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A Study of Antenatal Mothers' Levels of Comfort in the Semi-Fowler's Position and the Supine Position during Non-Stress Tests

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Abstract - One of the most crucial aspects of non-stress testing is the mother's health. Correct maternal posture reduces the potential for test-related mistakes and false positives and hence should be included into practice recommendations. The method was quantitative, taking the form of an experiment. One hundred women in the semi-position fowler's group and one hundred women in the supine group were randomly chosen from the pool of pregnant women who were in the convenience sample. A non-stress testing was performed to measure the foetal biophysiological parameters at baseline, and the mother's level of comfort was measured using a Verbal Numeric Rating Scale. The findings show that foetal parameters change somewhat between the two orientations. The degree of comfort in the semi-posture fowler's is significantly correlated with that in the supine position (p< 0.05).

Keyword - Labour, Women

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INTRODUCTION

A woman's first childbirth is a watershed event in her life. Therefore, the mother's well-being and the accomplishment of a healthy pregnancy and infant depend on the birthing process and the rituals surrounding it. Lamaze International (a nonprofit child birth education organization) has identified six care practices that have been adopted by the World Health Organization to promote, support, and preserve vaginal birth. Normal childbirth includes all of the following: the ability to move around freely during labour, constant labour support, the absence of routine interventions, pushing while standing or in a gravity-neutral posture, and no separation of the mother from the child at any point in the process, with the result being an unlimited potential for breastfeeding.

Women have historically given birth while standing, sitting, and in gravity-neutral positions, as shown in art from a variety of cultures (such as on their sides or hands and knees).

Women were urged to birth standing up and moving about during labour from ancient times until approximately the middle of the 18th century. In pre-Christian times, women often gave birth while squatting or crouching. Around 2500 BC, pregnant Egyptian women were segregated into wards where they gave birth on birth seats or crouched over hot stones.[1]

Today, most deliveries include the woman giving birth supine, semi-recumbent, or in a lithotomy position. Midwives and obstetricians claim that it is easier to monitor a pregnant woman while she is resting supine. Medical professionals and organizations have been accused for influencing women's delivery postures in ways that are insensitive to their comfort and the desire to see childbirth as a positive life event.

The World Health Organization (WHO) classifies the supine/lithotomy position as category B, which means it is obviously harmful, useless, and should be eliminated from the practice, whereas the non supine position is classed as category A, which means it is beneficial and should be encouraged.

In this context, the freedom to leave one's bed and go to work was seen as a step toward the emancipation of women and the humanization of labour. An argument in favour of standing up while labour was built on the basis of these premises. However, in the past two decades, evidence-based

explanations have been more relied upon by policymakers, health specialists, and the general public.

In the 1960s, clinical studies were undertaken on the benefits of an upright position for the labouring woman and her foetus. During the 1980s, researchers focused on the effects of the supine and upright postures on pregnancy outcomes for mothers and their infants. Research on women's perceptions of pain in different labour positions began in the 1990s, perhaps as a result of efforts to reduce unnecessary interventions and priorities women's needs above the comfort of medical staff. However, there is still debate about the optimal delivering position for moms, even after three decades of research. [2]

Indirect evidence suggests that a pleasant, supportive labour environment boosts the feeling of competence and personal success experienced by women during delivery, which in turn increases their confidence as moms and decreases their risk of postnatal depression.

The work of French accoucheur Mauriceau in the 17th century led to the widespread use of the dorsal position for giving birth. Once upon a time, it was common practice for women to give birth while seated or standing. The effects of changing position during the second stage of labour have come under more scrutiny recently. Non-recumbent labour has a number of physiological advantages, according to its proponents. These include a bigger pelvis, less risk of aorto-caval compression, stronger uterine contractions, and a better "aligned" baby as it passes through the pelvis.

Many expectant mothers would want more input during the early stages of labour and while deciding on the best position for giving birth. Although there is some debate over the optimal posture for low-risk moms to be in during labour, the evidence shows that moving about during the early stages of labour is beneficial. While the idea of squatting during labour may appeal to some, research has shown that Western women have difficulty adopting this position. Women may give birth in an upright position with the support of a variety of birthing chairs and other aids. There have been a lot of randomized controlled trials comparing birthing outcomes for mothers who are recumbent to those who are sitting in a birthing chair. [3]

As opposed to when you're laying down, you get a lot more out of life when you keep your body in an upright position. The University of Birmingham's Academic Department of Obstetrics and Gynecology conducted a study assessing the benefits and risks of using different postures during the second stage of labour. Relevant studies are identified by searching the Cochrane Controlled Trials Register and the Cochrane Pregnancy and Childbirth Group Trials Register.

LITERATURE REVIEW

In 1974, researchers in New York City looked into whether or not the posture of the mother during birth affected the baby's health and temperament. Thirty first-time moms between the ages of 20 and 25 participated in this research. According to the results of the probe:

- The intensity of uterine contraction was higher among women delivered in a 30-degree upright position than among women delivered in a flat recumbent position.
- There was greater regularity of frequency of uterine contractions among women in the 30 degree upright position.
- There was no significant difference in duration of uterine contractions between the two groups.
- The first and second stages of labor were shorter among women in an upright position.
- No significantly different APGAR scores for newborn infants in the first minute of life were observed between the experimental and control group.

In 1972, researchers in Indonesia conducted a comparative study to determine how much of an impact maternal position had on the length of the active phase of labour. One hundred first-time mothers were split into two groups, A and B. After amniotomy and engagement of the presenting component, patients in group B were permitted to sit up whereas patients in group A were put in the supine position and turned on their sides. The average period of active labour was 7.25 hours for patients who were lying supine, whereas it was only 5.47 hours for individuals who were not lying supine. There was a statistically significant difference in the amount of time spent actively working between the two groups, as determined by an Unpaired't' test ($t = 4.12$, $p .05$). [4]

In 1974, researchers in New York City studied the impact of supine and prone postures on labour progression and neonatal health. About 30 young, childless women, all between the ages of 20 and 25, participated in the research. During the first and second stages of labour, the individuals were randomly allocated to either a supine or a prone posture and monitored for a variety of factors. According to the study's results, mothers whose babies were delivered while sitting at a 30 degree angle had stronger uterine contractions (Mean score=56.62 mm of Hg) than those whose babies were born while lying flat in a recumbent posture (Mean score=42.51 mm of Hg). Uterine

contractions were more regular in frequency for women who were sitting up at a 30 degree angle. Women who laboured while standing had much shorter first and second phases (Mean difference=40.67). [5]

In 1982, the same researcher conducted a replication of the aforementioned study to further explain and validate the prior study's results. Sixty-eight first-time mothers between the ages of 18 and 25 were randomly divided into three groups: (a) one group used an upright position of 30 degrees with no bearing down instructions during the second stage of labour (n = 24); (b) another group used an upright position of 30 degrees with bearing down instructions given during the second stage of labour (n = 22); and (c) a control group used a zero-degree recumbent position with bearing down instructions during the second stage of labour. Because the foetal head could descend more easily in an upright posture, the first and second phases of labour were completed more quickly. The second stage of labour lasted less time when moms were allowed to stand and bear down at their own pace.

In 1989, researchers at Cleveland State University in the United States tested the hypothesis that women who stood up during the most intense part of labour would have a more manageable labour overall and a shorter peak intensity period. Forty women were divided into two groups, one working in an upright posture and the other lying down. During the steepest part of labour, the participants took up their allotted places (cervical dilatation from 4 cm to 9 cm). Each patient had a vaginal exam every hour throughout the maximum slope period to measure cervical dilation and evaluate her comfort using the Maternal Comfort Assessment Tool. In contrast to the recumbent group, women who gave birth while standing had a shorter period of maximum slope (t=7.09, p0.05) and similar levels of comfort. [6]

In 1985, Japanese researchers conducted an experiment to learn how sitting vs lying down during labour influenced the uterus' resting, contraction, and bearing down pressures. They studied 116 intrauterine pressure recordings to get their conclusions. Consistent rise (between 4 and 8 mm Hg) of resting pressure was seen in the seated position compared to the supine position, however there was no significant difference between the two postures in terms of contraction pressure. When compared to the supine posture, the bearing down pressure in the sitting position is much greater for both nulliparous (during the second stage) and multiparous (around the time of the 8-10 cm dilation). The second stage in nulliparous and the 5-10 cm dilation period in multiparous women were both considerably shortened by sitting. Based on these results, it seems that sitting may greatly reduce labour time since the increased bearing down pressure during this posture helps to augment the downward delivery effort.

Between 1997 and 2002, researchers in Vienna, Australia used a case-control study design to investigate the effects on the mother, the perineum, and the newborn of delivering while sitting up vs lying down. All all, 307 women gave birth while sitting or standing. Women in the sample had to be at least 37 weeks along in their pregnancies, have a healthy-sized foetus, and have a cephalic presentation in order to participate in the statistical analysis. A medical or obstetric risk factor disqualified a woman from participation. In the study, researchers found that women who gave birth while sitting up had significantly reduced rates of episiotomy and medical analgesic usage compared to those who gave birth while lying down (p0.0001). [7]

In order to determine whether or not sitting is preferable than lying down during the second stage of labour, a controlled experiment was conducted in Fortaleza, Brazil between 1994 and 1996. Primigravid mothers carrying a single, full-term, vertex-presented foetus was used as subjects. Participants verbally agreed to take part in the research and were then randomly allocated to give birth sitting or laying down, depending on their height. Those with a final height value of 2 or more were given the laying position, while those with a final height value of 0 or less were given the sitting posture. Apgar score, blood loss, vulvo vaginal and perineal lacerations, and the time it took for the placenta to be expelled were all measured. To evaluate statistical significance between means, we used Student's t-test. There was a statistically significant decrease in perineal damage while subjects were upright (44.1% vs 47%) compared to when they were horizontal (50%). [8]

The Obstetrics and Gynecology Division performed a research to compare the hazards and advantages of the squatting posture with the supine position during the second stage of labour. From January 1, 1999, through December 31, 1999, I worked at the Jinnah Postgraduate Medical Centre in Karachi. Two hundred women with comparable antenatal, intrapartum, and socioeconomic statuses were chosen. Patients were only included if they were beyond 37 weeks pregnant and were in active labour with cephalic presentation. Patients were not included in the research if they had been previously diagnosed with multiple pregnancies, malpresentation, a scar, maternal fever, or a foetal abnormality. After receiving permission, participants were randomly assigned to Group A or Group B. During the early stages of labour, both groups were able to walk about freely. Group-A changed to the squatting posture for the second phase, whereas Group-B remained in the supine lithotomy position. Both groups used the supine posture during the third stage of labour. The findings revealed that there was no difference in the use of episiotomies between the two groups; however, 7 percent of patients in the non-squatting group had episiotomy extension (P0.05). Five percent of the women in the squatting

group had para urethral rips, but only those who did not get an episiotomy. Nine percent of patients in the non-squatting group suffered from perineal tears of the second or third degree, whereas none of the squatting patients did (P0.05). Group A had 11% fewer cases of forceps use compared to Group B's 24% (P 0.05). The incidence of shoulder dystocia was two in group B but none in group A. There were no occurrences of retained placenta in group A, however there were 4 percent of retained placentas and 1 percent of postpartum haernorrhage of more than 500 ml owing to uterine atony in group-B. One patient in a posture other than squatting required a caesarean section because of a prolonged occipito posterior position. There was no discernible variation in apgar scores, foetal heart rate patterns, or the need for newborn resuscitation. The study's authors concluded that squatting during labour may reduce the number of caesarean sections, the length of episiotomies, and the occurrence of perineal tears (JPMA 57:19; 2007). [9]

Women who give birth while standing or sitting have shorter labours since the baby descends more quickly and the contractions are more effective. To determine the impact of the upright kneeling posture during the second stage of labour on mother and foetal outcome and evaluate patient satisfaction, a pilot research was carried out. The research was place between October 2012 and February 2014 at a tertiary care facility in Northern India. Women who were low risk and admitted in early labour were split into two groups: those who gave birth while kneeling and those who gave birth while lying flat on their backs. [10]

Second-stage labour length, birth method, second-degree perineal tears, 5-minute Apgar scores, NICU admission rate, and patient satisfaction were examined as possible outcomes. The average time spent in the second stage of labour was found to be 14.901 minutes shorter in the kneeling group. Vaginal birth rates for primigravida and multigravida women who gave birth while kneeling or lying supine were similar (RR: 2.275, 95% CI (0.7872-6.5831) and RR: 1.633, 95% CI (0.7872-6.5831), respectively) (0.393-6.775). Among primigravidae, there was a higher rate of perineal tears of the second degree in the kneeling group compared to the supine group (RR 4.191, 95% CI: 3.050–7.940). (1.54 to 11.41). In both the supine and kneeling groups, newborns with Apgar scores of 7 or higher at 5 minutes had the same rate of admission to the neonatal intensive care unit (RR 0.246 for both primigravida and multigravida). Summary with 95% Confidence Interval (0.079 to 0.761). Kneeling during labour has been shown to shorten the second stage of labour and prevent premature births, however there was no difference in patient satisfaction when comparing ns selected from two different samples. [11]

METHODOLOGY

The methodology of the investigation is quantitative and experimental. Participating medical institutions' antenatal care clinics served as the study's setting. The amount of calmness mothers report experiencing throughout a Non Stress Test is the main endpoint of this study. Each of the semi-fowlers and supine postures may be thought of as a separate independent variable. Researchers look at a variety of socioeconomic factors, including the ages and backgrounds of pregnant women, as well as their levels of education, work, family composition, and resources. Maternal baseline characteristics and clinical considerations include gestational age in weeks, the Obstetrical score (GPAL), and the existence of complications in the current pregnancy. One hundred pregnant women with no signs of uterine irritation or distress, at or beyond the 34th week of pregnancy, are included. Women who were pregnant but excluded from the study were those who had untreated preeclampsia, polyhydramnios, multiple pregnancies, or intrauterine growth retardation (IGR). We use a straightforward approach to sampling that is based on probability theory. The data was collected using structured questionnaires that asked about demographics, clinical data/baseline maternal characteristics, the results of a non-stress test, and comfort on a verbal number rating scale. During the duration of the 20-minute Non Stress Test, the following metrics are recorded: baseline foetal heart rate; beat-to-beat variability; number of accelerations; number of decelerations; and total number of foetal movements. The information is gathered via in-depth interviews and review of medical records.

DATA ANALYSIS

In light of the aims of the research, the data was summarized and clarified using descriptive statistics. Analyze the characteristics of pregnant women who adopt the semi-fowlers posture, including their demographics, health, and personality at the outset of their pregnancies (frequency and percentage). The level of comfort experienced by pregnant women when lying supine or in a semi-fowler posture is correlated with each other and analyzed using inferential statistics (chi square)..[12]

Table1: Population characteristics of pregnant women lying in the semi-fetal and supine positions (n=100)

S. No	Demographic Variables	SEMI FOWLERS POSITION		SUPINE POSITION	
		Frequency (M)	Percentage (%)	Frequency (f)	Percentage (%)
I	Age in years				
	21-25	18	18	25	25
	26.30	39	39	45	45
	31-35	34	34	17	17
	>35	9	9	13	13
2	Religion				
	Hindu	42	42	36	36
	Christian	46	46	54	54
	Muslim	12	12	10	10
3	Education				
	Higher Secondary	15	15	0	0
	Diploma	32	32	4	4
	Graduate	40	40	90	90
	Post Graduate	13	13	6	6
4.	Occupation				
	Housewife	28	28	48	48
	Teacher	13	13	22	22
	Staff Nurse	23	23	15	15
	Self employed	20	20	10	10
	Others	16	16	5	5
5	Family				
	Joint	38	38	24	24
	Nuclear	62	62	76	76

Table 2: presents the frequency and percentage distribution of semi-prone and supine prenatal moms' baseline features and clinical data

S. No	Baseline characteristics/Clinical data	SEMI FOWLERS POSITION		SUPINE POSITION	
		Frequency (F)	Percentage (%)	Frequency (F)	Percentage (%)
1	Gestational age in weeks				
	34+	10	10	06	06
	35+	22	22	15	15
	36+	18	18	19	19
	37+	16	16	30	30
	38+	14	14	20	20
	39+	20	20	10	10
2	Obstetrical more GPAL				
	G-Gravida				
	G1	52	52		
	G2	35	35		
	G3	10	10		
	G4	3	3		
	P-Parity				
	P0	52	52		
	P1	34	34		
	P2	8	8	4	4
	P3	3	3	2	2
	A-Abortion				
	A1	3	3	4	4
	L-Live				
	L0	52	52	60	60
	L1	34	34	34	34
	L2	8	8	4	4
	L3	3	3	2	2
4	Complications in the present pregnancy Ist Trimester				
	Threatened Abortion	2	2	3	3
	Hyperemesis	2	2	1	1
	II nd trimester				
	P1H	2	2	3	3
	GDM			4	4
	IIIrd trimester				
	P1H	4	4	5	5
	GDM	2	2	5	5
	1UGR	2	2		

Table 3: shows the rate and proportion of foetal parameters in the Semi fowler and Supine positions

S. No	Fetal Parameters	SEMI FOWLERS POSITION		SUPINE POSITION	
		Frequency (F)	Percentage (0/)	Frequency (F)	Percentage (%)
1	Baseline FHR				
	110.119	4	4	10	10
	120-129	10	10	56	56
	130-139	31	31	24	24
	140-149	34	34	6	6
	150-159	21	21	4	4
2	Beat to beat variability				
	<5	5	5	2	2
	5-15	80	80	65	65
	15-25	15	15	33	33
3	Number of Accelerations				
	1-2	6	6	13	13
	3-4	82	K2	73	73
	5-6	12	12	14	14
4	Number of Decelerations				
	Absent	2	2	4	4
	One	73	73	32	32
	More than one	25	25	64	64
5	Number of fetal movements				
	Absent	0	0	0	0
	<2movements	9	9	39	39
	2-4movements	91	91	61	61

Table 4 reflects the correlation between the semifowlers position and the supine position

and the amount of comfort experienced by pregnant women (n=200)

Sl No	Comfort level	Semi Fowlers Position	Supine Position	Chi Square X^2
		Frequency (0	Frequency (1)	
	0- Lack of comfort and need for help	0	0	
	2-discomfort		3	
	4- mild discomfort	9	IS	32.15
	6- good feeling	15	45	
	8- very comfortable	30	20	
	10- full comfort	45	17	

Table 4 shows that the Chi-square value of 32.15 for the connection between Semifowlers position and Supine position comfort among Antenatal moms is statistically significant at the p>0.05 level. [13]

CONCLUSION

According to the data shown above, the semi-fowlers position is the most at ease and most suited to achieving a Non Stress Test. All the mothers have agreed that the semifowler position is the most relaxing one. It is recommended that the patient adopt either the semi-fowler or left lateral position during a non-stress exam. To further reduce the risk of discomfort leading to unfavourable physiological changes, pregnant women's preferences should be determined in advance of the test.

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