



## Assessment the Level of Maternal Stress Referred for Fetal Echocardiography

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### ABSTRACT

**Introduction:** Referral for fetal echocardiography aggravates maternal stress. Maternal stress effects fetal growth. To decrease the stress of pregnant mothers, counseling and awareness regarding importance of fetal echocardiography required.

**Objective:** The objective of the study is to assess the level of maternal stress referring for fetal echocardiography.

**Materials and methods:** It was a cross sectional study. 70 pregnant mothers uncounseled were included as sample. Data collected from the cardiology department of the children hospital and institute of child health Lahore through a well structured self-administered questionnaire. The idea of questionnaire taken through Spiel Berger State Trait Anxiety Inventory (STAI) scale. We completed the questionnaires by asking frequent questions regarding maternal stress through the expected mothers a ter referral for fetal echocardiography. The data was analyzed in SSPS 20, frequency of stress was evaluated and bar graphs were formed by use of descriptive statistics.

**Results:** Out of 70 pregnant mothers, 69% said that they felt stress while 31% said that they did not feel stress a ter referral of fetal echocardiography. 79% women said that they felt mood luctuations and 67% women said that they were suffering from hypertension. 37% women said that they were con ident about their ability to handle personal problems and 36% women said that they were able to control problems the complete analysis of study showed that referral for fetal echocardiography was associated with aggravation in stress.

**Conclusion:** The proper awareness and support to expected mother must be provided in order to lay the importance of investigation and treatment of pre natal congenital heart disease on time and reduce the levels of stress in order to diminish the chances of behavioral abnormalities in expectant mother's children and ensure the mother not to indulge in stress and anxiety.

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**Keywords:** Maternal stress; Fetal echocardiography; Congenital heart disease; Steinberger State Trait Anxiety Inventory (STAI)

## INTRODUCTION

Fetal echocardiography used for detection of congenital heart disease in family history of congenital heart disease, maternal diabetes, abnormality in fetal anomaly scan, the presence of multiple gestations or *in vitro* fertilization [1]. The association between maternal anxiety and prenatal testing is well recognized. Studies reported that anxiety levels in expected women increased before non-invasive and invasive testing [2]. Preterm labor, preeclampsia, spontaneous abortion, and congenital malformations were documented adverse outcome in expected mother due to anxiety [3]. Similarly, maternal emotional instability resulted in development of autism or schizophrenia like behavior after birth. All of these factors need extra care to maternal psychosocial and emotional well-being during pregnancy related procedures [4,5]. No study done before to emphasis quantitative assessment of maternal anxiety. Furthermore, no study sought to characterize the anxiety level of the women before fetal echocardiography. We selected the subject because there was not much study performed at this topic in Pakistan. Moreover, stress was studied but less emphasis was paid specifically on maternal stress during pregnancy. Since maternal stress was very common but health care people remained unaware about the consequences of maternal stress that may cause autism and schizophrenia like behavior in children. As counseling part is very poor in our society, therefore the study suggested its importance. Similarly most of the expected mothers were illiterate and belong to low socio-economic status.

## MATERIALS AND METHODS

It was a cross sectional study in which consecutive sampling technique was used. Data collected from the cardiology department of the children hospital and institute of child health Lahore through a well structured self-administered questionnaire after ethical committee approval. Duration of study was 6 months, from September 2020 to March 2021.

**Selection of questionnaire:** A well structured self-administered questionnaire having 2 point dichotomous scale which included closed ended questions. The idea of questionnaire was taken through Spiel Berger State Trait Anxiety Inventory (STAI) scale. We completed the questionnaires by asking frequent questions regarding maternal stress through the expected mothers before and after referral for fetal echocardiography. The questionnaire was divided into two sections. First section was used to evaluate maternal stress before referral of fetal echocardiography and the other section to evaluate maternal stress after referral of fetal echocardiography and then both cases were compared to detect the increase in stress. The

reliability of the questionnaire was 70% in this study by using Cronbach's Alpha.

**Inclusion criteria:** The study included expectant mothers who were referred for fetal echocardiographic examination at the department of cardiology at children hospital, Lahore.

**Exclusion criteria:** Expected mothers who were not referred for fetal echocardiography were excluding.

## Statistical Analysis

All the figures were entered in SPSS version 20 and then analyzed for statistically substantial conclusions. Descriptive analysis was used to provide simple summary about the sample, evaluation of frequencies along with simple graphical analysis of data. Bar charts were formed for differentiating between fetal echo referred and non-referred pregnant women. Inferential analysis was used for generalization or drawing conclusion for the whole by using the laws of probabilities such as estimation of unknown and testing of hypothesis.

## RESULTS

In the study out of 70 women; 69% women said that they felt stress while 31% said that they didn't feel stress after referral of fetal echocardiography. 79% women said that they felt mood fluctuations and 67% women said that they were suffering from hypertension after referral of fetal echocardiography. 37% women said that they were confident about their ability to handle personal problems while 63% were unable to handle personal problem after referral of fetal echocardiography. 83% women said that they could not cope up with all things they need to do for fetal. 36% women said that they were able to control problems in their life after getting after referral of fetal echocardiography. 40% women said that they were on top of things to keep their fetus as safe as possible. 84% said that they felt angry when someone asks about fetus. 80% said that they felt that difficulties are piling up. 83% said that they were unable to maintain fetal development while only 17% said that they were able to maintain fetal development after referral of fetal echocardiography. 90% said that they felt worried while only 10% said that they don't feel worried after referral of fetal echocardiography. Overall results were summarized in **Table 1**. Since most of the women were illiterate, so it was noted that they were not known that why they were being referred for fetal echocardiograph. In spite of this the anxiety level in mother was high. Moreover, physician patient communication about fetal echocardiography was sub optimal.

**Table 1:** Assessment the level of maternal stress referred for fetal echocardiography.

Sr. No.	Description	Yes	No
1	Do you feel stressed about your fetal health?	69%	31%
2	Do you feel any fluctuations in your mood?	79%	21%
3	Are you suffering from hypertension?	67%	31%
4	Do you feel that things are going the way you want for the fetus?	40%	60%
5	Do you feel confident about your ability to handle personal problems?	37%	63%
6	Do you feel that you could not cope up with all things that you need to do for fetal care?	83%	17%
7	Are you able to control problems in your life after getting pregnant?	36%	64%
8	Do you feel that you are on top of things to keep your fetus as safe as possible?	40%	60%
9	How often you feel angry when someone asks you about the fetus?	84%	16%
10	Do you feel that difficulties are piling up so high that you could not overcome the problems related fetal birth?	80%	20%
11	Do you feel that you are unable to maintain the fetal development as it needs to be?	83%	17%
12	Do you feel worried about your fetus?	90%	10%

## DISCUSSION

Expected mothers referred for fetal echocardiography reflected high level of anxiety [6]. As it was demonstrated in our study also that 69% expected women showed high level of anxiety. Many reports suggested that anxiety level higher in mother due to poor physician-patient communication about obstetric ultrasound. A 2002 review of women's views of obstetric ultrasound reported that it is common for women to lack information about the reason for an obstetric ultrasound [7]. It is observed in study that health care professionals assume that parents of newborn babies diagnosed with congenital heart disease experience more negative feelings of sadness, anger, fear and guilt [8]. In our study the mood fluctuation was observed up to 79% and 67% developed uncontrolled hypertension. Factors representing stress in pregnant women such as fluctuation in mood, confidence variability, coping up with situations, problem controlling ability, anger situation, piling up of difficulties, maintaining

the fetal development and worried cases were evaluated in referred mothers which was found above 80% in our survey. Health care providers offer additional specialized testing as advantage for the patients, but that referral for advanced prenatal diagnostic testing may carry some unintentional negative effects. As in our study it revealed that 84% expected mothers felt angry and 80% felt that difficulties in piling up. Mothers coming for fetal echocardiography showed high stress and anxiety levels as compared to those pregnant women who were not referred for fetal echocardiography reported 24% higher GHQ stress than mothers included in early pregnancy. In our study 69% mothers felt stressed after referral of fetal echocardiography. A well guided counseling support must be provided to mother to reduce the level of stress. As counseling part is very poor in our society, therefore the study suggested its importance. Similarly, most of the expected mothers were illiterate and belong to low socio economic status. Main aim of this study was to examine relationship between fetal echocardiography and stress in

expected mothers. This was found that anxiety level was very high in our setup also, where mostly women are illiterate and poor [9-12].

## CONCLUSION

The proper awareness and support to expected mother must be provided in order to lay the importance of investigation and treatment of pre natal congenital heart disease on time and reduce the levels of stress in order to diminish the chances of behavioral abnormalities in expectant mother's child and ensure the mother not to indulge in stress and anxiety

## LIMITATIONS

The sample size was inadequate and collected from single center, so it reduced our ability to evaluate multiple relations to maternal stress. The STAI was offered only in english limiting generalize ability to non-english speaking patients. Though it was translated into Urdu in simple question but our major population is illiterate and belongs to low socio economic background. Refusal faced due to time constraints as study participation in the post fetal echocardiography subjects required that the patient remain in the hospital after the clinical visit to complete the questionnaires. Finally, possible confounding variables, such as maternal education and income, were not included in the analysis as this data was not available in all subjects. Fetal echocardiography result was not included. Therefore, the anxiety level of mother after positive result was not mention.

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## POTENTIAL CONFLICT OF INTEREST

No potential conflict of interest relevant to this article reported.

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