

# Perceived Stress and Anxiety in Women During Labour: A Case of Tamale West Hospital, Tamale, Ghana.

## ABSTRACT

**Aim:** To investigate the prevalence of intrapartum anxiety and stress, its effect on duration of labour as well as associated factors among parturient women.

**Design:** This study was a cross-sectional study

**Setting:** This study was carried out at the Tamale West Hospital, Tamale Ghana from April to May 2017.

**Methods:** One hundred and thirty-eight (138) participants with a singleton pregnancy and cervical dilation of 4 cm enrolled. Duration of labour, stress and anxiety were measured using the Friedman's curve, Kessler Psychological Distress Scale and Perceived Stress Scale.

**Results:** Among the 138 participants, the prevalence of severest form of intrapartum anxiety and stress were 8.70 % and 7.99% respectively. Analysis revealed that age, marriage duration, pre-pregnancy body mass index, height, weight, gestational age, duration of labour and parity showed significant association with stress and anxiety.

**Conclusion:** several factors were found to influence the occurrence of stress and anxiety among pregnant women in labour. It is important to prevent or reduce intrapartum anxiety and stress from occurring by identifying all the high-risk women and strengthening intrapartum-related education and mental intervention.

*Keywords: Stress, Anxiety, Labour, Childbirth, Pregnancy*

## INTRODUCTION

Pregnancy and delivery are major and generally positive life experiences for most women. However, a substantial number of women are more or less afraid of childbirth [1, 2] and approximately 10% report a severe fear of childbirth . Some of these women actively avoid becoming pregnant, seek termination of pregnancy or try to induce a miscarriage [2].

Some women dread and avoid childbirth despite desperately wanting a baby. Stress and anxiety of parturition has been already known for ages since Marcé – a French psychiatrist – wrote in 1858: "If they are primiparous, the expectation of unknown pain preoccupies them beyond all measures and throws them into a state of inexpressible anxiety. If they are already mothers, they are terrified of the memory of the past and the prospect of the future [3]. Labour is an important phenomenon and may be one of the most painful and stressful events that mothers experience during their lifetime .It is characterized by tremendous physiological and psychological changes that require major behavioural adjustment [4]. Childbirth has short, medium and long-term implications for the well-being of babies, women, their families and society [5]. Worldwide, there are clear differences between the problems faced by childbearing women in developing countries and those women in developed countries. Selye [6] defined stress as a non-specific result of any demand upon the body, be it the effect of mental or somatic. Stress was also defined as "a dynamic, progressive relationship between the person and the environment" [7]. Anxiety and stress in the course of labour may mar communication between the woman and the maternity staff, and poor communication may complicate clinical decisions and delay obstetric interventions.

Conversely, labour stress and anxiety has been linked to detrimental outcomes including immunosuppression, fluid and electrolyte imbalance, delayed wound healing, diminished uterine contractions and prolonged labour in the mother [8]. Ryding, Wijma, Wijma, & Rydhström [9] have also reported that labour stress can have deleterious effects on neonatal neural development and behavior including impaired motor ability, impaired balance reactions, shorter attention spans, impaired muscle coordination and tonic, greater infant irritability, and decreased coping ability.

Studies have found that certain variables including young maternal age, nulliparity, pre-existing psychological problems, lack of social support and a history of abuse or adverse obstetric events, low level of formal education and absence of antenatal education were linked to increased labour stress [3]. Furthermore, a high level of labour stress and anxiety has been associated with increased numbers of labour procedures [10].

Stress and anxiety have long been known to affect human well-being (biophysical and emotional) and may even threaten survival [7, 11]. Physical and psychological stressors produce an increase in catecholamine released from adrenal medulla together with changes in circulating levels of adrenocortical hormone [12]. Labour and birth are stressful events [13]. Studies on animals and humans have identified that stressors such as anxiety during labour are associated with increased levels of stress hormones; adrenaline, noradrenaline and dopamine [14].

Studies have shown that increased in adrenaline levels resulted in reduced uterine contractility, abnormal fetal rate patterns and prolonged labour. Despite the fact that various studies have assessed prevalence and determinants of intrapartum anxiety and stress in developed countries, there is still scarcity of data from developing countries with almost none from Ghana. The purpose of this study therefore was to explore the prevalence as well as the effects of stress and anxiety on the duration of labour.

## **MATERIALS AND METHODS**

### **Study Area**

This study was carried out at the Tamale West hospital in Tamale, Northern region of Ghana from April to May 2017, among women in labour visiting Tamale West Hospital for delivery. The Hospital which is currently a referral hospital for the Tamale Metro sub district health centres, provides 24-hour services and has seven functional wards, namely Male, Maternity, Labour, Emergency, Children, Female and Surgical wards. The hospital has approximately 300 staff nurses.

### **Study Design**

This study was a cross sectional survey conducted at the Tamale West Hospital.

### **Sample Size Determination**

The target population was women in labour visiting Tamale West Hospital. The necessary minimum sample size for the study was calculated to be 138 women, based on the assumption that 10% of the pregnant women experiences anxiety [15], with an expected difference of 5% between the sample and the general population and a type I error ( $\alpha$ ) of 0.05.

$$n = \frac{z^2(1-p)p}{d^2}$$

Where n = minimum sample size; Z = standard normal variance=1.96 to obtain a power of 95% confidence interval ( $\beta$ =5%) and a type 1 error probability of 5%; d=Absolute standard error=0.05; p=prevalence=10%.

### **Sampling Procedure**

Purposive sampling technique was used to select participants from the parturient women who visited the labour ward within the stipulated time of data collection. Women were assessed for their eligibility for participation in the study using a pre-defined set of criteria. Primigravida and multigravida women with uncomplicated singleton pregnancy with cephalic presentation were screened first for eligibility. Women who were selected for a caesarean section, had cervical dilatation of more than 4 cm at the time of admission or were booked for induction and augmentation were excluded from the study.

### **Data Collection**

Questionnaires were administered to respondents and appropriate guidance was given to respondents to enable them make informed choices. Prior to administering questionnaires, the purpose of this study was explained to respondents and confidentiality assured as well as the right to opt out at any moment without any repercussions. The questionnaire was organised into four categories:

### **Socio-Demographic Characteristics**

They included age, educational level, employment, socioeconomic status, marital status, duration of relationship, number of previous children, gestational age and any complications experienced throughout pregnant.

### **Duration of labour.**

The timing of the duration of labour was made using the partograph on the following criteria: being in the active stage of the 1st stage and cervical dilatation of 4 cm. A vaginal 4 hourly examination was carried out to ascertain the cervical dilatation. The diagnosis of prolonged and normal duration of labour was made based on Table 1. With division of 1st stage of labour into latent and active phases in mind, the active phase was calculated by cutting off latent phase and again confirmed the timing using the rate of cervical dilation. For the purpose of this study, latent phase of the 1st stage and 4th stage of labour were exempted.

Table 1: Prolonged Duration of Labour Classified by Friedman

|                             | Nulliparous | Multiparous |
|-----------------------------|-------------|-------------|
| Prolonged 1st stage         | > 20 hours  | >14 hours   |
| Prolonged 2nd stage         | >2 hours    | >1 hour     |
| Prolonged 3rd stage         | > 1 hour    | >30 minutes |
| Rate of cervical dilatation | 1.2 cm/hr   | 1.5 cm/hr   |

### **Anthropometric Measurements**

Obesity was assessed using two parameters; weight (kg) and height (m). Weight was taken to the nearest 0.1 kilograms using a bathroom scale while measurement of height was done with a stadiometer. Based on the anthropometric measurements deduced; the Body Mass Index (BMI) was calculated with weight in kg and height<sup>2</sup> in (m<sup>2</sup>). BMI (kg/m<sup>2</sup>) was categorised, using the current World Health Organization (WHO) definitions. BMI of <18.5 kg/m<sup>2</sup>, 18.5-24.9 kg/m<sup>2</sup>, 25-29.9 kg/m<sup>2</sup> and 30 kg/m<sup>2</sup> were used to define underweight, normal, overweight and obese respectively.

### **Blood Pressure measurement**

Both systolic blood pressure (SBP) and diastolic blood pressure (DBP) were measured with the digital and manual sphygmomanometer and stethoscope. Study participants arms were supported so that the cuff was around the left arm at the same level as their heart while the participants were in the sitting position using a sphygmomanometer using the auscultation method. All measurements were taken twice for each person as well as a confirmatory check using a digital BP apparatus and the average was taken as final. Respondents were given a 15 minutes period of rest, before and after the first blood pressure reading. The blood pressure was checked to distinguish the normotensives from the hypertensive. Hypertension was defined as systolic blood pressure,  $\geq 140$  mmHg and/ or diastolic blood pressure  $\geq 90$  mmHg.

### **Stress Data**

The Perceived Stress Scale (PSS) is a classic stress assessment instrument originally developed by Cohen, Kamarck [16] remains a popular choice for helping us understand how different situations affect our feelings and our perceived stress. The questions in this scale ask about your feelings and thoughts during the last month. PSS are scored by following these directions:

- ✓ First, reverse your scores for questions 4, 5, 7, and 8. On these 4 questions, change the scores like this: 0 = 4, 1 = 3, 2 = 2, 3 = 1, and 4 = 0.
- ✓ Now add up your scores for each item to get a total.
- ✓ Individual scores on the PSS can range from 0 to 40 with higher scores indicating higher perceived stress.

Stress score was assessed using the Perceived Stress Scale (PSS).

- ✓ Scores ranging from 0-13 would be considered low stress.
- ✓ Scores ranging from 14-26 would be considered moderate stress.
- ✓ Scores ranging from 27-40 would be considered high perceived stress

### **Anxiety Data**

The Kessler Psychological Distress Scale (K10) is a 10-item questionnaire intended to yield a global measure of distress based on questions about anxiety and depressive symptoms that a person has experienced in the most recent 4-week period. The K10 general rule states that, patients who rates most

commonly “Some of the time” or “All of the time” categories are in need of a more detailed assessment. Patients who rate most commonly “A little of the time” or “None of the time” may also benefit from early intervention and promotional information to assist raising awareness of the conditions. “None of the time”, “A little of the time”, “Some of the time” and “All of the time” were numbered one to four in that order to calculate the scores.

### Statistical Analysis

Data collected was analyzed using MS Excel (2013 edition) and Graph Pad Prism version 6.0 to obtain plotted graphs and tables that were used to generate reason and proof as well as recommendations. The data was presented as mean  $\pm$  SD (standard deviation) or percentages. Correlation was used to assess the relation among of different variables. Graphical representations of charts and tables were also used to aid in comparison of responses from the data collected. Chi square analysis was used to compare categorical variables and probability less than 5% (p value < 0.05) was considered statistically significant.

### Ethical Consideration

The study was conducted after the approval from the Dean of School of Allied Health Sciences (Reference number SAHS/0014/17 dated 17/03/2017). Data collection permission also obtained from Tamale West Hospital Administrator and then the labour ward in-charge. An informed consent was obtained from each participant, which emphasized the voluntary nature and the right to withdraw from the study at any point without affecting their routine care.

## RESULTS

### General Characteristics of The Study Population

In all, a total of 138 subjects participated in the study. Overall, 116 (84.06%) were found to have normal birth duration and 22 (15.94%) had prolonged labour. As shown from table 1, the mean  $\pm$  s.d. age of the studied population was  $28 \pm 7.078$  years. However, the mean  $\pm$  s.d. age of those with normal labour duration ( $29.02 \pm 6.974$  yrs) as compared to those with prolonged labour duration ( $22.64 \pm 4.962$  yrs) indicate that, those with prolonged duration of labour were significantly (p < 0.001) younger as compared to those with normal labour duration (Table 2). In this study, majority of the participants reported were illiterates (31.16 %) followed by basic/J.H.S. (28.26%), secondary/technical (23.91%) and then tertiary (16.67%). Almost the entire population (89.86%) were married with mean  $\pm$  s.d. duration of  $7.435 \pm 6.126$  years, mean  $\pm$  s.d. number of birth of  $1.956 \pm 2.093$  as well as mean  $\pm$  s.d. gestation week of  $38.33 \pm 1.457$  weeks. It appears that marital status was strongly correlated with the duration of labour index (p=0.004). Close to half of the respondents were unemployed 46.38% with a mean  $\pm$  s.d. income level of GH¢  $658.1 \pm 502.3$ . The largest group 114(82.61%) of the parturient mothers experienced no complications during pregnancy.

**Table 2: General characteristic as well as obstetric parameters of the studied population classified by labour duration.**

| Variable                         | Total<br>(n=138)  | Normal Labour<br>(n=116) | Prolonged Labour<br>(n=22) | P Value |
|----------------------------------|-------------------|--------------------------|----------------------------|---------|
| <b>Age (yrs)</b>                 | $28 \pm 7.078$    | $29.02 \pm 6.974$        | $22.64 \pm 4.962$          | <0.001  |
| <b>Highest Educational Level</b> |                   |                          |                            |         |
| Illiterate                       | 43(31.16 %)       | 36(31.03%)               | 7(31.82%)                  | 0.94    |
| Basic/J.H.S.                     | 39(28.26 %)       | 29(25.00%)               | 10(45.45%)                 | 0.05    |
| Secondary                        | 33(23.91 %)       | 30(25.86%)               | 3(13.64%)                  | 0.22    |
| Tertiary                         | 23(16.67%)        | 21(18.10%)               | 2(9.09%)                   | 0.30    |
| <b>Employment Status</b>         |                   |                          |                            |         |
| Unemployed                       | 64(46.38%)        | 48(41.38%)               | 16(72.73%)                 | 0.007   |
| Employed                         | 53(38.40%)        | 48(41.38%)               | 5(22.73%)                  | 0.10    |
| Gainfully employed               | 21(15.22%)        | 20(17.24%)               | 1(4.54%)                   | 0.13    |
| <b>Monthly Income (Ghc)</b>      | $658.1 \pm 502.3$ | $673.5 \pm 502.4$        | $483.3 \pm 511.5$          | 0.38    |
| <b>Marital Status</b>            |                   |                          |                            |         |

|                                |             |               |                |        |
|--------------------------------|-------------|---------------|----------------|--------|
| Married                        | 124(89.86%) | 108(93.10%)   | 16(72.73%)     | 0.004  |
| Single                         | 14(10.14%)  | 8(6.90%)      | 6(27.27%)      | 0.004  |
| <b>Marriage Duration</b>       | 7.435±6.126 | 7.806±6.236   | 4.938±4.768    | 0.08   |
| <b>Parity</b>                  | 1.95±2.093  | 2.216 ± 2.134 | 0.7727 ± 1.343 | 0.003  |
| Nulliparous                    | 45(32.61%)  | 31(26.72%)    | 14(63.64%)     | <0.001 |
| Multiparous                    | 93(67.39%)  | 85(61.59%)    | 8(36.36%)      | <0.001 |
| <b>Gestational Age (Weeks)</b> | 38.33±1.457 | 38.33 ± 1.485 | 38.36 ± 1.329  | <0.92  |
| <b>Complications</b>           |             |               |                |        |
| Yes                            | 24(17.39%)  | 18(15.52%)    | 6(27.27%)      | <0.18  |
| No                             | 114(82.61%) | 98(84.48%)    | 16(72.73%)     | <0.18  |

Categorical data are presented as proportion and compared using chi-square whilst continuous data are presented as Mean ± SD and compared using unpaired t-test

### Anthropometric, Stress, Anxiety and Blood Pressure Findings of Respondents According to Duration of Labour

The mean ± s.d. SBP for normal labour was 124.0 ± 14.69 and for prolonged 125.2 ± 12.04 with no significant difference in ( $p=0.71$ ). The mean ± s.d. mean DBP for normal labour was 80.68 ± 12.97 and for prolonged 82 ± 11.79. From this study, the prevalence of hypertension was 16.67%. Among participants with normal labour duration, the prevalence of hypertension (17.24%) was not significantly different ( $p = 0.68$ ) from that of the prolonged duration of labour (13.64%). From table 3, there is a significant association between duration of labour with height and weight ( $p<0.001$ ,  $p= 0.003$  respectively). Also, the mean ± s.d. BMI of those participants with normal duration of labour (23.97 ± 5.303) was significantly lower as compared to those with prolonged labour duration (26.82 ± 5.303) as indicated in table 3. For women in labour within the normal duration, (0.86%) were underweight, 26.72% had normal weight, 42.24% were overweight and 30.17% were obese. For women in labour within the prolonged duration 4.55% were underweight, 36.36% were normal weight, 27.27% were overweight and 31.82% were obese. An overwhelming majority (84.78%) of the total population had moderate stress. A statistical difference ( $p= 0.31$ ) was observed in the mean scores for stress between normal and prolonged labour duration but this was not significant. From the study, more than half the number of participants (67.39%) had no anxiety. The mean ± s.d. of anxiety score for prolonged and normal duration of labour were 15.73 ± 7.692 and 12.38 ± 7.692 respectively with no significance difference ( $p=0.04$ ).

**Table 3: Anthropometric, stress, anxiety and blood pressure findings of respondents classified by duration of labour**

| Variable                      | Total<br>(n=138) | Normal Labour<br>(n=116) | Prolonged Labour<br>(n=22) | P Value |
|-------------------------------|------------------|--------------------------|----------------------------|---------|
| <b>Blood Pressure</b>         |                  |                          |                            |         |
| Systolic (mmHg)               | 124.2±14.27      | 124.0 ± 14.69            | 125.2 ± 12.04              | 0.71    |
| Diastolic (mmHg)              | 80.89±12.76      | 80.68 ± 12.97            | 82 ± 11.79                 | 0.66    |
| <b>Hypertensive</b>           |                  |                          |                            |         |
| Yes                           | 23(16.67%)       | 20(17.24%)               | 3(13.64%)                  | 0.68    |
| No                            | 115(83.33%)      | 96(82.76%)               | 19(86.36%)                 | 0.41    |
| <b>Weight (Kg)</b>            | 65.52±11.27      | 66.73 ± 8.132            | 59.14 ± 8.132              | 0.003   |
| <b>Height (m)</b>             | 1.643±0.1605     | 1.670 ± 0.1665           | 1.502 ± 0.1665             | <0.001  |
| <b>BMI (Kg/m<sup>2</sup>)</b> | 24.42±4.371      | 23.97 ± 5.303            | 26.82 ± 5.303              | 0.005   |
| <b>Weight Classes</b>         |                  |                          |                            |         |
| Under weight                  | 2(1.45%)         | 1(0.86%)                 | 1(4.55%)                   | 0.19    |
| Normal                        | 39(28.26%)       | 31(26.72%)               | 8(36.36%)                  | 0.36    |
| Over weight                   | 55(39.86%)       | 49(42.24%)               | 6(27.27%)                  | 0.19    |

|                           |             |               |               |      |
|---------------------------|-------------|---------------|---------------|------|
| Obesity                   | 42(30.43%)  | 35(30.17%)    | 7(31.82%)     | 0.88 |
| <b>Stress Score</b>       | 19.19±4.719 | 19.01 ± 5.375 | 20.14 ± 5.375 | 0.31 |
| <b>Stress Categories</b>  |             |               |               |      |
| Low                       | 10(7.25%)   | 9(7.76%)      | 1(4.55%)      | 0.59 |
| Moderate                  | 117(84.78%) | 98(84.48%)    | 19(86.36%)    | 0.82 |
| High                      | 11(7.97%)   | 9(7.76%)      | 2(9.09%)      | 0.83 |
| <b>Anxiety Score</b>      | 12.91±7.050 | 12.38 ± 7.692 | 15.73 ± 7.692 | 0.04 |
| <b>Anxiety Categories</b> |             |               |               |      |
| Normal                    | 93(67.39%)  | 80(68.97%)    | 13(59.09%)    | 0.37 |
| Mild                      | 20(14.49%)  | 16(13.79%)    | 4(18.18%)     | 0.59 |
| Moderate                  | 13(9.42%)   | 11(9.48%)     | 2(9.09%)      | 0.95 |
| Severe                    | 12(8.70%)   | 9(7.76%)      | 3(13.64%)     | 0.37 |

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Categorical data are presented as proportion and compared using chi-square whilst continuous data are presented as Mean ± SD and compared using unpaired t-test

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### **Prevalence of Stress and Anxiety Disorders Among Study Participants**

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As shown in Figure 1, 92.75% of the participants consented were having some form of stress disorder. From this, 84.78% had moderate stress disorder, 7.97% had the severest form of the disorder whilst 7.25% had none. The prevalence of anxiety among these studied participants was 32.61%. The analysis again revealed that, a higher percentage of respondents 93, representing 67.39% had no anxiety, whilst 20, representing 14.49% experienced mild form of anxiety and about one-tenth of the respondents (9.42%) had moderate form of the disorder. The perilous form of this disorder was experienced by 12 (8.70%).

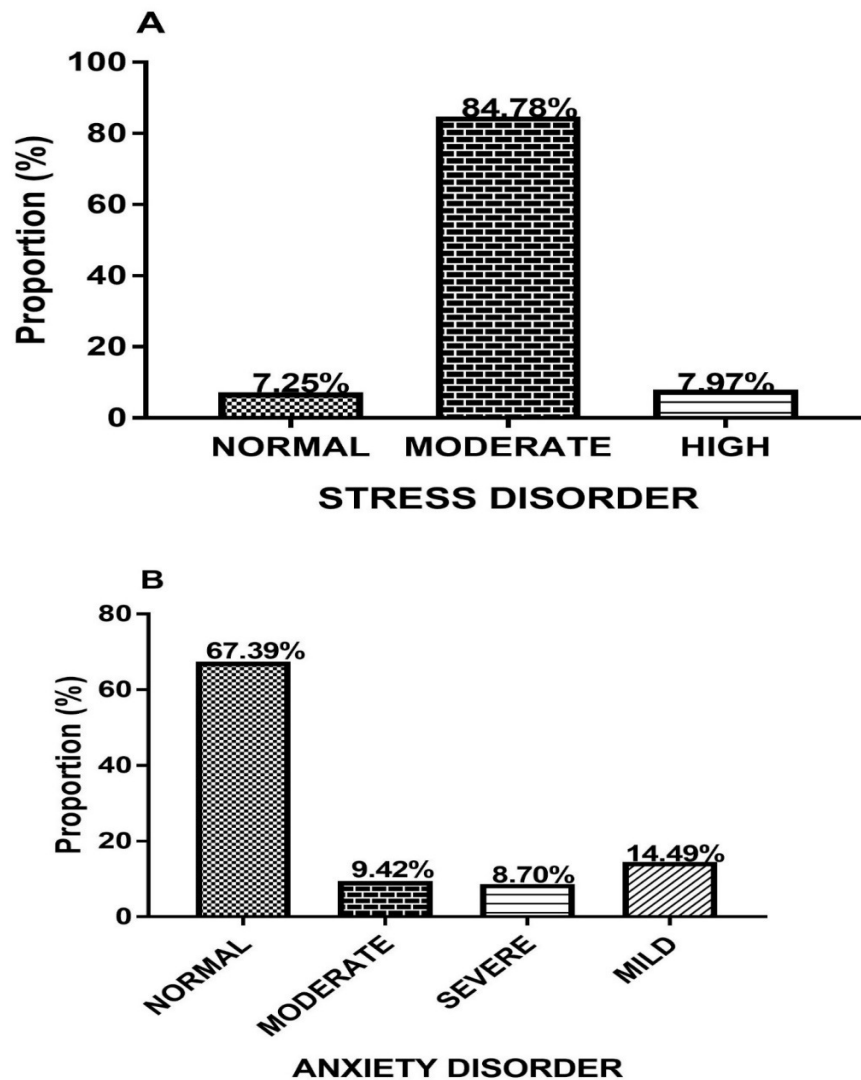
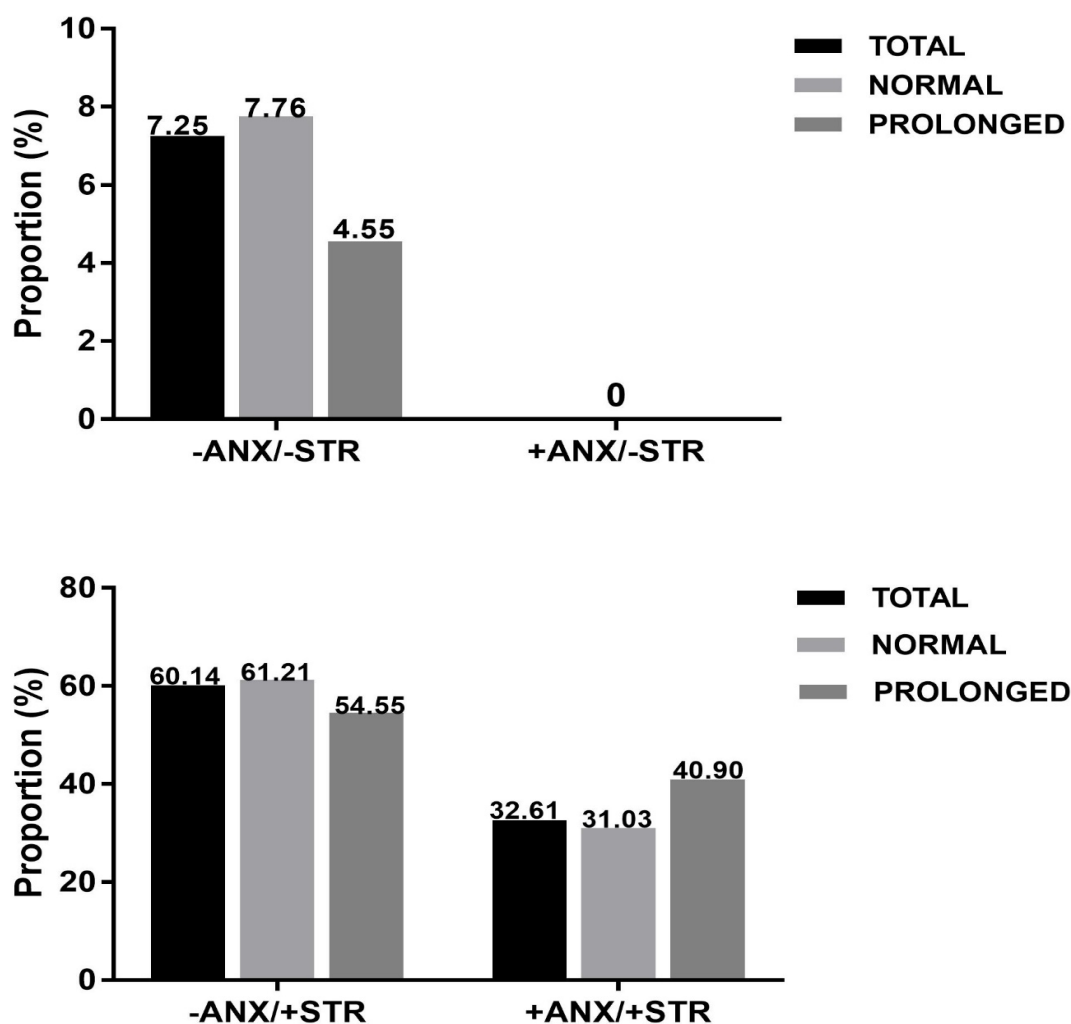


**Figure 1: The prevalence of anxiety disorder (A) and stress (B) among the studied participants stratified by the severity of the condition.**

### **Trend of Stress and Anxiety Among Study Participants**

From this study, 7.25% of the participants had neither anxiety nor stress (i.e. 10 out of 138 consented parturient women) with no significance ( $p = 0.59$ ) in duration of labour. For the classification of participants with no stress and anxiety, no number was recorded. As part of the study, an investigation in participants with no anxiety but with stress revealed that 60.14% of the population fall within this class. In determining the prevalence of both anxiety and stress in the participants, study participants who had normal duration of labour consisted of 31.0% and 40.90% of those with prolonged labour duration.



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235 **Figure 2: The prevalence of various combination of stress and anxiety disorder among the**  
 236 **studied participants.**

237 **Key- -ANX-STR = those without both stress and anxiety disorder, +ANX-STR = those with only**  
 238 **anxiety disorder, -ANX+STR = those with only stress and +ANX+STR = those with both stress**  
 239 **and anxiety disorder.**

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#### 241 **Correlation of Variables**

242 From Table 4, age showed a direct positive correlation with income and gestational age whiles it  
 243 showed an inverse correlation with duration of labour. Income showed an inverse correlation against  
 244 marriage duration only. There was a strong positive correlation of both age and marriage duration  
 245 against SBP and DBP. Meanwhile, age and marriage duration showed an inverse correlation with  
 246 anxiety and stress respectively. Parity also showed a positive correlation with DBP and height whereas  
 247 stress and anxiety were negatively correlated. With the exception of weight that was negatively  
 248 correlated with income, the remainder of the variables showed no significance. SBP recorded a positive  
 249 correlation with weight. DBP recorded a positive correlation with both weight and BMI. Whiles weight  
 250 showed a negative correlation with both stress and anxiety, height showed an inverse association with  
 251 only anxiety.

252 **Table 4: Correlation of the variables**

| Variables                | Income | DOM    | Parity | GA(Weeks) | SBP    | DBP    | Weight | Height  | BMI    | DOL   | Stress   | Anxiety  |
|--------------------------|--------|--------|--------|-----------|--------|--------|--------|---------|--------|-------|----------|----------|
| Age (yrs)                | -0.03  | 0.87   | 0.89   | -0.03     | 0.3*** | 0.27** | 0.52   | 0.4     | 0.16   | -0.11 | -0.34    | -0.31*** |
| Income (Ghc)             |        | -0.25* | -0.19  | 0.13      | 0.05   | 0.08   | -0.04  | 0.12    | -0.09  | -0.09 | -0.13    | -0.11    |
| DOM (yrs)                |        |        | 0.89   | -0.02     | 0.27*  | 0.3*** | 0.38   | 0.21    | 0.25   | -0.12 | -0.19*   | -0.14    |
| Parity                   |        |        |        | -0.06     | 0.24   | 0.25*  | 0.53   | 0.32*** | 0.23   | -0.12 | -0.28*** | -0.25**  |
| GA (Weeks)               |        |        |        |           | 0.17   | 0.15   | 0.07   | -0.02   | 0.07   | -0.05 | -0.11    | 0.02     |
| SBP (mmHg)               |        |        |        |           |        | 0.79   | 0.24*  | 0.02    | 0.22   | -0.04 | -0.11    | -0.1     |
| DBP (mmHg)               |        |        |        |           |        |        | 0.3*** | 0.06    | 0.24** | -0.07 | -0.1     | -0.05    |
| Weight (Kg)              |        |        |        |           |        |        |        | 0.34    | 0.65   | -0.11 | -0.26**  | -0.21*   |
| Height (m)               |        |        |        |           |        |        |        |         | -0.49  | -0.16 | -0.41    | -0.3***  |
| BMI (Kg/m <sup>2</sup> ) |        |        |        |           |        |        |        |         |        | 0.02  | 0.08     | 0.03     |
| DOL (minutes)            |        |        |        |           |        |        |        |         |        |       | 0.03     | 0        |
| Stress                   |        |        |        |           |        |        |        |         |        |       |          | 0.56     |

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 254 \*Correlation is significant at the 0.05 level (2-tailed), \*\*Correlation is significant at the 0.01 level (2-  
 255 tailed), \*\*\*Correlation is significant at the 0.001 level (2-tailed). Boldface r = Pearson product moment  
 256 correlation coefficient with a medium size ( $0.30 \leq r \leq 0.50$ ) effect: boldface and underlined r= Pearson  
 257 product moment correlation coefficient with a large size ( $r > 0.50$ ) effect.  
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## 259 **DISCUSSION**

260 Suppression of labour activity and prolonged deliveries due to anxiety, strong emotions, and stressful  
 261 events has been reported in women since ancient times, and are known to occur in many other  
 262 mammalian species. Despite the growing literature, there are gaps that need to be addressed. Definitive  
 263 studies that link stress, anxiety and prolonged labour duration need to be further explored. This study  
 264 was performed to assess the prevalence of intrapartum anxiety and stress as well as their effect on  
 265 duration of labour in parturient women attending Tamale West Hospital.

266 Various sources have estimated between 25 to 75% of women experience stressful life events or social  
 267 health issues during the antenatal period [17, 18]. It has also been reported that about 18% of women  
 268 experience three or more stressful life events during pregnancy [19]. In this study, the prevalence of all  
 269 forms of stress among parturient women was 92.75% which was not in concordance with findings by the  
 270 above-mentioned authors. The prevalence of anxiety as found in this study was higher than the 10%  
 271 reported from a population in the studies by [15]. The variance in prevalence among the various studies  
 272 may be attributed to the diverse research designs and divergent population number used.

273 Findings from this study provide evidence for a positive association between duration of labour and  
 274 anxiety. Nevertheless, there is insufficient data in the literature that directly looked at the correlation  
 275 between duration of labour and anxiety in women in labour. Notwithstanding, it could be attributed to the  
 276 labouring environments that are associated with high rates of painful intervention, unfamiliar people,  
 277 bright lights, noise and lack of privacy: all of which are sources of stress and anxiety in labouring women  
 278 [20]. The presence of both anxiety and stress in parturient women were found to be complicating factors  
 279 in prolonged duration of labour. The influence of anxiety and stress in lengthening labour duration has  
 280 also been reported by [8].

281 Generally, there was a significantly prolonged duration of labour among participants with higher BMI as  
 282 against those with low BMI. A study conducted by Bassiouny, Alaa [21] on the Impact of Body Mass  
 283 Index on the Progress of Labor in Egyptian Women, showed an increase in the duration of labour in  
 284 cases of higher BMI. Raised BMI found to be associated with prolonged labour duration from this study  
 285 and was again consistent with the results put forward by Nuthalapaty, Rouse [22] on The association of  
 286 maternal weight with cesarean risk, labor duration, and cervical dilation rate during labor induction. Also,  
 287 findings about height as an influential factor on duration of labour was consistent with the findings of the  
 288 study conducted on maternal height, shoe size and outcome of labour in white primigravida: a  
 289 prospective anthropomorphic study [23].

290 The relationship between maternal age and labour progress is unclear. One study showed maternal age  
 291 of more than 30 years to be associated with longer first stage labour in nulliparous and multiparas at

term who did not receive oxytocin or epidurals [24]. However, other studies have found no association between maternal age and the duration of the first stage [25]. Nevertheless, it was found out in this study that a surge in mean maternal age was associated with shorter duration of labour and vice versa. It was then speculated that this could be due to less anxiety in the participants who were old

Kessler, Angermeyer [26] stated that the youngest maternal age is a factor for anxiety in the pregnancy. Further studies by Melender (2000) and [27] have demonstrated that nulliparous women are more likely to be ill-prepared for pregnancy as well as labour and can attributed to the possibility of lack of experience. Even with the reliance on others for advice, most nulliparous women seem to fear the unknown especially in tolerance to pain and additional worry of possible deformities to the child. However, it was found in this study that the age does really affect the anxiety level.

From the current study, age was found to be associated with intrapartum stress and anxiety as this reinforces the findings of Arch [28] who showed that younger age is associated with higher levels of stress and anxiety. Younger expectant mothers are more likely to have unwanted pregnancies, be unemployed, involved in domestic violence or intimate partner abuse thus have greater anxiety and stress for childbirth resulting in the unforeseen changes during the period of childbirth [29].

## CONCLUSION

Based on the findings, the prevalence of severe forms of anxiety and stress in women during labour were 8.70 % and 7.97% respectively. However, when all the forms of anxiety and stress are summed up, prevalence stands at 32.61% and 92.75% for anxiety stress respectively.

Anxiety was found to lengthen duration of labour. This study highlights the following factors: age, marriage duration, pre-pregnancy body mass index, height, weight, gestational age, duration of labour and parity as having an upper hand in the occurrence of stress and anxiety.

This calls for the inclusion of prenatal screening for stress and anxiety as part of routine check up to identify and intervene early so as to reduce the adverse labour outcome in the high-risk group. The birth preparedness and complication readiness education should be intensified by the ANC to empower as well as enabling expectant mothers cope with challenges of pregnancy and childbirth. A possible method of intervention is the early intrapartum teaching by midwives to improve mental preparation for labour and delivery.

## CONSENT

A consent was sought from each participant before being included in the study. Subjects who did not give their consent were excluded from the study.

## ETHICAL APPROVAL

Ethical clearance was sought from the Ethical Review Board of the School of Allied Health Sciences and the Tamale Teaching Hospital, Tamale.

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