

Relation of Semi-Fowler's Position and Supine Position on Comfort Level of Antenatal Mothers during Non Stress Test

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ABSTRACT

Background of the study: NST is a simple, non invasive test performed in pregnancy over 28 weeks of gestation. A variety of positions can be used during non stress test, such as semi fowler's, lateral tilts, lateral recumbence, supine and semi fowlers with tilts. Pregnant women are generally positioned in the supine position because this position allows easy administration of the test. But supine position cause aortacaval compression which decrease blood supply to the fetus. Also it seems the comfort level of woman is also altered when she is placed in different position. So position is one of the main factors which should be considered during Non Stress Test.

Methodology: A quantitative approach with experimental design was used. A total of 200 antenatal women (100 in semi fowler's position group, 100 in supine position group) was selected by convenient sampling technique. Data collection method- Antenatal mother is given position and Baseline fetal biophysiological parameters were assessed by performing NST and the comfort is assessed by Verbal Numerical Rating Scale.

Results: Result reveals that there is a variable difference between the fetal parameters in both positions. Also there is a significant association between the comfort level with semi fowlers position and supine position at $p < 0.05$ level.

Conclusion: The study concluded that the comfort level of Antenatal mothers during Non Stress Test in each position significantly varies so as the fetal parameters. The study explores Semi fowler's position as the higher opting position during Non Stress Test.

Keywords: Relation, semi fowler's position, supine position, comfort, Antenatal mothers, Non Stress Test.

INTRODUCTION

Antenatal care is a crucial element of the antepartum period to ensure normal pregnancy with delivery of healthy baby. Earlier the aim of prenatal care has only been focused on prevention and treatment of the maternal diseases but, the fetal counterpart of this approach is now accepted as equally important. [1] Non-stress test (NST) is part of a routine monitoring of pregnant women before delivery and it is often used early in pregnancy. Fetal heart rate monitoring is an integral part of fetal

surveillance. Auscultation of fetal heart rates has been a basic component of fetal surveillance, done during each prenatal visit. [2] It helps in early detection of fetal hypoxia, and thus, reduces the fetal mortality and results in healthier fetomaternal outcomes. Non-stress test is an overriding alternative for fetal health and survival evaluation. It is basically an electronic monitoring of fetal heart rate response to the fetal movements. [3] NST with fetal heart rate acceleration during each fetal movement is an indicative of healthy

fetus. [4] Birth asphyxia being one of the major causes for increased neonatal mortality rate could be possibly decreased by monitoring NST in the antepartum and intrapartum periods with the lowest possible rate of unnecessary obstetrical intervention. [5] The non stress tests are reviewed for baseline heart rate, beat to beat variability, duration and extent of fetal heart rate acceleration or deceleration with uterine contractions and finally the correlation of fetal heart rate (FHR) accelerations with fetal movements. [6]

A variety of positions can be used during non stress test, such as semi fowler's, lateral tilts, lateral recumbence, supine and semi fowler's with tilts. Semi fowler's position is considered as a comfortable position for the mother during her pregnancy. This position helps in improving the lung expansion. [1] As pregnancy advances, the gravid uterus exerts pressure on the diaphragm, causes breathing difficulty and shortness of breath. On obtaining a semi fowlers position, the diaphragm becomes erect due to the gravity pull and the lung expansion is promoted. [4] The improved oxygenation and gaseous exchange in the mother increases the uterine and placental perfusion, preventing the fetal compromise. Hence semi fowler's position could be used as an alternative to relieve the pressure on the diaphragm. [7]

Alus M, Okumus H, Mete S, Guclu S has done a study to determine the effects of different maternal positions on non-stress test results and the preferences of mothers for involving positions. Using experiment design, 408 women were randomly assigned four positions: supine, left lateral, semi-fowler and sitting up. The data were collected through demographic and Pregnancy History Form and NST tracing. Main outcome measures were percentage of reactive NST and number of minutes for reactivity in each position. There were significant ($P < 0.05$) differences among four groups. Supine position showed the least fetal reactivity. In terms of time to reactivity, there were no statistically

significant differences. Qualitative data showed that pregnant women were least comfortable in supine position reporting back pain and shortening of breath. The study concluded that Supine position yields the lowest non-reactivity in tandem with physical discomfort such as back pain and difficulty in breathing. [8]

Many a times, a deficient knowledge regarding the effects of a particular position during pregnancy can lead to serious complications in a prenatal woman. Nurses play a major role in educating the antenatal mother regarding the indications and benefits of semi fowler's position thereby preventing the fetal distress.

Objectives

- To record the fetal parameters during Non Stress Test in Semi fowlers position and supine position.
- To find the relation of semi fowlers position and supine position with comfort level of antenatal mothers during Non Stress Test.

Hypothesis

H1: There will be significant association between comfort level with semi fowler's position and supine position.

MATERIALS AND METHODS

Quantitative approach with experimental design is adopted for the study. The study was conducted at Antenatal Clinics of selected hospitals. The dependent variables of the study are comfort level of mothers during Non Stress Test. The independent variable is Semi fowlers Position and Supine position. The demographic variables assessed are age, religion, education, occupation, type of family and family income of Antenatal mothers. The clinical variables / baseline maternal characteristics are Gestational age in weeks, Obstetrical score-GPAL and complications in the present pregnancy. A total of 100 Antenatal mothers beyond 34 weeks with relaxed non irritate uterus are included in the study. The Antenatal

mothers with uncontrolled Pregnancy Induced Hypertension, Polyhydramnios, Multiple pregnancy and Intrauterine Growth Retardation were excluded from the study. Probability sampling with convenient sampling technique is used. The tool for data collection comprised of structured questionnaires which consisted of Demographic Variables, Clinical data / Baseline maternal characteristics and Non Stress Test Tracing and Verbal Numerical Rating scale for comfort. The fetal parameters assessed in Non Stress Test tracing includes Baseline fetal heart rate, Beat to beat variability, Number of accelerations, Number of decelerations, and Number of fetal movements in a 20 minute Non Stress Test. Techniques during data collection are interview technique, recording from clients medical records,

observation and record of bio physiological measures. The reliability of the items in fetal parameters of Non Stress Test is $r = 0.8$ and for comfort scale the reliability is 0.85.

DATA ANALYSIS

The collected information was condensed and explicated based on the research objectives using descriptive statistics.

- To document the demographic variables, clinical variables / baseline maternal characteristics of Antenatal Mothers in semi fowlers position, descriptive analysis (frequency and percentage) are used.
- To find the relation of semi fowlers and supine position with comfort level of antenatal mothers inferential statistics (chi square) is used.

RESULTS

Section I A: Distribution of Antenatal mothers according to their demographic variables in Semi fowlers and Supine position (n=100)

S.No	Demographic Variables	SEMI FOWLERS POSITION		SUPINE POSITION	
		Frequency(f)	Percentage (%)	Frequency(f)	Percentage (%)
1	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
	PostGraduate	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 shows the frequency and percentage distribution of baseline characteristics/ clinical data of antenatal mothers in Semi fowlers and Supine position

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

Table 2 to be continued...					
2	Obstetrical score GPAL				
	G-Gravida				
	G ₁	52	52	58	58
	G ₂	35	35	34	34
	G ₃	10	10	5	5
	G ₄	3	3	3	3
	P-Parity				
	P ₀	52	52	60	60
	P ₁	34	34	34	34
	P ₂	8	8	4	4
	P ₃	3	3	2	2
	A-Abortion				
	A ₁	3	3	4	4
L-Live					
L ₀	52	52	60	60	
L ₁	34	34	34	34	
L ₂	8	8	4	4	
L ₃	3	3	2	2	
4	Complications in the present pregnancy				
	I st trimester				
	Threatened Abortion				
	Hyperemesis	2	2	3	3
		2	2	1	1
	II nd trimester				
	PIH				
	GDM	2	2	3	3
				4	4
	III rd trimester				
PIH	4	4	5	5	
GDM	2	2	5	5	
IUGR	2	2			

Objective I: To identify the selected fetal parameters during Non Stress Test in Semi fowlers and Supine position

Table 3 depicts the frequency and percentage of fetal parameters on Semi fowlers and Supine position

S.No	Fetal Parameters	SEMI FOWLERS POSITION		SUPINE POSITION	
		Frequency (F)	Percentage (%)	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	82	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	

Objective 2: To find the relation of semi fowlers position and supine position with comfort level of antenatal mothers during Non Stress Test.

Hypothesis H₁: There will be significant association between comfort level with semi fowlers position and supine position.

Table 4 represents the association of comfort level of antenatal mothers with semifowlers position and supine position (n=200)

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

*significant at p>0.05

Table 4 interprets that the Chi square value for the association between comfort level of Antenatal mothers with Semifowlers position and Supine position is 32.15, significant at p>0.05 level. Hence research hypothesis H₁ is accepted.

DISCUSSION

Non Stress Test is done to ensure the well-being of a developing fetus during prenatal period. The study was focused on assessing the relation of comfort level of mothers during Non Stress Test in Semifowlers position and Supine position. The result reveals that 34% of prenatal women shows a baseline FHR of 140-149 beats per minute in semifowlers position whereas 56% shows a baseline FHR of 120-129 beats per minute in supine position. In Semifowlers position the beat to beat variability was 80% and in Supine position it was 65%. There was 3 to 4 acceleration in 82% of subjects in Semifowlers position and 73% in Supine position. Only one deceleration was noticed in 73% of Antenatal mothers in Semifowlers position and in Supine position 64% shows more than one deceleration. Majority (91%) perceived 2 to 4 fetal movements during NST in Semifowlers position and 61% in Supine position. The Chi square value for association between the comfort level with Semifowlers position and Supine position was X²=32.15, proves that there was a significant association between the position and level of comfort of Antenatal Mothers. Hence, the study recommends to adopt Semifowlers position during Non Stress Test for a better reactivity. Nathan EB, Haberman S, Burgess T, Minkoff H. did a

study to determine whether maternal posture (left lateral recumbent vs semi-Fowler position) had any effect on nonstress test results when the test was performed for a shortened period (10 minutes). In this randomized clinical trial of 108 patients with singleton pregnancies at 32 to 42 weeks' gestation, patients were randomly assigned to a "sitting first" (semi-Fowler position) or a "supine first" (left lateral recumbent position) group at the initial visit. The order of position was alternated at subsequent visits. Ten minutes of fetal heart rate monitoring was performed in each position at each visit. The results reveal that there were no adverse clinical outcomes among the participants. Logistic regression analysis showed that both the sequence of the nonstress test and the position were significant and independent factors related to nonstress test reactivity. Tests performed during the second 10 minutes and tests performed with the patient in the semi-Fowler position were more likely to have reactive results. The concluded the semi-Fowler position is a superior position for conducting a nonstress test in a short period. Use of this position could decrease the need for prolonged monitoring, thus leading to a more time-effective evaluation of patients at risk. [9]

CONCLUSION

Comparing with the above study it is proved that semi fowlers position is the most comfortable position for obtaining Non Stress Test. Also the mothers verbalised semifowlers position as the comfortable position.

Relevance to Clinical Practice:

Semi-fowler and left lateral positions are recommended to be used during the non-stress test. In addition, the preferences of the pregnant women should be determined before the test to minimize discomfort, which may lead to physiological alterations experienced during the test.

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