor, upright positions tend to be more comfortable for pregnant women by altering the shape and size of the pelvic cavity, increase blood flow, and uterine activity (DiFranco & Curl, 2014;

Gizzo et al., 2014). These positions also facilitate the fetus rotating and descending into the pelvic cavity (Christiaens et al., 2014 & Motta, et al., 2016). These findings are in line with the result of Maddirevula et al., (2018) who found the descent of the fetal head showing a significant difference during the 2nd, 3rd and 4th hours, after assuming upright position than in the recumbent position.

The fetal heart rate was not affected by different labor positions during the first stage of labor. This result was highlighted by the findings of the present study, which is congruent with the results of Pitts et al., (2021). The duration and intensity of uterine contraction during the first stage of labor had a significant difference between different positions in the current study. Women who choose Lateral or Semi-Recumbent positions had the highest percentage of having strong contractions that last between 60 to 90 seconds after 4 hours. Previous studies have supported the finding of this study that there is a significant correlation between different positions and the duration and intensity of uterine contraction (Afaf and Ahlam, 2018; Prabhakar et al., 2015). & While Prabhakar et al. (2015) have focused on ambulation position, Afaf & Ahlam (2018) focused on upright positions during labor. The results; however, highlighted opposite findings that ambulation and upright positions had improved the progress of uterine contraction with respect to the increase in number of uterine contraction/10 minutes, intensity, and increased duration compared to recumbent position.

Moreover, the mean pain score at baseline assessment among sitting position groups was significantly less than those lying on the recumbent or walking group. In the active phase, the mean score of pain becomes less in the walking group. Similarly, in the transition phase, the pain severity became less in walking and sitting groups. Previous studies confirmed that women who spent the early stage of labor in the upright position had less pain than in the supine position (Catling et al., 2016; Emam and Al-Zahrani, 2018; & Rajakumari et al., 2015).

Despite the fact there was no significant correlation between the colors of liquor and different positions during the first stage of labor, the liquor was almost clear during the active phase for all positions except in recumbent position, more than 10% had meconium liquor. Nevertheless, some other studies support this finding such as Gaffka (2016) who had compared between lateral position and lithotomy position, and the results were focused around having negative outcomes from lithotomy position in contrast to the lateral position in terms of maternal and fetal outcomes.

This study is important as it is novel within the Saudi Society where the maternity health care system is medicalized and the common labor positions used are lithotomies or recumbent, and changing positions is not recommended. Reducing pain intensity during delivery and having the best outcomes for the mother, her child, and her whole family must be the focus of maternity caregivers; taking into consideration her preferences, cultural background, and previous birth experiences. One of the interventions toward a better outcome is helping women and her family to make the right decision about the most comfortable position during labor as the decision of the position is not limited to the midwife or care providers only.

Future researches are recommended to evaluate changing labor positions during the second stage of labor and its effect on labor pain and outcome. The repetition of this study at the national level is recommended to illuminate the holistic view of the importance of moving and changing positions during labor.

Conclusion :

The study has concluded that change positions during the first stage of labor must be encouraged because of its remarkable effect on labor pain intensity and improved maternal and fetal outcomes. Duration, frequency and intensity of Uterine contraction was influenced by changing positions during first stage of labour in favour for lateral or recumbent position in compared to walking or sitting position. labour pain intensity result by VAS showed significant difference in the severity of pain in relation to childbirth positions in the first stage of labour. In Comparison between the three groups ,mean pain score during latent phase (3-4 cm) was less in sitting position compared to others two positions , while in active stage when cervical dilatation 5 to 7 centimetre; pain intensity in walking position is less than other groups (sitting position and recumbent position). These findings enhance our understanding the importance of Sitting position and walking position during first stage of labour in reducing labour pain intensity and shortening labour duration and increase normal vaginal delivery.

Recommendations :

The study findings inform maternity care providers especially midwives about the importance of informing women about the different labor positions that they can choose, and support them in making this decision based on her preferences, cultural background, and previous birth experiences. In addition, stakeholders must equip labor and delivery rooms with tools, beds, and chairs that assist

women and care providers to be in different positions. Moreover, midwives' scope of practice must be updated with international competencies and skills which empower them to practice independently, one of the midwives' competencies is encouraging women to be active during labor.

Implications of findings

The findings from this study lead to several implications for nursing management, practice, education, and research to close the gap between research findings and nursing practice. Midwives must be willing to provide comprehensive childbirth education that introduces women to a variety of pain management options; to advocate for women in the birthing environment to change practices and policies that inhibit the use of nonpharmacologic approaches; and to provide sensitive continuous care during labor that is a collaborative effort with the woman to assist her in coping with pain and also in mastering the experience of childbirth. The time the health providers and midwives spend on application of technology is more than the time they can spend on mothers' peace and comfort. So, physiologic childbirth and its benefits are forgotten.

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