



Effectiveness of Counseling in Reducing Pregnancy-related Anxiety among Primigravida Women – A Quasi-experimental Study

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Background: As a stressful stimulus, pregnancy-related anxiety in mothers can lead to mental and psychological problems in newborns. Identification and early management of such disorders during the antenatal period can prevent further psychological and physiological complications to both mother and offspring. **Aim:** This study aims to assess the effectiveness of counseling in reducing anxiety among primigravida women. **Methods:** Quasi-experimental study was carried out among primigravida pregnant women of age >18 years. They were divided into two groups of 50 each. Baseline data were collected. Anxiety-related data were collected using the pregnancy-related anxiety questionnaire. The intervention group was followed up for 8 weeks. Four counseling sessions were given to them for 45 min with a gap of 2 weeks. **Results:** Both groups were comparable for baseline characteristics and hemoglobin levels. Baseline mean anxiety scores in both groups were similar ($P > 0.05$). After 8 weeks, the mean anxiety score was significantly ($P < 0.05$) higher (21.16 ± 4.73) in the control group compared to the intervention group (14.32 ± 3.17). In the intervention group, the mean anxiety decreased significantly ($P < 0.05$) from 19.5 ± 4.94 at baseline to 14.32 ± 3.17 at the end of 8 weeks. While in the control group, the mean anxiety increased significantly ($P < 0.05$) from 19.64 ± 5.2 at baseline to 21.16 ± 4.73 at the end of 8 weeks. **Conclusion:** Counseling was found to be effective in reducing pregnancy-related anxiety in the intervention group. However, it increased significantly in the control group. There is a need to screen primigravida women for anxiety and provide them with counseling and antenatal education sessions.

Key words: Anxiety, counseling, primigravida

INTRODUCTION

A state of anxiety specific to pregnancy concerns, such as worrying about giving birth, having an ill child, and worries about one's appearance, is described as a distinctive type of antenatal anxiety termed "pregnancy-related anxiety" or "pregnancy-specific anxiety." Pregnancy-specific anxiety is a distinct and definable syndrome reflecting fears about the health and well-being of one's baby, of hospital, and health care experiences. It represents a particular emotional state which is closely associated with state anxiety, but more contextually based, that is, tied specifically to concerns about the current pregnancy. Pregnancy-related anxiety is the most potent psychological predictor of birth and child development.¹

Prevalence of pregnancy-related anxiety according to a systematic review conducted by Dennis *et al.*² was 22.9%.

A study done by Nath *et al.*¹ in India found the prevalence of pregnancy-related anxiety to be 55.7%.

As a stressful stimulus, pregnancy-related anxiety in the mother can lead to mental and psychological problems in the newborns. Identification and early management of such disorders during the antenatal period can prevent further psychological and physiological complications to both mother and offspring.³

The goals for pharmacotherapy for anxiety disorder include treatment of the symptoms of worry, anxiety, tension, somatic distress, and autonomic arousal. Psychotropic drugs readily cross the placenta and could have important implications for the developing fetus. Several areas of concern exist when using

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anxiolytic medication during pregnancy and the postpartum period, including teratogenicity, perinatal syndromes, and neurobehavioral effects.³

To reduce women's anxiety during pregnancy, they must be diverted from daily problems and conflicts. Thinking about the fetus and performing maternal–fetal attachment techniques can draw mothers' attention to more interesting issues. Daily repetition of such behaviors suppresses unwanted thoughts and reduces anxiety levels. Due to the positive effects of enhanced maternal-fetal attachment on pregnant women's health, they become motivated to better exercise pregnancy and childbirth health behaviors such as proper nutrition, exercise, willingness to know the fetus, participation in pregnancy education programs, and frequent breastfeeding. Such behaviors led to satisfactory pregnancy outcomes and improved health status of mothers and newborns.³

Counseling is an easy, inexpensive, and noninvasive method to reduce pregnancy-related anxiety, especially in first-time mothers. Attachment behavior education can be used as an effective nonmedicinal method in reducing anxiety. Reducing anxiety is an essential component of pregnancy care, especially for first-time mothers who are exposed to anxiety-provoking thoughts due to lack of knowledge and experience or exposure to public concerns. In low- and middle-income countries, more importance is given toward addressing obstetric issues and reducing maternal mortality, while a woman's emotional and mental health receives less attention than is required.⁴

There are many studies done on antenatal depression and other psychiatric disorders in different countries of the world but there are only few studies done on antenatal anxiety, even though the prevalence of pregnancy anxiety is higher, especially in low and middle-income countries. There is a dearth of data on pregnancy anxiety, especially to study the effect of counseling in reducing pregnancy anxiety. Hence, this study was done to assess the effectiveness of counseling in reducing anxiety among primigravida women and to study various factors associated with anxiety among primigravida women.

MATERIALS AND METHODS

Quasi quasi-experimental study was carried out over a period of 1½ years from January 2021 to June 2022 in the field practice area of the Rural Health and Training Centre (RHTC) of a tertiary teaching hospital.

The study was conducted in accordance with the Declaration of Helsinki and was approved by the Institutional Ethics Committee (IEC) (MRIMS-DHR-IEC-47/2021/2-1-2021). Participants were informed about the purpose of the study. Written informed consent was obtained. The participants were

assured that the information obtained would be for research purposes and would therefore be anonymous and kept strictly confidential. No follow-up counseling was offered to the control group post-study.

Primigravida pregnant women of age more than 18 years were included. Those with medical or obstetric problems such as diabetes, preeclampsia, bleeding, high-risk pregnancy, hypothyroidism were excluded.

Based on a previous study,⁵ where the mean anxiety among counseling group was 2.48 ± 0.3269 and the mean anxiety among the control group was 2.68 ± 0.81 , with 95% confidence level and 80% power, the required sample size was 40 in each group. We were able to enroll 50 women in each group.

There are two primary health centers (PHC) in the rural field practice area. Using the simple random sampling method (lottery method), primigravida women belonging to one PHC (Gumadidala) were allocated to the experimental group, and primigravida women belonging to PHC (Kanakunta) were allotted to the control group. Pregnant women who visited PHC for routine antenatal care (ANC) check-up were enrolled consecutively. Every Monday and Wednesday, the ANC clinic is at PHC. During these days, all eligible women were interviewed, and women belonging to the experimental group were asked to visit RHTC for counseling sessions.

Educational status of both husband and wife was categorized into illiterate, primary school or literate, middle school, high school, post-high school diploma, graduate, postgraduate, or professional degree. Occupational status of both husband and wife was categorized as unemployed, unskilled worker, semiskilled worker, skilled worker, clerical/shop-owner/farm-owner, semi-professional, and professional. Socioeconomic status was calculated according to BG Prasad scale. The scale was used after obtaining the current All India Consumer Price Index for the base year 2021 and making necessary corrections as suggested by Prasad.⁶ Type of family in which participants were living was categorized into nuclear and joint family. Addictions were categorized into the presence or absence of any kind of addiction.

Baseline data were collected with predesigned, semi-structured study questionnaire. Anxiety-related data were collected with the help of the pregnancy-related anxiety questionnaire (PRAQ). This questionnaire was designed by Huizink *et al.*⁷ for measuring the anxiety during pregnancy and includes 11 items and three structural factors: Fear of delivery with three items; anxiety about giving birth to a physically or mentally challenged child with four items; and anxiety about physical changes with three items. Each item was scored based on a 5-point Likert scale. The total score of the questionnaire is the sum of each item's score. This scale showed internal consistency (Cronbach's alpha >0.8).⁸ PRAQ-R2 is designed

specifically for measuring pregnancy-related anxiety both in primiparous and multiparous pregnant women in a brief format that can be simply applied.

The principal investigator has undergone training using the World Health Organization manual on counseling for maternal and newborn health care. Supervised counseling sessions were practiced under the expert guidance of counselor for 2 weeks at department of Psychiatry, Malla Reddy Hospital.

The intervention group was followed up for a total of 8 weeks. The four counseling sessions were given to the intervention group for 45 min at RHTC by the investigator with a gap of 2 weeks. The eligible women who got enrolled on that visit formed one group, and counseling was planned accordingly. During the first counseling session: pregnant women were educated on pregnancy-related physiological and hormonal changes and their effects on mind and body. They were also told strategies for coping with those changes, for example, they were taught maternal–fetal attachment techniques (e.g. touching the abdomen and being familiar with the fetus) and understood their benefits. During the second counseling session: Pregnant women were educated about nutrition during pregnancy and fetal developmental stages. Some other attachment techniques such as, counting and recording fetal movements and positively imagining the appearance of the fetus, were taught to the participants and practiced by them in the session. During the third counseling session: Pregnant women were educated on pregnancy warning signs and ways to deal with them. Participants practiced attachment techniques, such as paying attention to fetal movements, touching the abdomen, talking to the fetus, calling its name, and looking at the abdomen. During the fourth counseling session: Focusing on the fetus, touching the fetus from the abdomen, and guessing its position, and calming the fetus by touching the abdomen were practiced by the participants. The participants also learnt about stages of the birth process, breastfeeding, and hugging newborns. After 1 week of the fourth counseling session, the endline assessment of pregnancy-related anxiety was done using the pregnancy anxiety questionnaire. Hemoglobin was recorded as found in the ANC records. For women enrolled in the control group, line data, anxiety-related data using PRAQ, were collected at the time of enrolment, and routine ANC was given. Hemoglobin was recorded as found in the ANC records. After 8 weeks, their anxiety levels were assessed again. There were no dropouts, and participant compliance was good.

Statistical analysis

Data were entered into Microsoft Excel worksheet. Data were expressed in proportions, means, and standard deviation. For comparison of proportions, Chi-square test or the Fisher

exact test was utilized. For comparison of means in two groups, *t*-test statistics was used. $P < 0.05$ was taken as statistically significant.

RESULTS

In both the groups, majority belonged to the age group of 20–24 years, i.e., 54% and 76% in the intervention and control group, respectively. Majority from both groups were educated up to inter. A similar observation was about their husband's education. Women from both groups were homemakers, and a very few were employed. Sixty-six percent of women from the intervention group and 80% from the control group belonged to a nuclear family. Only 10% of women from intervention group and 4% from the control group were married before the age of 18 years. Majority had their first pregnancy after the age of 20 years, i.e., 74% and 84% from intervention and control groups, respectively. All these differences were not statistically significant. There were more women (76%) whose age at first pregnancy was 20–24 years in the control group compared to the intervention group (48%), and this difference was statistically significant ($P < 0.05$) [Table 1].

The prevalence of anemia was 64% in the intervention group compared to 66% in the control group. This difference was not found to be statistically significant ($P > 0.05$) [Table 2].

The baseline mean anxiety scores in both groups were comparable ($P > 0.05$). After 8 weeks, the mean anxiety score was significantly ($P < 0.05$) higher (21.16 ± 4.73) in the control group compared to the intervention group (14.32 ± 3.17). In the intervention group, the mean anxiety decreased significantly ($P < 0.05$) from 19.5 ± 4.94 at baseline to 14.32 ± 3.17 at the end of 8 weeks. While in the control group, the mean anxiety increased significantly ($P < 0.05$) from 19.64 ± 5.2 at baseline to 21.16 ± 4.73 at the end of 8 weeks. The Cohen *d* at baseline showed no difference in the effect size, but after 8 weeks, it was 1.699, indicating a significant difference in the effect size [Table 3].

DISCUSSION

In the present study, majority of the study participants were in the age group of 20–24 years (65%). Around 20% of the subjects were <20 years. Fifteen percent of respondents were more than 25 years of age. Similar findings of majority of participants in the age group of 20–24 years were reported by Nath *et al.*,¹ one study from Nigeria.⁹

In the current study, the educational qualification of most of the study participants was up to high school 66%. Among the subjects, 27% had studied up to graduate or postgraduate level. Only 4% of people were illiterate, and 3% had studied

Table 1: Comparison of sociodemographic characteristics in two groups

Characteristics	Intervention group, n (%)	Control group, n (%)	P
Age (years)			
<20	12 (24)	8 (16)	0.0516
20–24	27 (54)	38 (76)	
25 and more	11 (22)	4 (8)	
Education			
Illiterate	2 (4)	2 (4)	0.1182
Primary to middle school	1 (2)	2 (4)	
10+2 (inter)	39 (78)	27 (54)	
Graduate and above	8 (16)	19 (38)	
Occupation			
Professional/semi-skilled	1 (2)	1 (2)	0.5937
Unskilled	1 (2)	3 (6)	
Unemployed/home-maker	48 (96)	46 (92)	
Husband's education			
Illiterate	1 (2)	1 (2)	0.9101
Primary to middle school	2 (4)	3 (6)	
10+2 (inter)	31 (62)	30 (60)	
Graduate and above	12 (24)	9 (18)	
Type of family			
Nuclear	33 (66)	40 (80)	0.1148
Joint	17 (34)	10 (20)	
Age at marriage (years)			
<18	5 (10)	2 (4)	0.2396
>18	45 (90)	48 (96)	
Age at pregnancy (years)			
<20	13 (26)	8 (16)	0.0105
20–24	24 (48)	38 (76)	
>24	13 (26)	4 (8)	
Socioeconomic status			
Class I	11 (22)	5 (10)	0.0758
Class II	20 (40)	14 (28)	
Class III	15 (30)	21 (42)	
Class IV and V	4 (8)	10 (20)	

Table 2: Comparison of hemoglobin levels in two groups

Haemoglobin levels	Intervention group, n (%)	Control group, n (%)	χ^2	P
11 and above	18 (36)	17 (34)	0.044	0.833
<11	32 (64)	33 (66)		

up to primary or middle school. Nagandla *et al.*,¹⁰ Shrestha and Pun,¹¹ from their study also reported similar observations

of 45.8% and 33.1% being educated up to the secondary level, respectively. Nath *et al.*¹ also found that 38.6% of primigravida were educated up to high school level. From the current study and the studies mentioned above it is evident that very few women were illiterate or had no formal education, indicating women nowadays have realized the importance of education and are getting more and more qualified.

In the present study, the majority of the pregnant women were unemployed/homemaker (94%). Four percent of respondents were employed in an unskilled profession. Two percent of pregnant women were either professionals or employed in semiskilled profession. A similar finding of majority being homemakers was also reported from a Bangalore study (92%).¹ However, study from Western countries¹² show that majority of women were employed in some or the other occupations. The present study was done in the rural area, and hence most of the women were homemakers.

In the current study more than half of the study subjects lived in nuclear families (73%). Twenty-seven percent of respondents were still living in joint families. In a Chinese study¹³ majority of women were living in nuclear families (67.4%). Current study and studies mentioned above shows that women living in both developed and developing regions prefer to stay in nuclear families when compared to joint families.

In the present study, majority (36%) of subjects belonged to socioeconomic status Class III as per BG Prasad scale. Nath *et al.*¹ found that 57.4% of women belonged to upper lower class. In Italian study,¹⁴ 46.1% of women had an average high status. This might be due to different classifications used for categorizing the socioeconomic status. It might be due to different criteria used like family income, landownership, educational status.

The current study found counseling to be effective in reducing pregnancy-related anxiety in the intervention group ($P = 0.000$). Study done by Parsa P *et al.*¹⁵ found counselling on maternal foetal attachment behaviour to the intervention group to reduce mean anxiety score significant. A Turkish study¹⁶ found that women in the antenatal education group reported less birth fear, depression, anxiety, and stress symptoms compared to controls. Thus, the present study results are in line with the above studies.

Pregnancy-led physical and psychological changes may cause great emotional fluctuations, especially in primiparous women. Anxiety disorders are common and are significantly higher in pregnancy when compared to nonpregnant women.¹⁷ Mothers stress exposure and her affective states in pregnancy may have significant consequences for her child's subsequent development and health. Mothers' anxiety can cause 10%–15% of behavioral and emotional disorders in babies' lives. There

Table 3: Effect of counseling on pregnancy related anxiety

Group	Baseline (mean±SD)	After 8 weeks (mean±SD)	Statistics (paired <i>t</i> -test)	<i>P</i>
Intervention	19.5±4.94	14.32±3.17	<i>t</i> =12.559	0.000
Control	19.64±5.2	21.16±4.73	<i>t</i> =4.216	0.000
Unpaired <i>t</i> -test	0.12	9.302		
<i>P</i>	0.91	0.000		
Cohen's <i>d</i>	0.0276	1.699		
Interpretation of Cohen's <i>d</i>	No difference	Large difference		

SD=Standard deviation

is substantial evidence that maternal stress, anxiety, and depression in pregnancy lead to adverse neurodevelopmental outcomes. Evidence suggests that this occurs via effects on the development of the fetal nervous system and alterations in the functioning of maternal and fetal hypothalamic pituitary adrenal (HPA) axes.¹⁸ Maternal mood disorders have also been shown to activate the maternal HPA axis and program the HPA axis and physiology of the fetus. The effects are on attention regulation, cognitive and motor development, fearful temperament, and negative reactivity to novelty in the 1st year of life, behavioral and emotional problems, and decreased gray matter density in childhood and impulsivity. The adverse outcomes include low birth weight, prolonged labor, preterm delivery, and a higher incidence of cesarean section. When compared with general anxiety, pregnancy-related anxiety appears to be stronger determinant for poor obstetric consequences.^{18,19}

With increasing adaptation of the nuclear family lifestyle, women nowadays are exposed to more anxiety because of a lack of elderly support, which they used to get previously when they used to live in joint families, indicating the need of antenatal education or counseling. Hence, a counselor should be appointed at every peripheral health center so that pregnant women receive counseling in their visits on various aspects of pregnancy and are taught to practice maternal fetal attachment behavior, which can help in reducing any stress or anxiety that they may be experiencing.

Apart from the pregnant women, their family members such as husbands and parents could also be counseled on various aspects of pregnancy such as the stages of fetal development, dangers sign in pregnancy, and various stages of labor. They can also be taught to practice maternal-fetal attachment behavior.

The increase in anxiety observed in the control group was notable and may due to external factors such as environmental stressors or psychological anticipation during late pregnancy.

Limitations and strengths

Only limitation might be the small sample size of 50 in each group. Hence, the findings may not be generalizable to other rural areas. The findings of the study cannot be applied to urban and urban slum areas. However, the results are comparable to studies with a higher sample size. The investigator was trained in counseling to overcome the information bias. One group of women was not in touch with the other group of women (as they were from different areas), and hence, they could not influence the outcome. The pregnancy-related anxiety was measured with a standard questionnaire. The grouping method was based on "PHC geographic clusters," which, while convenient for implementation, carries a risk of cluster bias. Factors such as the availability of medical resources or cultural differences within certain PHCs may inherently influence anxiety levels.

Although the sample size ($n = 100$) is sufficient, the study did not perform a multivariate regression analysis to control for potential confounding variables such as education level or socioeconomic status, which might independently affect anxiety.

This study successfully demonstrates that a four-session structured counseling intervention can effectively reduce pregnancy-related anxiety in first-time mothers, showing strong potential for practical application. The research design is clear, the findings are consistent, and the discussion is well-grounded – making it a valuable contribution to public health research. Nonetheless, future studies are encouraged to enhance control for confounding variables, report effect sizes, and further explore the mechanisms of intervention, and conduct larger, multi-center randomized controlled trials to improve the level of evidence.

Allocation of the study group and the control group by geographic PHC might have introduced the location-based confounders. Randomization was not carried out, which may introduce a selection bias that could not be addressed.

Blinding was not used and is one of the limitations of the present study.

CONCLUSION

In the present study, counseling was found to be effective in reducing pregnancy-related anxiety in the intervention group. As pregnancy-related anxiety has various harmful effects on the developing fetus and the mother, there is a need on screening pregnant women, especially primigravida for anxiety and providing them counseling and antenatal education sessions.

Data availability statement

The data that support the findings of this study are available

from the corresponding author, Prashant R. Kokiwar, upon reasonable request.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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