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AN OBSERVATIONAL PROSPECTIVE STUDY ON ASSESSMENT OF PSYCHOMETRIC SCORES USING DIFFERENT SCALES DURING AND AFTER PREGNANCY

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ABSTRACT

During pregnancy, women undergo physiological changes in their body, which leads to anxiety, stress and depression. Individual scales are used to assessment of anxiety, stress and depression. For assessing the anxiety levels in the body of pregnant women, PRAQ-R2 scale is used over the PRAQ due to the lack of usage in parous women because of its one of the item says "I'm anxious about delivery, because I have never experienced this before". Hence, this PRAQ-R scale can be used only by women who haven't experienced the labor process before. Due to this, PRAQ-R2 is used in this study. Stress in pregnant women was assessed using 10 items questionnaire named PSS-10 (Perceived Stress Scale-10) and depression was assessed using 10 items questionnaire named EPDS. The study included 200 individuals in total. Out of 200, 125 participated in anxiety and stress studies, and 75 participated in depression studies. The pregnant womens in their 3rd trimester are mostly affected with anxiety and stress. Within 75 participants, half of the participants are not affected with depression and the other half of participants are with mild to severe depression. The third trimester is the crucial period for baby's development and added pressure of ensuring a healthy pregnant can contribute to increased levels of anxiety, stress in expected mothers. Due to this, assessment of anxiety, stress and depression is necessary. Scales gives accurate and reliable results for assessing of anxiety, stress and depression, and avoid risk of elevated levels of stress, anxiety and depressive symptoms.

KEYWORDS: Stress, Anxiety, Depression, Pregnancy, PRAQ-r2, PSS, EPDS.

INTRODUCTION

Pregnancy undergoes physiological and psychological changes during this period. Due to the changes, most of the women are affected with anxiety, stress and depression.[1] The pregnant women with anxiety disorder may cause maternal distress and affect the fetal development. It further includes catastrophic results such as maternal-fetal bonding issues, abnormal fetal development, premature delivery.[2] The adverse effects for the unborn child include preterm birth, impaired neurocognitive development and further adverse outcomes include cardiovascular diseases and psychiatric problems in adulthood.[3] Pregnant women with anxiety may have enhanced levels of concern, excessive worry, apprehension about the labor & delivery process and the role of motherhood. The pulse rate increases, restlessness and the person begin to sweat.[4] Stress during pregnancy may affect the fetal development by elevating the adverse event outcomes of pregnancy and conditions such as gestational diabetes, preterm labor, pre-eclampsia, low body weight of infants, preterm delivery, reduced gestational period and have major impact on birth outcomes.[5] Moderate levels of stress experienced by nearly 78% of women during their pregnancy period, while high levels of stress were experienced by 6% of pregnant women during pregnancy. At the time of pregnancy, the causes associated with stress are unfavorable work conditions, complications related to pregnancy, owning low resources, arguing with their partner, responsibilities at home.[6] Apart from general stress, pregnant women experience stress specific to pregnancy, which is associated with fears regarding the health and welfare of the infant, labor pains, delivery procedure, pregnancy period, postnatal period, role as a mother in the future.[7] Several psychological changes in their body which leads to increased stressors in their body. These can be illustrated well by keeping a look on levels regarding primary important HPA axis hormone. Major natural source that affects the fetus from the mother's psychological stress is an overindulgence of the production of cortisol by the mother.[8] Cortisol hormone is the primary stress hormone responsible for the stress. High levels of cortisol can be evaluated by using saliva or hair samples of the mother.[9] In fact, pregnancy features a continuous elevation in the levels of the cortisol, ACTH, CRH blood serum levels from starting to the last of pregnancy.[10] These elevation results in stimulating the placenta to release the CRH, which consecutively contribute to release of cortisol in mother and fetus which in turn release the ACTH from the pituitary gland of fetus and mother.[11] These responses are interpreted as the condition called stress if the diagnosis is made only by using the cortisol concentration.[12]

At the time of pregnancy, fetal maturation and programming are observed because of glucocorticoid elevations that happen due to the chronic hypercortisolism which occurred as a biological demand of the baby.[13] Almost 20% of women experience depression at some point in their lives, and pregnancy existence high susceptibility period.[14] Depression during pregnancy has to be known to society due to the 3 major reasons. The first was, depression in the antenatal period was very high.[15] The next was, depression at the time of pregnancy was postpartum depression's most potent risk factor.[16] The last was the depression makes adverse fetal and maternal outcomes.[17] Many risk factors make them susceptible to depression at the time of pregnancy. Those are poor nutrition, inadequate prenatal care, difficult life circumstances such as financial hardship, a history of mental illnesses, events during pregnancy such as abortions, puerperal complications previously occurred. Other factors such as age, gravidity and marital status, the degree of assistance, history of stillbirth, length of previous labor, and whether the pregnancy was intended in society.[18] Therefore, assessment of anxiety, stress and depression at the time of pregnancy and after pregnancy is required to identify pregnant women who require arbitration to safeguard the health of both the mother and the unborn child.[19]

PRAQ-R and PRAQ-R2 SCALE

Pregnant women can utilize the 10-item PRAQ (Pregnancy Related Anxiety Questionnaire) to measure and detect pregnancy-specific anxiety. It has greater predictive validity for the results of births and superior psychometric value.[20] The PRAQ-R, which is revised 1 scale focuses only on the nulliparous women. To assess the level of anxiety in both parous and nulliparous women, researchers modified the PRAQ-R scale and named it PRAQ-R2. These PRAQ-R2 is used to assess the anxiety in both parous and nulliparous women.[21] Some studies showed that pregnancy related anxiety assessed by using PRAQ-R and PRAQ-R2 reflects a particular construct than a general anxiety majorly, even though both general anxiety and pregnancy specific anxiety have effects on pregnant women at any time in the pregnancy.[22] The PRAQ-R is a widely used tool for anxiety.[23] But these PRAQ-R can be used only for the 1st time mothers. As these PRAQ- R consist of 10 items, one of the items says "I'm anxious about delivery, because I have never experienced this before". Hence, this PRAQ-R scale can be used only by women who haven't experienced the labor process before. In 2015, some of the scientist tested factorial invariance of PRAQ-R scales along with subscales for parous and nulliparous women. Firstly, the test was made for a 10 items scale, which includes ambiguous items for both parous and nulliparous women and showed non-

invariant factors as the PRAQ-R cannot be compared for parous and nulliparous. Secondly, they removed an ambiguous part from PRAQ-R in two groups and continued analyses, which results in an invariant factor. For comparing parous and nulliparous women, you can use the nine items in PRAQ-R for assessing anxiety. If evaluating anxiety in parous women solely, PRAQ-R's nine items are not used, as it weakens the major factor for parous women that is the "Fear of giving birth" factor. Therefore, the PRAQ-R was modified and rephrased into a simple sentence from "I'm anxious about the delivery, because I have never experienced before" into the most basic, condensed form for all expectant mothers as "I'm anxious about delivery" which shows factorial invariance for women who are parous and nulliparous and the modified PRAQ-R was named as PRAQ-R2. In this study, the anxiety was measured and evaluated using the PRAQ-R2 scale. Both PRAQ-R and PRAQ- R2 consist of three subscales: "Fear of giving birth" (FoGB), "Worries of bearing a physically or mentally handicapped child" (WaHC), (CoA) "Concern about own appearance".[24] The 10 items PRAQ-R2 are scored using five responses that are Score 1: absolutely not relevant to Score 5: which is more relevant. The total score of PRAQ-R2 range from 10 to 50, with each subscale receiving a single score, FoGB subscale consists of 3 items in the PRAQ-R2 which score ranges from 3 to 15, WaHC subscale consists of 4 items in the PRAQ-R2 which score ranges from 4 to 20, and CoA subscale consists of 3 items in PRAQ-R2 which score ranges from 3 to 15 can be calculated.

PSS-10 SCALE

The most used tool for determining stress levels is the 10-item Cohen Perceived Stress Scale (PSS-10). These PSS-10 measures are used to study stress in a variety of populations, such as drug users, healthy college students, the elderly, and women who are pregnant or just gave birth. Earlier, In order to build the Cohen PSS, the year 1983 which consists of an individual's perspective and assessment of life events as stressful is evaluated using a 14-item Likert-type questionnaire.[25] One of the previous studies came to know reality about the PSS-14, that the study involves 2387 male and female US residents the researcher collected data from telephonic interviews, using PSS-14. Out of 14 questions, 4 were removed as that the participants didn't load on any of the two components that were determined for the PSS-14 through exploratory factor analysis. Then a shorter version emerged which is PSS-10 scale.[26] PSS-10 contains adequate reliability & validity and has more reliability than PSS-14 scale. Like PSS-14, the PSS-10 has the same two factor structure of exploratory factor analysis. The questions in the first factor demonstrate negative emotions like anger, anxiety,

or upsetness as well as an incapacity to cope with or manage stress, while the questions in the second factor demonstrate positive emotions and the capacity to cope with or behave in stressful situations. The PSS-10 scale inquire about the thoughts, feelings that gauge how well respondents perceive their current circumstances tense, unmanageable, and uncertain. On a scale of 0 to 5, where 0 represents never, 1 represents almost never, 2 represents sometimes, 3 represents pretty often, and 4 represents very often, respondents indicate how they felt in the past month. Levels of stress were assessed using PSS-10 which contains 10 questions and the total score is 40 with each question scores 0-4. It is considered mild stress if the total score is 0–13, moderate stress if the total score is 14–26, and high stress if the total score is 27–40. In the PSS-10, the 1,2,3,6,9,10 items are scored as 0,1,2,3,4 as it had negative feelings and thoughts, and the 4,5,7,8 items are scored in reverse order that is 4,3,2,1,0 as it has positive emotions.[27]

EPDS SCALE

The Edinburgh Postnatal Depression Scale is known as the EPDS scale. The EPDS was used to measure depression symptoms, a self-report scale consisting of 10 items developed by Cox et al. This instrument is specifically designed to perform a postpartum depression screening.[28] It has been thoroughly validated for both postpartum and antenatal depression and is widely acknowledged as the most regularly used questionnaire for screening for postpartum depression.[29] Notably, it is the sole depression rating scale approved for use in the prenatal stage of pregnancy.[30] Women are asked to select one of four answers for each topic that best captures how they have been feeling during the previous week.[31] Each response is assigned a number between 0 and 3, and the aggregate of the scores for each of the ten elements yields a final score that ranges from 0 to 30. The scoring for items 1, 2, and 4 in the EPDS scale ranges from 0, 1, 2 and 3, while scores for items 3–10 are in reverse order as 3, 2, 1, 0. A score between 0- 9 tells no depression, 10-12 has to take reassessment after 2 weeks, and a score above 13 indicates a referral to a psychiatrist. If item 10 has a score of 3 or 2 or 1, further evaluation has to be conducted on the same day.[32]

MATERIALS AND METHODS

All the pregnant women included in the study were assessed for anxiety, stress and depression by using different psychometric scales. The consent from the patient were taking before collecting the data. The participants were clearly explained about the study in their regional language and the consent form was signed. The anonymity and confidentiality of the

data was well explained to the participants. The data collection form consists of basic demographic details like age, weight, month of pregnancy, trimester, last menstrual period. The data collection form consists of psychometric scales of three different conditions such as anxiety, stress and depression which was named as PRAQ-R2(anxiety), PSS (stress) and EPDS (depression) which contains questionnaires and score with range of 1 to 5 in PRAQ-R2, 0 to 4 in PSS scale and 0 to 3 in EPDS scale.

Study site

The study was conducted in department of "Obstetrics" Babu Hospitals, Chittoor.

Study duration

This study was carried out 6 months (September to February).

Study materials

Patient data collection form, Information consent form, PRAQ-R2, PSS and EPDS.

Study criteria

Inclusion criteria

Pregnant women without comorbidities.

Exclusion criteria

Patients with comorbidities such as cardiovascular disorder, respiratory problems, thyroid problems, diabetes etc. and pregnant women with in-vitro fertilization.

Statistical analysis

The obtained results are statistically treated for report and analyzed the data by using "MICROSOFT EXCEL".

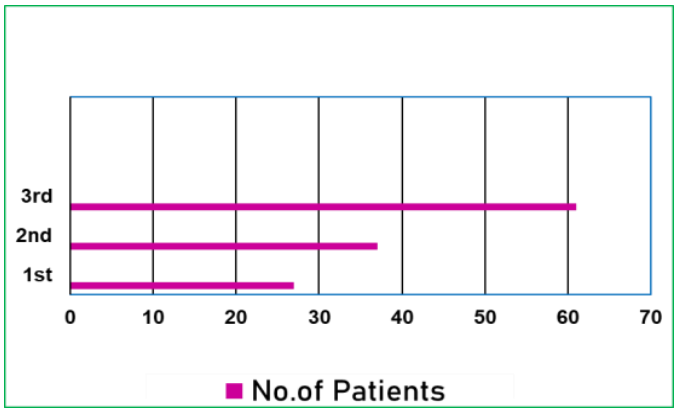
RESULTS

This study included 200 pregnant women, 125 of whom had anxiety and stress, and 75 of whom had depression.

Trimester wise distribution for anxiety & stress

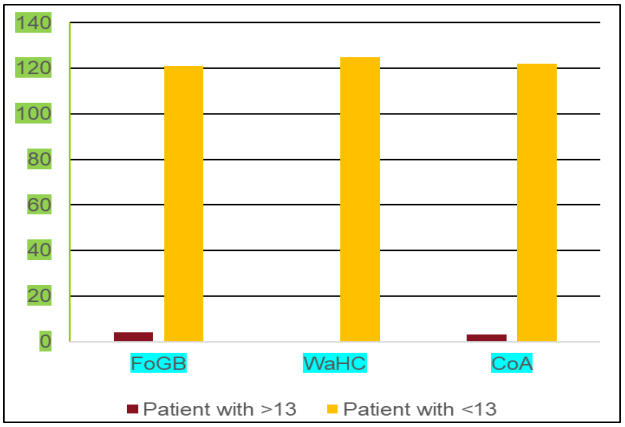
The gestation period consists of three trimesters. The first trimester lasts for three months, the second trimester lasts for four to six months, and the third trimester lasts for seven to nine

months. 27 patients belong to 1st trimester, 37 patients belong to 2nd trimester. The majority of patients belongs to the 3rd trimester.



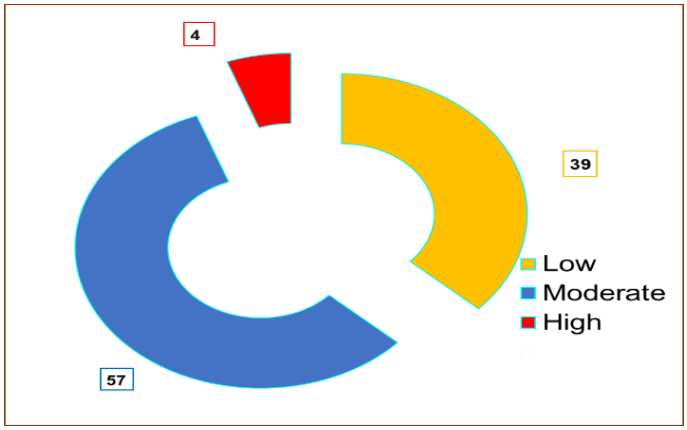
PRAQ-R2 (pregnancy related anxiety questionnaire-revised 2)

Subscales of PRAQ-R2 are FoGB, WaHC, CoA. The score for each subscale FoGB, WaHC, CoA ranges between <13 to > 13. Patients with >13 considered as the anxiety patients. Most of the patients have no anxiety. 4 patients are experiencing FoGB with 3.2%, none under WaHC & 3 patients are experiencing CoA with 2.4%.



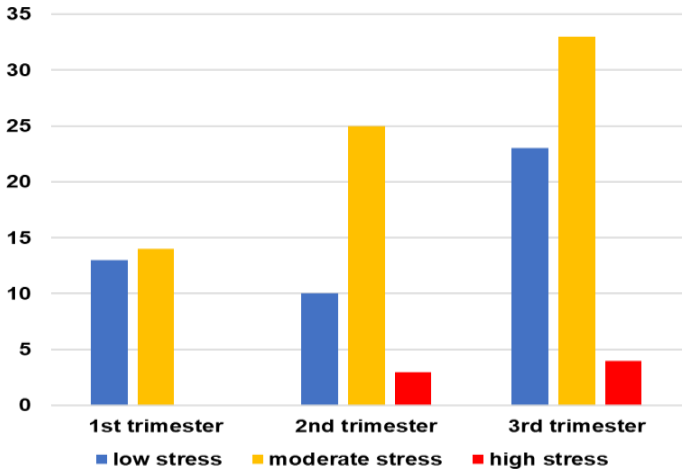
Levels of Stress

According to the PSS, a score of 0–13 indicates mild stress, a score of 14–26 indicates moderate stress, and a score of 27–40 indicates severe perceived stress. A very few are experiencing high stress. In this study, majority of the patients are experiencing moderate stress during pregnancy period with 67%. Only 4% patients are experiencing high stress.



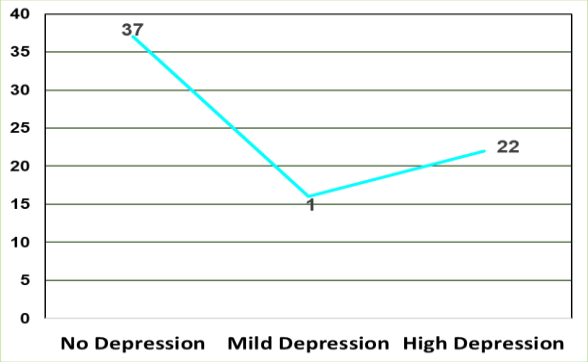
Trimester wise distribution for low, moderate, high stress

There are 3 trimesters during gestation period. Each trimester consists of 3 months. In this graph, it shows that patients with low stress are high during 3rd trimester and less in 2nd trimester. Patients with moderate stress are high during 3rd trimester and less in 1st trimester. The 3rd trimester patients have high depression when compared to other trimesters. During the third trimester of pregnancy, most expectant mothers experience stress.



Levels of Depression

The scores of EPDS scale ranges from 0-9 indicates no depression, 10-12 indicates mild depression & > 13 indicates high depression. In this study, majority of the patients are experiencing no depression (37 participants), mild depression (1 participant) and high depression (22 participants). When compared to these, no. of patients with mild depression are low.



DISCUSSION

Scales are effective tools for obtaining accurate results when assessing anxiety, stress, depressive symptoms. Evaluating pregnant women's anxiety, stress, and depression are critical in determining the appropriate intervention for the mother's and the unborn child's safety and wellbeing. This research utilizes PRAQ-R2 as it is capable of evaluating both nulliparous and parous women. The selection of PRAQ-R2, PSS-10 & EPDS for this study was based on their demonstrated reliability in producing accurate results.

This study conducted on a group of 200 participants. Out of which 125 are participated both in anxiety and stress. 75 are participated in depression studies.

Pregnant women's anxiety is measured with the PRAQ-R2. The PRAQ-R2 scale's anxiety subscales include worry about one's own appearance (CoA), fear of giving birth (FoGB), and fears about a disabled child (WaHC). The scores for each subscale FoGB, WaHC, CoA ranges between less than 13 to more than 13. Patients greater than 13 are considered as anxiety patients. Most of the patients in this study has no anxiety. The FoGB subscale assessed 3.2% (4 patients) with anxiety and 97% (121 patients) without anxiety. The WaHC subscale assessed 100% (125 patients) without anxiety. The CoA subscale assessed 2.4% (3 patients) with anxiety and 98% (122 patients) without anxiety. Majority of patients are from the third trimester with 49% (61 patients) and least patients are from first trimester with 22% (27 patients).

Pregnant women's stress levels are measured using the PSS-10 scale. There are three levels of stress. The range of low stress is 0–13, while the range of moderate stress is 14 to 26 and high level of stress ranges from 27 to 40. Out of 125 pregnant women, 67% of patients with moderate stress (72 patients), 39% of patients with low stress (46 patients) and 4% of patients with high stress (7 patients). Majority of the patients are experiencing stress during 3rd

trimester of pregnancy. In 3rd trimester, patient with low stress are 18.4% (23 patients), moderate stress are 26.4% (33 patients) and high stress are 3.2% (4 patients).

Out of 75 participants in depression studies, 37 (49.3%) individuals exhibit no signs of depression, while 16 (21.3%) individuals experience a mild form of depression, and 22 (29.3%) individuals suffer from a severe state of depression. The third trimester is a crucial period for the baby's development, and the added pressure of ensuring a healthy pregnancy can contribute to increased stress levels for expected mother. Therefore, assessment of psychometric properties is necessary during pregnancy using scales.

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