# Maternal and Foetal Health Status during Non-Stress Test among Antenatal Mothers: Descriptive Cross-sectional Study

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## Abstract

The Non-Stress Test (NST) is considered an effective method for evaluating fetal well-being during the prenatal period by using an electric monitor that continuously records the fetal heart Rate (FHR). The main aim of the study is to determine assess the different maternal positions on Maternal and Foetal Health Status during Non-Stress Test among Antenatal Mothers. A descriptive cross-sectional research design with a total of 60 antenatal mothers who fulfil and meet the inclusion criteria were selected as samples by using a convenient sampling technique. The socio-demographic and obstetrical data information was collected by a self-administered questionnaire using a structured questionnaire. The level of discomfort was assessed with the Maternal Comfort Rating Scale. The demographic and obstetric data were analyzed by frequency and percentage. Mean and standard deviation were used to assess the maternal and foetal parameters. The probability of $p<0.05$ or less was taken as statistical. Out of 60 samples, 34 (56.7%) of mothers aged between 21 - 30 years, 28(46.7%), had a gestational age between 36 - 37 weeks, 21(35.0%) had abdominal girth between 90 - 99 cm, 49(81.7%). The mean score of the foetal movements in left lateral and supine positions were 4.14 - 4.23. Comparatively, in semi sitting position the mean score was 2.78. Compared with the other two positions in the left lateral position the mean acceleration score was 2.78. This study concluded that Semi-fowler's position demonstrated favourable maternal blood pressure during the non-stress test in the third trimester of pregnancy.

**Keywords:** Antenatal Mothers, Foetal, Health status, Maternal, Non-Stress Test.

## Introduction

The maternal bond between a woman and her biological child usually begins to develop during pregnancy. At around 18 to 25 weeks, the mother begins to feel the foetus moving. Similar to seeing her child for the first time in an ultrasound scan, this experience typically leads the mother to feel more attached to the child. Although pregnancy is considered a normal biological event, 6-33% of pregnant women experience pregnancy complications. Some of these complications are related to the mother, fetus, or both [1]. Pregnant women need to receive appropriate Antenatal Care

(ANC) to promote maternal and foetal health [2]. ANC aims to detect and prevent potential problems that affect pregnancy. Based on the World Health Organization (WHO), ANC is "the care provided by health care professionals for pregnant women to ensure the better health status for the mothers and their fetus" [3]. ANC has a significant impact on maternal and foetal health by providing preventive and curative services. Moreover, it has positive implications for foetal health, including reducing perinatal mortality rates and low birth weight through antenatal foetal surveillance [4]. The Non-Stress Test (NST) is considered one of the most effective methods for evaluating fetal well-being during the prenatal period by using an electric fetal monitor that continuously records the fetal heart Rate (FHR). It is a non-invasive, simple, and emergency diagnostic procedure that is easily interpreted [5]. NST is an assessment tool that can be done in the third trimester of pregnancy and takes about 20 to 45 minutes. It can be done in the outpatient clinic without any adverse effects on the mother and foetus. The non-stress test can identify danger to the in-utero foetus, which ensures well-timed intervention to attain the best possible outcome [6]. A high-risk pregnancy can unfavourably affect the mother and/or newborn in the neonatal period. It is estimated that one-fourth of the pregnancies fit this group. The non-stress test is based on the fact that prolonged absence of fetal heart acceleration is noted in the presence of foetal hypoxemia. [7]. The Non-Stress Test reassessment of the "Gold Standard". The Non-Stress Test has been a desirable cornerstone in antenatal testing [8, 9]. Contemporary data suggest that foetal well-being is best surveyed by using the Non-Stress Test. This test is a screening tool that is much better at identifying healthy fetuses and sick ones. [10]. Non-stress Test is a routine procedures in all hospitals. It is done for all pregnant women both in normal and complicated cases. The commonly used

position for the procedure is supine [11]. When women in late pregnancy lie flat on their backs, the gravid uterus completely occludes the inferior vena cava and laterally displaces the substernal aorta. This aortocaval compression reduces maternal cardiac output, and some of the pregnant women will exhibit 'supine hypotension syndrome' [12, 13]. Pregnant women who lie in a supine position may develop syncopal symptoms on the Non-Stress Test and get non-reactive NSTs with a supine maternal position [14]. The mother complained of back pain also. Many studies had been done in positions and the findings were conclusive [15, 16]. This made the investigator consider without restricting a particular position to the mothers; the investigator introduced different positions to the mother during the non-stress test, to assess the level of discomfort in different positions. Recognizing a gap in assessing parameters for predicting different positions, the current study aims to determine the Maternal and Foetal Health Status during Non-Stress Tests among Antenatal Mothers. The objectives of the study, 1. To assess the different maternal positions with maternal and foetal parameters during non-stress tests among antenatal mothers, 2. To associate the maternal and foetal parameters during non-stress tests among antenatal mothers with the selected demographic variables.

**Hypothesis**

1. There is a significant difference in maternal health (Mean pulse, respiration, and blood pressure) status during non-stress tests among antenatal mothers after implementation of different maternal positions (supine, left lateral, semi-sitting).
2. There is a significant difference in foetal health status (Mean foetal heart rate, movement, and acceleration of the foetus during non-stress tests among antenatal mothers after the implementation of different maternal positions.

### Ethics Committee Approval

The study protocol was approved by The Institutional Scientific Review Board under the Saveetha College of Nursing (782/2022/ISRB/SCON dated 05th December 2022). The study was conducted by the principles of the Declaration of Helsinki.

## Material and Methods

A descriptive cross-sectional research design was adopted to assess the maternal and foetal health status in different maternal positions during the Non-Stress test among antenatal Mothers. This study was conducted for one month of May 2023 in the Saveetha Medical College and Hospital. The study was conducted after receiving ethical approval from the Institutional Ethical Committee of Health Sciences under the Saveetha Institute of Medical and Technical Sciences and formal permission from the hospital authority. A total of 60 antenatal mothers who fulfil and meet the inclusion criteria like both primi and multigravida mothers, mothers between 20-35 years of age, and mothers admitted for delivery & caesarean section were selected as samples by using a convenient sampling technique. The mothers in labour, in an emergency, and Antenatal mothers who are mentally ill were excluded from this study. The study participants explained the purpose of the study in their regional language and clarified their doubts. Written informed consent was obtained from the participants after assuring confidentiality. Socio-demographic and obstetrical data information was collected by a self-administered questionnaire using a structured questionnaire.[18] After recruitment, the mothers, pulse and respiration were checked by manual method and blood pressure by sphygmomanometer. The maternal and foetal parameter chart was prepared to assess the physiological parameters. The maternal parameters were recorded during a 20 min NST, and 20 min in each position. Foetal heart rate, foetal movements, and acceleration by strip obtained from the cardiotocograph. In the first observation non-stress test was done in the supine, the second left lateral and third semi-sitting position respectively. Before the non-stress test pulse, respiration, and blood pressure were checked. The foetal heart rate was assessed using a pinard stethoscope and marked; a transducer was stripped on the marked area, for assessing the foetal heart rate throughout the non-stress test. A device was given to the mother to press when she felt the fetal movement. After 10 minutes of the procedure. The level of discomfort was assessed with The maternal comfort rating scale (MCRS), an 11-point rating scale ranging from 0 to 10, which was developed by the researchers to evaluate the women's comfort in different positions. A score of 0 indicated no discomfort, whereas a score of 10 indicated severe discomfort. The comfort levels were categorized based on scores as follows: 0 = comfortable, 1–3 = mild discomfort, 4–7 = moderate discomfort, and 8–10 indicated severe discomfort. [18] The content validity of the tools was checked, Positions during a non-stress test and the maternal-fetal physiological parameters and 92% agreement, suggesting excellent content validity of the tool with a content validity index of 0.92. Hence this tool is more valid and reliable for measuring discomfort. Subsequently, during the afternoon and evening, the same procedure was carried out in the same manner in the left lateral position and semi-sitting position. Confidentiality and anonymity were strictly maintained throughout the study, adhering to ethical principles.

## Statistical Analysis

The data were analyzed by descriptive and inferential statistical methods using IBM SPSS version 22.0 software (IBM Corp., Armonk, NY, USA) statistical package. The

demographic and obstetric data were analysed by frequency and percentage. Mean and standard deviation were used to assess the maternal and foetal parameters. One way the RM ANOVA test was used for comparing the means of both the position groups and the Chi-square was to assess the association. The probability of $p<0.05$ was taken as statistically significant.

## Results

The demographic and obstetric Variables were expressed as frequency and percentage. Out of 60 samples,34(56.7%) of mothers aged between 21 – 30 years, 28(46.7%) had a gestational age between 36 – 37 weeks, 21 (35.0%) had abdominal girth between 90 – 99 cm, 49 (81.7%) were primi gravida mothers, 36 (60.0%) had 0 31 parity, 46 (76.7%) had done non-consanguineous marriage, 36 (60.0%) has body mass index below 20 [18] and 35(58.3%) mothers were housewife.

**Table 1.** Frequency and Percentage Distribution of Maternal Parameters of Antenatal Mothers in Different Positions Before Non-Stress Test

| Sl no | Maternal parameters | Supine position | | Left lateral position | | Semi sitting position | |
|---|---|---|---|---|---|---|---|
| | | f | % | f | % | f | % |
| 1. | PULSE | | | | | | |
| | a)<60 b/m | 2 | 3.33 | 3 | 5.0 | 2 | 3.33 |
| | b) 60 – 100 b/m | 16 | 26.7 | 14 | 23.3 | 14 | 23.3 |
| | c) > 100 b/m | 2 | 3.33 | 4 | 6.7 | 3 | 5.0 |
| 2. | RESPIRATION | | | | | | |
| | a)< 15 b/m | 1 | 1.67 | 1 | 1.67 | 1 | 1.67 |
| | b)16 – 25 b/m | 13 | 21.7 | 17 | 28.3 | 18 | 30.0 |
| | c)> 26b/m | 6 | 10.0 | 2 | 3.33 | 1 | 1.67 |
| 3. | SYSTOLIC | | | | | | |
| | a) <100mmHg | 1 | 1.67 | 1 | 1.67 | 1 | 1.67 |
| | b) 110-120mmHg | 16 | 26.7 | 18 | 30.0 | 17 | 28.3 |
| | c) >120mmHg | 3 | 5.0 | 1 | 1.67 | 2 | 3.3 |
| 4. | DIASTOLIC | | | | | | |
| | a) <60 mmHg | 1 | 1.67 | 1 | 1.67 | 2 | 3.3 |
| | b) 60-80 mmHg | 17 | 28.3 | 18 | 30.0 | 17 | 28.3 |
| | c) >80 mmHg | 2 | 3.3 | 1 | 1.67 | 1 | 1.67 |

The findings of the analysis revealed in Table 1 show that 16(26.7%) of mothers in supine positions have normal pulse rates, 18 (30.0%) of mothers in semi-sitting positions have normal respiratory rates (16 -25b/m), 18 (30.0%) mothers have normal systolic bp in lateral position and 18 (30.0%) mothers have normal diastolic BP (60 – 80 mmHg) before non-stress test (Table 1).

**Table 2.** Frequency and Percentage Distribution of Maternal Parameters of Samples in Different Positions During Non-Stress Test

| Sl no | Maternal parameters | Supine position | | Left lateral position | | Semi sitting position | |
|---|---|---|---|---|---|---|---|
| | | F | % | f | % | f | % |
| 1. | PULSE | | | | | | |
| | a)<60 b/m | 3 | 5.0 | 1 | 1.67 | 3 | 5.0 |
| | b) 60 – 100 b/m | 15 | 25.0 | 17 | 28.3 | 14 | 23.3 |
| | c) > 100 b/m | 2 | 3.33 | 2 | 3.33 | 2 | 3.33 |
| 2. | RESPIRATION | | | | | | |
| | a) < 15 b/m | 3 | 5.0 | 1 | 1.67 | 3 | 5.0 |
| | b) 16 – 25 b/m | 13 | 21.7 | 18 | 30.0 | 16 | 26.7 |
| | c) > 26b/m | 4 | 6.7 | 1 | 1.67 | 1 | 1.67 |
| 3. | SYSTOLIC PRESSURE | | | | | | |
| | a) <100mmHg | 1 | 1.67 | 1 | 1.67 | 2 | 3.33 |
| | b) 110-120mmHg | 17 | 28.3 | 18 | 30.0 | 17 | 28.3 |
| | c) >120mmHg | 2 | 3.33 | 1 | 1.67 | 1 | 1.67 |
| 4. | DIASTOLIC PRESSURE | | | | | | |
| | a) <60 mmHg | 2 | 3.33 | 1 | 1.67 | 2 | 3.33 |
| | b) 60-80 mmHg | 15 | 25.0 | 18 | 30.0 | 16 | 26.7 |
| | c) >80 mmHg | 3 | 5.0 | 1 | 1.67 | 2 | 3.33 |

## Assessment of Maternal Parameters Before and During Non-Stress Tests in Different Positions

Table 2 shows that 16(26.7%) of mothers in supine position have normal pulse rates, 18(30.0%) of mothers in semi-sitting position have normal respiratory rates (16 -25b/m), 18(30.0%) mothers have normal systolic BP in lateral position and 18(30.0%) mothers have normal diastolic BP (60 – 80 mmHg). In all three positions (supine, left lateral, semi-sitting) the mean parameters of pulse and respiration of the mothers were normal without much variation, but the systolic and diastolic pressure showed slight variations. Before testing systolic had 3-5mmHg variation and diastolic 3-6mmHg, during test systolic pressure, had 3-9mmHg and diastolic pressure had 2-10mmHg. Statistically, it shows there is no significant difference in the maternal parameters of the mothers in three positions before and during the non-stress test.

**Table 3.** Mean and standard Deviation of Maternal Parameters in Different Positions Before and During Non-Stress Test With Level of Significance

| Sl. No | Parameters | Supine Position | | Left Lateral Position | | Semi Sitting Position | | F value, $P \leq 0.05$ |
|---|---|---|---|---|---|---|---|---|
| | | Mean | SD | Mean | SD | mean | SD | |

|  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|
| *Before Non - stress test* | | | | | | | | |
| *1.* | **Pulse** | 78.6 | 11.67 | 71.67 | 11.77 | 80.66 | 7.85 | 1.43 NS |
|  | **Respiration** | 23.11 | 3.47 | 22.7 | 3.16 | 22.3 | 2.77 | 1.70 NS |
|  | **Systolic pressure** | 118.9 | 10.48 | 114.35 | 9.99 | 115.8 | 11.96 | 2.14 NS |
|  | **Diastolic pressure** | 79.6 | 6.65 | 70.89 | 11.78 | 75.3 | 11.86 | 2.15 NS |
| *During Non-stress test* | | | | | | | | |
| *2.* | **Pulse** | 76.67 | 6.33 | 78.52 | 6.56 | 81.3 | 7.82 | 2.74 NS |
|  | **Respiration** | 23.32 | 4.17 | 23.5 | 3.75 | 21.4 | 4.15 | 1.57 NS |
|  | **Systolic pressure** | 117.89 | 13.3 | 106.4 | 12.6 | 115.2 | 9.45 | 5.11 NS |
|  | **Diastolic pressure** | 79.54 | 12.7 | 68.3 | 12.01 | 75.34 | 9.23 | 5.62 NS |

*NS= Not significant, **Significant at $p<0.05$ level

In all three positions (supine, left lateral, semi-sitting) the mean parameters of pulse and respirationof the mothers were normal without much variation, but the systolic and diastolic pressure showed slight variations. Before the test systolic had 3-5mmHg variation and diastolic 3-6mmHg, during the test systolic pressure had 3-9mmHg and diastolic pressure had 2-10mmHg. Statistically, it shows there is no significant difference in the maternal parameters of the mothers in three positions before andduring the non-stress test the table concludes that the mean parameters (pulse, respiration, systolic & diastolic pressure)before and during the test had no significant difference.) (Table 3).

**Table 4.** Frequency and Percentage Distribution of Samples in Different Positions Based on Fetal Parameters During Non-StressTest

| Sl. no | Fetal parameters | Supine | | Left lateral | | Semi sitting | |
|---|---|---|---|---|---|---|---|
|  |  | f | % | f | % | f | % |
| 1. | **FHR in B/M** | | | | | | |
|  | a) <120 | - | - | - | - | - | - |
|  | b) 120-160 | 19 | 95.0 | 20 | 100 | 18 | 90.0 |
|  | c) >160 | 1 | 5.0 | - | - | 2 | 10.0 |
| 2. | **Movements** | | | | | | |
|  | a) <2 | 4 | 20.0 | 2 | 10.0 | 4 | 20.0 |
|  | b) 2 | 1 | 5.0 | 1 | 5.0 | 10 | 50.0 |
|  | c) >2 | 15 | 75.0 | 17 | 85.0 | 6 | 30.0 |
| 3. | **Acceleration** | | | | | | |
|  | a) <2 | - | - | - | - | 1 | 5.0 |
|  | b) 2 | 14 | 70.0 | 11 | 55.0 | 16 | 80.0 |
|  | c) >2 | 6 | 30.0 | 9 | 45.0 | 3 | 15.0 |

**The Assessment of Foetal Parameters Before And During Non-Stress Tests in Different Positions**

In the left lateral position, the fetal heart rate is normal whereas in the supine position, 19 (95%) had normalFHR and in the semi-sitting position 18(90%) had normal fetal heart rate. Fetal movement '2' is essential during the test.

In the semi-sitting position, 10 (50%) had 2, in the supineposition 15(75%) had >2 movements and in the left lateral position, 17(85%) had >2 movements. Acceleration 2 is considered normal during the non-stress test, in the semi-sitting position 16 mothers(80%) had normal acceleration. In supine 14(70%) mothers and in left lateral position 11 (55%) mothers had normal accelerations. (Table 4).

**Table 5.** Mean Score and Standard Deviation of Samples Based on Foetal Parameters in Different Positions During Non-Stress Test

| Sl. No | Parameters | Supine Position | | Left Lateral Position | | Semi Sitting Position | | F Value $P \leq 0.05$ |
|---|---|---|---|---|---|---|---|---|
| | | Mean | SD | Mean | SD | mean | SD | |
| 1. | Foetal Heart Rate | 144.3 | 7.83 | 143.3 | 6.86 | 139.9 | 5.89 | 0.36 NS |
| 2. | Foetal Movements | 4.14 | 4.24 | 4.23 | 2.59 | 2.78 | 1.76 | 3.13 NS |
| 3. | Acceleration | 1.87 | 1.11 | 2.78 | 1.47 | 1.77 | 1.004 | 7.78 NS |

**\*NS= Not significant, \*\*Significant at p<0.05 level One way RM ANOVA)**

Table 5 represents the mean score and standard deviation of samples based on fetal parameters indifferent positions during non-stress tests with the level of significance. In all three positions, the mean fetal heart rate ranged from 139 - 144. The mean score of the fetal movements in left lateral and supine positions was 4.14 - 4.23. Comparatively, in the semi-sitting position, the mean score was 2.78. Compared with the other two positions in the left lateral position the mean acceleration score was 2.78. In the other two positions, supineand left lateral the mean score acceleration was 1.87 and 1.77 respectively. The above finding infers that there is no statistically significance correlation between maternal position and maternal and fetal parameters.

**Association of Selected Demographic Variables in Different Maternal Positions**

The present study reveals that there no was association found between demographic variables and maternal and fetal parameters hence it is statistically not significant (Table 6).

**Table 6.** Association of Selected Demographic Variables in Different Maternal Positions among Antenatal Mothers

| Demographic variables | Frequency n | Percentage % | Chi-Square |
|---|---|---|---|
| **Age in years** | | | $X^2 = 0.6964$ P=0.7059 NS |
| a) Below 20 | 12 | 20.0 | |
| b)21 – 30 | 34 | 56.7 | |
| c)Above 30 | 14 | 23.3 | |
| **Gestational age in weeks** | | | $X^2 = 0.2316$ |

| | | | |
|---|---|---|---|
| a)36 – 37 | 28 | 46.7 | P= 0.89056 NS |
| b)38 – 39 | 17 | 28.3 | |
| c)40 – 41 | 15 | 25.0 | |
| **Abdominal girth in cm** | | | $X^2 = 0.2731$ P= 0.96501 NS |
| a)90 -99 | 21 | 35.0 | |
| b)100 -109 | 11 | 18.3 | |
| c)110 – 119 | 18 | 30.0 | |
| d)Above 120 | 10 | 16.7 | |
| **Gravida** | | | $X^2 = 0.0795$ P= 0.777959 NS |
| a) Pirmi Gravida | 49 | 81.7 | |
| b) Multi Gravida | 11 | 18.3 | |
| **Parity** | | | $X^2 =1.0526$ P=0.59077 NS |
| a) 0 | 36 | 60.0 | |
| b) 1 | 19 | 31.7 | |
| c) 2 | 5 | 8.3 | |
| d) Above 2 | 0 | 0.0 | |
| **Type of marriage** | | | $X^2 =0.1845$ P=0.6675 NS |
| a)Consanguineous marriage | 14 | 23.3 | |
| b) Non consanguineous marriage | 46 | 76.7 | |
| **Occupation** | | | $X^2 =1.2546$ P=0.739931 NS |
| a) Housewife | 35 | 58.3 | |
| b) Sedentary worker | 7 | 11.7 | |
| c) Moderate worker | 14 | 23.3 | |
| d) Heavy worker | 4 | 6.7 | |

NS= non-significant, Significant at p<0.05 level (Chi-square test)

## Discussion

The current study analyzed that in all three positions (supine, left lateral, semi-sitting) the mean parameters pulse and respiration of the mothers were normal without much variation, but the systolic and diastolic pressure showed slight variations. Before the test systolic had 3-5mmHg variation and diastolic 3-6mmHg, during the test systolic pressure had 3-9mmHg and diastolic pressure had 2-10mmHg. Statistically, it shows there is no significant difference in the maternal parameters of the mothers in three positions before and during the non-stress test. The study concludes that the mean parameters (pulse, respiration, systolic & diastolic pressure) before and during the test had no significant difference. A similar study was conducted by Patel R (2022) [17]. Semi-fowler's position demonstrated favourable maternal blood pressure and heart rate during the NST in the third trimester of pregnancy, though it was clinically not significant. The study was supported by Subramanian V., (2016), [18] there were statistically significant differences (P<0.05) between the different maternal positions regarding maternal heart rate, systolic Blood pressure (BP), diastolic BP, and maternal satisfaction. The study was

supported by Rachel Samuel, et al., (2021), [19]. The total number of antenatal women included in the study was 44. Results: There were significant changes in maternal physiological parameters like maternal systolic (p=0.001), diastolic (p=0.001) blood pressure and pulse rate (p=0.001) between left lateral and sitting position. There was a significant difference in foetal physiological parameters like baseline foetal heart rate (p = 0.034) [20]. A study conducted in Iran by El Sayed and Mohamady [21] reported better reactive NST in the left lateral position (87.5%) compared to the semi-fowler's position (66.7%). In a study conducted in Italy, the sitting position had a shorter NST reactive time when compared to the walking or a reclined position. In another study, the NST was reactive in a semi-sitting position in high-risk pregnant women with hypertension; however, our study excluded high-risk subjects. Hence the research hypothesis H1 stating "Mean score of antenatal mothers during Non-Stress Test carried out in (supine, left lateral, semi-sitting) positions show significant difference" was not accepted.

In the current study, the fetal parameters in all three positions are analyzed in that the mean fetal heart rate ranged from 139-144. The mean score of the fetal movements in left lateral and supine positions was 4.14- 4.23. Comparatively, in semi sitting position the mean score was 2.78. Compared with the other two positions in the left lateral position the mean acceleration score was 2.78. In the other two positions, supine and left lateral the mean score acceleration was 1.87 and 1.77 respectively. The above finding infers that there is no statistically significance correlation between maternal position and maternal parameters. A study conducted in 2005 by Cito et al., [21] among 1055 antenatal women to determine the influence of maternal position during the non-stress test (NST) on foetal heart rate patterns revealed that the number of foetal movements perceived by the mother was greater in the reclining position than in sitting

position or while walking. The NST duration did not vary greatly in the reclining position. The present study also showed a significant difference in foetal physiological parameters such as baseline foetal heart rate and deceleration in the sitting position and than lateral position (p=0.034). The above finding infers that there is no statistical significance of the correlation between maternal position and maternal and fetal parameters. Hence the research hypothesis H2 stated earlier "Mean fetal heart rate, movement, and acceleration of the fetus during Non-Stress Test carried out (supine, left lateral, semi-sitting) positions will show significant difference." Was not accepted. A similar conducted by Kabootari, et al (2012) [22] revealed that the post-test score of fetal reaction in supine was 4.20±1.16 and in lateral 4.90±0.31. The calculated independents' test value of t = 3.205 was found to be statistically significant at p<0.01. Hence the present research hypothesis H2 stated earlier "Mean fetal heart rate, movement, and acceleration of the fetus during Non-Stress Test carried out (supine, left lateral, semi-sitting) positions show significant difference." Hence the hypothesis was not accepted. The present study finding revealed that the demographic variable had shown that there is no statistically significant association with maternal and fetal parameters with different maternal positions at p<0.05 level.

## Limitation

The data on discomfort obtained through a self-reporting and observational schedule may not be accurate. Another limitation of this study is the small sample size, as some variables such as the number of accelerations did not reach statistical significance but were very close to the statistical significance level.

## Conclusion

The analysis revealed that a non-stress test was done among the antenatal mothers to compare the maternal and foetal parameters with different maternal positions but there is no

statistically significant association found. The present study concludes that the maternal BP and heart rate were within normal levels in semi-fowler's and left lateral positions. The researcher concluded that Semi-fowler's position demonstrated favourable maternal blood pressure and heart rate during the non-stress test in the third trimester of pregnancy.

## Conflict of Interest

The authors declare no conflict of interest.

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