Full Length Research Paper

The prevalence of pregnancy-specific anxiety across the three trimesters of pregnancy, postnatal period and its relationship with labour outcomes

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Pregnancy-specific anxiety is a key predictor of unfavorable labour outcomes; very few studies have explored pregnancy-specific anxiety as opposed to general anxiety. To determine the prevalence of pregnancy-specific anxiety across the three trimesters of pregnancy and postnatal period and to relate anxiety with labour outcomes. With ethical approval, a prospective cohort study was conducted among 500 low risk pregnant women of 18-35 years, in Kerala-India from 2004 - 2005. Anxiety measured using State Trait Anxiety Inventory and Pregnancy-Specific Anxiety Inventory and labour outcomes noted. A U-pattern display of pregnancy specific anxiety was reported across trimesters of pregnancy with highest anxiety among nulliparous childbearing women (M=134.40). Unfavorable labour outcomes such as prolonged labour, preterm labour, low birth weight and unplanned caesarean sections were associated with high pregnancy - specific anxiety. The findings suggest that pregnancy anxiety is a core predictor of many adverse labour outcomes. A routine screening of pregnancy anxiety needs to be integrated into prenatal care. Specific interventions to minimize adverse labour outcomes could be a future research area.

Keywords: Prenatal care; anxiety; depression; pregnancy outcome; pregnancy anxiety

INTRODUCTION

A woman's ability to adapt to the changes and challenges of pregnancy is unique and the level of the stress she experiences affects the outcome of pregnancy. Most studies reported varied prevalence rate from different parts of the world and majority of them explored general anxiety than pregnancy-specific anxiety. Prevalence of high anxiety disorders in pregnant women was found to be undiagnosed and untreated (Hodnett, 2002). Anxiety and depression in pregnancy have been associated with prematurity, low birth weight (Rondo et al., 2003). Few studies demonstrated that pregnancy related stress was the predictor of preterm delivery (Huizink et al., 2004;

Lobel et al., 2008; Rondo et al., 2003). Pregnancy-specific anxiety (PSA) defined as worries, concerns and fears about pregnancy, childbirth, the health of infant and future parenting(Huizink et al., 2004). Previous studies reported that 54% low risk pregnant women had pregnancy anxiety and it varied at different trimesters of pregnancy with a U pattern of high anxiety during first and third (Lee et al., 2007; Teixeira et al., 2009).

In Kerala government hospitals the measures to assess anxiety are buried under heavy patient loads. The formal childbirth education classes are not available in hospitals of this region and the requests for caesarean

birth due to severe childbirth fear are increasing. Unpublished observations reported high prevalence (90-94%) of childbirth anxiety and poor perceived knowledge regarding childbirth preparation among Kerala pregnant women (Lekshmi, 2002; Maria Tressa, 1999). Considering the possible impact of PSA this study explored the extent of pregnancy-specific anxiety and its impact on labour outcomes. Objectives of the study were to determine the prevalence of pregnancy-specific anxiety during the three trimesters of pregnancy and postnatal period and as well as to identify the association between level of anxiety and labour outcomes.

Literature Review

Childbirth fears and anxiety is unique to woman. About 20% of low-risk pregnancies in western countries reported intense childbirth fear and 6 % to 10 % are seriously incapacitated by childbirth fear (Eriksson et al., 2006). A Brazilian cohort with 865 pregnant women reported prevalence of stress and distress varying from 22.1 to 52.9% (Rondo et al., 2003). In Spain an observational, analytical cross-sectional study among 174 third trimester pregnant women classified as low, medium and high-risk/very high-risk concluded that pregnant women's anxiety levels were higher than general population and is increased according to pregnancy risk. Prospective study which examined course of maternal anxiety from pregnancy till seven months among 100 Australian pregnant women reported 21% anxiety disorder (García Rico et al., 2010; Grant et al., 2008)˙

In Iran prospective study, investigated prenatal anxiety and fear of childbirth as predictor of postpartum depressive symptoms using STAI and Childbirth Attitudes Questionnaire (CAQ) among 160 third trimester pregnant women found a significant relationship between state and trait anxiety and fear of childbirth, and highlighted that nulliparous women were with higher levels of anxiety in 28th and 38th weeks of gestation (Alipour et al., 2012). In a study among 660 low risk Turkish pregnant women at 28 to 40 weeks gestational ages a significant relationship was determined between fear of childbirth with general anxiety. They highlighted nulliparous women reported higher scores of fear of childbirth than parous women (Körükcü et al., 2010).

The detection and treatment of highly prevalent anxiety disorders in pregnant women is essential as it is associated with poor neonatal outcome (Weisberg and Paquette, 2002). A study reported that maternal anxiety and other social variable were associated with 19% of antenatal depression (Mohammad et al., 2011) . High prevalence of antenatal anxiety both state and trait anxiety was reported in a sample of 453 pregnant women in Osasco, Sao Paulo (Faisal-Cury and Rossi Menezes, 2007). A survey among 650 low risk third trimester nulliparous and multiparous women of 17-46 years of age reported 25% childbirth fear (Hall et al., 2009).

An investigation on childbirth anxiety among 77 nulliparous and 85 parous women at 32 weeks, at 2 hours and 5 postnatally highlighted nulliparous women had higher level of childbirth fear during pregnancy than parous women (Zar et al., 2001).

Assessment of general anxiety during pregnancy may underestimate pregnancy specific anxiety. Only few studies have systematically assessed the specific fears and worries related to pregnancy and the structure of pregnancy anxiety. A confirmatory factor analysis on the original items of the Pregnancy Anxiety Scale suggested a three-dimensional model of pregnancy anxiety: 'anxiety about being pregnant', 'anxiety about childbirth', and 'anxiety about hospitalization' (Levin, 1991). Further research which tested the structure of pregnancy specific anxiety and examined the associations with anxiety and depression among 230 normal risk nulliparous pregnant women using a 34-item pregnancy-related anxiety questionnaire at 15–17, 27–28, and 37–38 weeks of gestation revealed the similar findings. The study reported marked increase in pregnancy related anxiety and suggested that measurement of pregnancy specific anxiety enables researchers and clinicians to address issues of prediction, identification and risk reduction more precisely and effectively(Huizink et al., 2004).

A qualitative study among 19 nulliparous women with childbirth fear in Turkey, found out that women's fears were related to labour pain, birth-related problems and procedures, attitudes of health-care personnel and sexuality (Sercekus and Okumus, 2009). Pregnant women differ in the risk factors and timing of heightened anxiety during the transition to motherhood. Third trimester pregnancy anxiety remains high and was in par with state aspect of general anxiety. Findings of a prospective study among 161 pregnant women reported that the occurrence of gestational complication during pregnancy was related with pregnancy- related stress in third trimester and was found more among young mothers (Da Costa et al., 1999; Grant et al., 2008). Studies have reported that anxiety and depression in pregnancy can increase complications of pregnancy, such as preterm birth and low-birth weight babies (Weisberg and Paquette, 2002).

A Swedish study among 1635 pregnant women reported 15.8% prevalence of intense fear of childbirth and 5.7% very intense fear. Nulliparous women had a higher mean score than parous women.

Preference for caesarean section was associated with fear of childbirth (Nieminen et al., 2009). A prospective correlation study investigated pre- and postpartum levels of childbirth fear in a cohort of 401women childbearing women and explored the relationship to birth outcomes. Reported 26% were highly fearful especially of nulliparous women and high antenatal fear was associated with emergency caesarean delivery (Fenwick

et al., 2009). In a Danish National Birth Cohort study with nulliparous women found that fear of childbirth in early (16 weeks) and late (31 weeks) pregnancy was associated with emergency caesarean section (Laursen et al., 2009).

Association between severe fear of vaginal childbirth among 100 primiparas and prevalence of emergency caesarean, vacuum extraction and prolonged labour was reported (Glynn et al., 2008). An observational cross-sectional study in Northern Ireland U K in among 263 healthy low-risk mothers found out that high degree of pregnancy-related stress is related to maternal characteristic of nulliparous status (Lynn et al., 2011).

METHODS

A prospective longitudinal survey approach was adopted among all pregnant women attending the government hospitals in Kerala, India. The study was conducted among 500 volunteered pregnant women attending government Victoria Hospital, Kollam, Kerala during the data collection period June 2004 - July 2005. Literate, mentally and physically healthy and categorized as low risk pregnant women as per the national standard and at 8 to 16 weeks of gestation with singleton normal pregnancy within age of 18 to 35 years and who are expecting normal delivery were included in the study. All pregnant women who developed any complication during the period of study were also excluded.

MATERIALS

General anxiety was measured by a standardized tool State Trait Anxiety Inventory (STAI) (Spielberger, 1989), a self-report 40 item likert scale with total score of 160. Both state and trait anxiety was measured and analysed separately. Internal consistency ranges from 0.86 to 0.85 for state and 0.89 to 0.91 for trait sub scale. Chronbach's alpha was > 0.88 for state and 0.83 for Trait anxiety. This instrument has been widely used in pregnancy (Faisal-Cury and Rossi Menezes, 2007; Zar et al., 2001).

Pregnancy-specific anxiety was assessed by standardized structured Pregnancy-Specific Anxiety Inventory (PSAI), 40 items self report questionnaire on a five-point Likert scale with a maximum score of 200. It measures the intensity of woman's anxiety in four main areas of pregnancy and childbirth anxiety. The first part deals with Anxiety about Being Pregnant (ABP) with 16 items to explore anxiety related to pregnancy. The second part is related to Anxiety of Childbirth (ACB) with 10 items. The third part with eight questions related to Anxiety about Breastfeeding (ABF) and the fourth part with 6 questions related to Anxiety about Newborn Care (ANB). The face and content validity of the PSAI was established with review by 10 experts PSAI was piloted in

100 convenient samples of pregnant women for feasibility. The reliability of the PSAI was established using split half method and the reliability coefficient obtained was 0.76 which indicated that the tool was reliable.

A checklist with 15 items pertaining to delivery and newborn for Labour Outcome used to record the labour outcomes by record analysis. The inter-rater reliability coefficient was computed by Pearson's coefficient of correlation formula and it was 0.883. A Structured interview using questionnaire was used to collect socio-personal variables with obstetric data.

Ethical Consideration

The pilot and main studies were conducted after the approval of ethical advisory committee of the Schools of Behavioural Sciences under M G University (Reference number SBeS /612/2003 dated 9/01/2003). Data collection permission also obtained from District Medical Officer. An informed written consent was obtained from each participant, which emphasised the voluntary nature and the right to withdraw from the study at any point without affecting their routine care.

Data Collection Procedure

Initially 700 Pregnant women who met the inclusion criteria and volunteered were recruited to the study as convenient sample. Each pregnant woman was contacted at their 8-16 weeks for 20 -30 minutes for their socio-personal variables and asked to self rate their anxiety using STAI and PSAI. They were followed up throughout their pregnancy and postpartum period. The concurrent anxiety measures were repeated at second trimester (20–28weeks), third trimester (30 -38 weeks) and postnatal period before discharge. The labour outcomes were noted from their labour records using the Checklists. The data from 500 samples with all four concurrent measurements were taken as the final sample of the study. The responses of the remaining pregnant women had to be deleted mainly due to non-completion of the questionnaire in concurrent readings. The main reason where change of place of consultation and planned caesarean sections for known obstetrical cause. An average antenatal attendance of 60 to75 pregnant women per day assured the feasibility of the adequate sample.

The data were analyzed using SPSS version 16 with two-tailed significance level of less than 0.05. Frequency and percentage are calculated to determine the prevalence of anxiety. Chi-square test was used to find out association of anxiety with labour outcome. General Linear Model (GLM)-Repeated Measures test were used
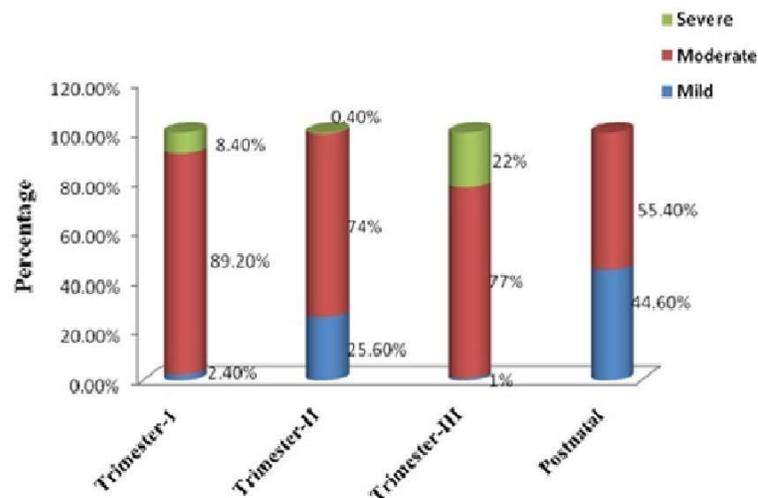
Figure .1 Prevalance of PSA along theTrimesters of
Pregnancy and Postnatal Period

to find out levels of significance among inter-trimester anxiety scores.

RESULTS

Socio personal characteristics of samples

More than half (60 %) of the pregnant women were in the age group of 20-24 years and nulliparous were of 69 %. Though 93 % of women had above high school education, (81.6%) of them were housewives. Eighty percent of them belonged to nuclear type of family with low middle income group. Only 9.6 % reported history of abortion. Majority of pregnant women (96%) had good support system and (88%) of the women were satisfied in their marital relationship.

Anxiety during pregnancy and postnatal period

Prevalence of general anxiety during trimesters of pregnancy and postnatal period

Prevalence of 18.4% severe degree and 70% moderate degree general anxiety were reported during first trimester whereas all subjects during third trimester were with moderate (71%) to severe (29%) anxiety. The State anxiety and Trait anxiety varied in each trimester, the pregnant status contributed more state anxiety compared to trait anxiety. The mean anxiety score during third trimester was high (106.89) compared to first, second trimesters and postnatal (100.36, 85.50, 95.98). This

inter-trimester variations were significant according to GLM test (F=369.726, P <0.001).

Prevalence of pregnancy-specific anxiety across trimesters of pregnancy and postnatal period

The prevalence of Pregnancy-specific anxiety during all trimesters and postnatal period are shown in figure 1.

Figure1 reveals a high prevalence of PSA both in first and third trimesters. Highest PSA of sever type (22 %, M 126.90) was noted in third trimester compared to other trimesters (8.4%,118.77; 0.04%, 106.06). The inter-trimester differences according to GLM test proved that the PSA scores across the three trimesters and postnatal period differed significantly F (621.225, P 0.01).

Analysis of section - wise pregnancy-specific anxiety

The main findings of section-wise analysis of PSA along the three trimesters of pregnancy and postnatal period are reflected in ABP and ACB.

Anxiety of being pregnant (ABP)

During third trimester 38 % pregnant women reported severe ABP and 29.4%in first trimester. The mean values of first, second, third trimesters and postnatal period (52, 45, 56, 38) varied and these differences were significant by GLM (F 578.048, P 0.01).

Anxiety about childbirth (ACB)

Prevalence of 93% severe ACB during third trimester with a high mean score of 38.70 was reported. Even in first

Table 1. The Mean, SD and Significance of Anxiety about Childbirth (ACB) across Trimesters of Pregnancy and Postnatal period

ACB	Mean	SD	Level of Significance GLM test
ACB -1	35.09	2.969	
ACB -2	31.94	4.232	
ACB -3	38.70	3.194	F= 432.689
			P < 0.001
ACB -PN	30.00	4.794	

Maximum score for ACB is 50   ACB-1, 2, 3, PN indicate first, second, third trimester and postnatal period

Table 2. The Mean, SD and Significance of PSA with Parity

Anxiety	Nulliparous Pregnant Women (N- 346)		Parous Pregnant Women (N -156)		Level of Significance GLM -test
	Mean	SD	Mean	SD	
PSA -1	123.65	10.158	107.81	5.83	
PSA -2	107.95	10.882	101.81	8.92	F 252.03
PSA - 3	131.40	10.693	116.80	7.25	P <0.05
PSA -PN	102.79	11.490	93.92	10.67	

Maximum score for ACB is 200 , PSA -1, 2, 3, PN indicate first, second, third trimester and postnatal period

trimester 42.4%reported severe childbirth anxiety which tapered to 16.8% in the postnatal period. The Mean, SD and level of significance of inter-trimester variations are shown in Table 1.

Association between level of anxiety and labour outcomes

Maternal   anxiety   increased   the   chances   of

Table 3. The Mean, SD and Significance of Anxiety about Childbirth (ACB) across Trimesters of Pregnancy and Postnatal period among Nulliparous and Multiparous Pregnant Women

ACB	Nulliparous		Multiparous		Significance GLM
	Mean	SD	Mean	SD	
ACB-1	35.67	3.047	33.78	2.310	
ACB-2	31.98	4.267	31.86	4.167	F 432.69
ACB-3	39.26	3.200	37.44	2.810	$P<0.05$
ACB-PN	30.60	4.838	28.65	4.419	

Maximum score for ACB is 50   ACB-1, 2, 3, PN indicate first, second, third trimester and postnatal period

abnormal/operative and prolonged labour. Chi-Square values showed significance at 0.05 level in the area of duration of labour (x^2 23.20, P 0.001) and in types of labour (x^2 25.969, P 0.001). Out of 30 caesarean sections 28 were unplanned, when explored the indication for caesarean 12 out of 28 (42.9%) were done at maternal request. It was found significant that pregnant women with higher levels of third trimester anxiety requested for caesarean (x^2 28.893, P 0.001). Weeks of gestation (x^2 9.505, P 0.009) , baby birth weight (x^2 10.938, P 0.027) and gestational age at birth by size were also correlated significantly with pregnant women's third trimester PSA.

DISCUSSION

General and pregnancy-specific anxiety

In the present study the prevalence of general anxiety varied according to trimester of pregnancy with high prevalence rate of moderate to severe degree in third trimester. Findings of this study agree with the earlier studies (Faisal-Cury and Rossi Menezes, 2007; García Rico et al., 2010). Women with a high fear of childbirth had high general anxiety too (Hall et al., 2009; Zar et al., 2001).

Prevalence of pregnancy-specific anxiety (PSA)

The highest prevalence of pregnancy-specific anxiety

was observed in third trimester. In general a flow of U pattern was observed in anxiety level across the course of pregnancy with low prevalence in second trimester and is consistent with previous findings (Lee et al., 2007; Teixeira et al., 2009). Similar studies also reported marked increase in pregnancy related anxiety(Huizink et al., 2004). Other studies also reported high degree of childbirth fear among pregnant women (Fenwick et al., 2009; Hall et al., 2009).

Anxiety about childbirth (ACB)

Higher prevalence of severe third trimester childbirth anxiety was reported especially by nulliparous pregnant women. These findings were consistent with similar studies (Alipour et al., 2012; Eriksson et al., 2006; Fenwick et al., 2009; Grant et al., 2008; Hall et al., 2009; Körükcü et al., 2010; Zar et al., 2001).

Association between PSA and labour outcomes

Study revealed significant association of PSA with unplanned caesarean requested by mothers. The study pointed out that high PSA was one of the major factor for emergency caesarean. These findings are in agreement with previous studies (Fenwick et al., 2009; Laursen et al., 2009). Moderate to severe PSA also contributed to preterm birth and is consistent with findings of previous studies (Glynn et al., 2008; Hall et al., 2009).

Clinical Implications

A formal prenatal screening for PSA could be a part of routine prenatal check up to identify the high risk group. Antenatal anxiety must be taken care as priority to reduce the emerging number of caesarean sections and other adverse labour outcomes. In fact this study results emphasize the importance of early detection and interventions to reduce pregnancy specific anxiety. A planned childbirth education to all pregnant women could be considered as most of the younger generation live in nuclear family system where there is no transfer of childbearing knowledge from mother and relatives and this provokes further interventional studies. This recommendation could be considered to any part of the world where there is no formal prenatal screening of pregnancy specific anxiety and childbirth education available to expectant mothers.

The limitations of this study

The limitations are acknowledged, although the study samples were relatively large from government hospitals, excluding elite private group may limit the generalizability of the findings. The instrument (PSA) used had not previously been validated; however its validity and reliability were established in this study. Further explorations of its relationship with validated measures are suggested.

CONCLUSION

The study findings brought out the fact that even in low-risk pregnancy PSA especially ACB is highly prevalent. Nulliparous pregnant mothers reported highest childbirth anxiety calling for the attention of further interventional research to reduce anxiety. Study emphasise routine screening of all pregnant women for pregnancy- specific anxiety to identify and intervene early so as to reduce the adverse labour outcome. A programmed formal childbirth education could be made available to all pregnant women attending in all Government Hospitals in Kerala State India to enrich their childbirth preparation and empower them to cope with challenges of pregnancy and childbirth.

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