Research Report

PROPORTION AND RISK FACTORS OF DEPRESSION AMONG PREGNANT WOMEN SEEKING ANTENATAL CARE AT A PRIMARY HEALTH CENTRE IN SOUTH INDIA

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ABSTRACT

Background: Depression in the antenatal period can have serious repercussions for both the mother and child. There is a paucity of community studies in the area of antenatal depression in the state of Kerala. This study was carried out to find out the prevalence of antenatal depression and to explore the correlates of depressive symptoms with social and clinical variables in antenatal women attending a primary health center in Pangappara, Thiruvananthapuram. **Methods:** A community-based cross-sectional study was carried out among 175 antenatal women attending antenatal clinics at the primary health center Pangappara, under the medical college health unit area, Thiruvananthapuram. Socio-demographic and clinical details were recorded using a pretested semi-structured questionnaire. Antenatal women were assessed using the Edinburgh Postnatal Depression Scale questionnaire to detect depressive symptoms. The data collected was analyzed using SPSS version 22. Pearson's Chi-square test and Fisher's exact test were used for the comparison of categorical variables between groups. **Results:** The prevalence of depressive symptoms according to EPDS was found to be 18.85%. Past history of psychiatric illness and history suggestive of premenstrual syndrome were found to have a statistically significant association with depressive symptoms on binary logistic regression analysis ($p<0.005$). **Conclusion:** The proportion of antenatal depression was found to be relatively high. Clinical factors like a history suggestive of premenstrual syndrome and a past history of psychiatric illness were found to be significant risk factors for antenatal depression.

Keywords: Antenatal depression, Risk factors, EPDS, Primary care

INTRODUCTION

The antenatal period is considered a time of happiness and positive expectations; however, it can be a time of distress and difficulties for some. Pregnancy is also a period of increased risk for the onset or relapse of psychiatric disorders.[1] According to a cross-sectional study done in a tertiary care center in South India, the prevalence of antenatal depression was 36.75%.[2] In a community-based cross-sectional study conducted by George et al. in a coastal area in South India, the prevalence of antenatal depression was found to be 16.3%.[3] Among pregnant women attending a rural maternity hospital in Bangalore, the prevalence of antenatal depression was 12%.[4] Antenatal depression can have both short and long-term impacts on the mother, the child, the family, and society as a whole. Antenatal

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depression has serious consequences on the quality of life and social functioning of the mother.[5] Hence, it would be important to know which risk factors may favour the occurrence of antenatal depression in order to carry out appropriate prevention interventions.[6]

We found that the following studies have reported some important risk factors of antenatal depression. Some risk factors for antenatal depression in the area of social and economic factors, obstetrical history, lifestyle, biological factors, and history of having mental illness have been studied.[7] Past history of depressive disorder, history of taking treatment for psychiatric illness, and depression severity are important predictors of antenatal depression.[5,8,9] The employment status of the pregnant woman has been associated with a reduced risk of postpartum depression.[10] The role of social support in decreasing peripartum depression has been demonstrated.[11] Studies have reported some important risk factors, which include past history or family history of mood disorder, single marital status, co-morbid medical illnesses, and lower socioeconomic status. Pregnant women who have a past history of postpartum depression, particularly with features of bipolarity, may be especially at higher risk of developing antenatal depression.[12]

Antenatal depression, despite its association with increased maternal morbidity risks, is not given much attention in developing countries.[9] There are various reasons why mental health issues during pregnancy period have received lesser importance than in the postnatal period. There is a misconception in society that women are "hormonally protected" from emotional problems during their pregnancy period. In addition, there is a tendency to focus on physical health during the antenatal period instead of mental health and to wrongly attribute emotional disturbances to the physiological changes that happen during pregnancy.[13] There is a need to develop methods for recognition and prompt intervention for antenatal depression in the background of locally pertinent risk factors to improve maternal and child outcomes.[3] There is a paucity of studies related to antenatal depression in the primary care setting, especially in the South Indian state of Kerala. Hence, this study was conducted to estimate the proportion of depression among pregnant women attending primary care setting and to determine the risk factors contributing to the development of antenatal depression.

MATERIALS AND METHODS

A cross-sectional study was carried out at the main centre and 11 sub-centres in the field area of the Medical College Health unit of Primary Health Centre (PHC), Pangappara, Thiruvananthapuram, from August 2021 to July 2022 after Institutional Ethics Committee approval. From the reference study, the prevalence of depressive symptoms in antenatal women was 36.76%.2 The sample size was calculated using the formula n= 4pq/d2, taking d(margin of error) as 20%. The sample size was estimated to be 175. The antenatal outpatient clinic in the Primary Health Centre is open on all Tuesdays of the week. Through consecutive sampling, all women aged 18 and above with a confirmed pregnancy, attending the antenatal Outpatient clinic, were recruited to the study after obtaining informed consent. No identifiable information, such as name, address, or date of birth, was collected during data collection to ensure anonymity. The participants were given random registration numbers during data entry to ensure confidentiality.

The subjects were then administered the Edinburgh Postnatal Depression Scale (EPDS) questionnaire by the researcher. The EPDS is the most commonly used and acceptable screening tool for detecting depressive symptoms in the perinatal period worldwide; with a threshold of ≥13, the EPDS had a pooled sensitivity and specificity of 88.9% (95%CI 77.4–94.9) and 93.4 (95%CI 81.5–97.8), respectively when validated in India. EPDS consists of 10 questions. The test can be completed within 5 minutes. The translated and back-translated Malayalam version of the EPDS questionnaire was used in the current study.16 The outcome variable was depressive symptoms.

A pre-tested semi-structured data collection questionnaire was used to collect information on the other variables- Age, religion, place of residence, educational qualification, occupation, marital status, educational qualification of spouse, occupation of spouse, type of family, family income, socioeconomic class, social support, previous pregnancy, history of infertility treatment, history of premenstrual syndrome, family history of mood disorder, history of medical illness, current trimester, past history of psychiatric illness. In the current study, women who were found to have depressive symptoms were referred to a tertiary care centre.

All the collected data were coded and entered into a Microsoft Excel sheet and re-checked and analyzed using SPSS statistical software version 22. The normality of distribution was checked using the Kolmogorov-Smirnov test. Quantitative variables were summarised using mean and standard deviation (SD) or using median and interquartile range, depending on the normality of the distribution. Categorical variables were represented using percentages and frequencies. Appropriate statistical tests were done based on the normality of the data. The distribution of scores on the Depression scale was not normally distributed. When the factors associated with depression were expressed as qualitative variables, the chi-square test was used to assess the statistical significance between the determinants of Depression. As the scores were not normally distributed, the Mann-Whitney test was used to determine the statistical significance of the difference between the means of the variables across two independent groups. The Kruskal-Wallis test was used to assess the statistical significance of the differences in means across independent groups for the variables. A p-value of < 0.05 was considered significant.

RESULTS

The antenatal women were screened with the help of an EPDS questionnaire, and the prevalence of depressive symptoms according to EPDS (score more than or equal to 13) was found to be 18.85%. (Table 1)

Table 1: Proportion of Depression based on EPDS

Depression based on EPDS score ≥13	
	N (%)
Yes	32(18.3%)
No	143(81.7%)

The total sample size was 175. In this study, age, religion, place of residence, educational qualification, occupation, marital status, educational qualification of spouse, occupation of spouse, type of family, family income, socioeconomic class, or social support were not found to be significantly associated with depression. (Table 2)

Table 2: Association of Socio-demographic Variables with Depression

Variable	Groups	Depression		X^2 value	P value
		Yes	**No**		
Age Groups	20-25 years	10 (31.25)	53 (37.06)	0.79	0.673 *
	26-30 years	16 (50)	71 (49.65)		
	>30 years	6 (18.75)	19 (13.28)		
Religion	Hindu	16 (50)	81 (56.64)	1.80	0.614 #
	Christian	13 (40.63)	42 (29.37)		
	Muslim	3(9.37)	19 (13.29)		
	Others	0	1(0.7)		
Residence	Rural	23 (71.87)	101 (70.63)	0.02	0.889 *
	Urban	9 (28.13)	42 (29.37)		
Education	Graduate and above	8 (21.1)	30 (78.9)		
	High school educated	18 (17.1)	87 (82.9)		
	Primary school and below	6(18.8)	26 (81.33)		
Occupation	Semi-professional and professional	4(20)	16 (80)		
	Skilled worker, clerk/shopkeeper/farmer	10 (20.8)	38 (79.2)		
	Unskilled and Semi-skilled worker	9(30)	21(70)		
	Homemaker	9 (11.7)	68 (88.3)		
Marital Status	Married	32 (100)	130 (90.9)	3.14	0.208 #
	Divorced	0	3(2.1)		
	Separated	0	10 (6.99)		
Family Type	Nuclear	11 (34.38)	59 (41.26)	0.52	0.769 *
	Joint	11 (34.3)	43 (30.07)		
	Extended	10 (31.2)	41 (28.67)		
Socio-economic Status	Upper class	6 (16.7)	30(83.3)		
	Middle	9 (22)	32(78)		
	Lower	17 (17.3)	81 (82.7)		
Social Support	Poor	12 (37.5)	37 (25.8)	**0.490**	0.783 *
	Average	13 (40.6)	64 (44.7)		
	Good	7 (21.8)	42 (29.3)		

In the current study, 4.6% of the antenatal women had a history suggestive of depressive disorder in the past, 1.7% had a history suggestive of bipolar affective disorder, 1.7% had a history suggestive of psychotic disorder, and 88.6% reported no history of any psychiatric illness in the past. In the current study, a past history of psychiatric illness was found to be an important determinant of antenatal depression (p<0.001) (Table 3).

Table 3: Association of Clinical Variables with Depression

Variable	Groups	Depression		Test statistic	P value
		Yes	No		
History of PMS or PMDD	Yes	14(31.8)	30(68.2)	7.20	**0.007***
	No	18(13.7)	113(86.3)		
Past Psychiatric History	Mood disorders	10(90.9)	1(9.1)	44	**<0.001** #
	Psychotic disorder and others	3(33.3)	6(66.7)		
	Nil	19(12.3)	136(87.7)		
Family History of Mood Disorders	Yes	12(16.2)	62(83.8)	0.36	0.544*
	No	20(19.8)	81(80.2)		
Current Trimester	1st	9(14.8)	52(85.2)	0.89	0.638*
	2nd	12(21.4)	44(78.6)		
	3rd	11(19)	47(81)		
Previous Pregnancy	IUD	4(30.8)	9(69.2)	3.39	0.376#
	Abortion	5(21.7)	18(78.3)		
	Living	8(15.1)	45(84.9)		
	Neonatal death	1(50)	1(50)		
	Primi	14(16.7)	70(83.3)		
Infertility Treatment	Yes	7(30.4)	16(69.6)	2.61	0.144*
	No	25(16.4)	127(83.6)		

* Chi square test; # Fisher's exact test

In this study, 25.1% of the antenatal women reported symptoms suggestive of premenstrual syndrome (PMS), and 74.9% reported no such symptoms. In the current study, a history suggestive of PMS was found to be a statistically significant risk for antenatal depression (p=0.007). (Table 3) In this study, previous pregnancy, history of infertility

treatment, family history of mood disorder, history of medical illness, and current trimester were not found to be significantly associated with depression.

DISCUSSION

This study aimed to assess the prevalence of depressive symptoms and their correlates among antenatal women attending the antenatal out patient under the medical college unit area of PHC, Pangappara, Thiruvananthapuram 175 antenatal women who satisfied the inclusion criteria were included in our study

The pregnant women were evaluated using the EPDS questionnaire, and the prevalence of depressive symptoms according to EPDS (score more than or equal to 13) was found to be 18.85%. In a systematic review of epidemiological and clinical aspects of depression in pregnancy by Pereira et al., in various developed and developing countries, most gestational depression prevalence rates reported in developing countries were about 20%, while in developed countries, they were usually in a range between 10% and 15%.[14] The prevalence of antenatal depression is similar to a community-based cross-sectional study conducted by George et al. in a coastal area in South India, where antenatal women were screened using CSI-R, and the prevalence of antenatal depression was found to be 16.3%.[3] Similar results were yielded in a study done by Prabhu et al. among pregnant women attending a rural maternity hospital in Bangalore in which the antenatal women were screened using EPDS, and the study reported that the prevalence of antenatal depression was 12%.[17] However, a cross-sectional study was done in a tertiary care hospital in Mangalore by Pai Keshava et al., in which the antenatal women were screened using EPDS with a cut-off score of 13, where the prevalence was found to be 36.75%.[2] This difference may be because these studies were conducted in a tertiary care hospital and due to difference in socio-cultural factors. In India, antenatal women with obstetric complications, medical or psychiatric comorbidities are referred to tertiary care hospitals, for expert management and the risk of depressive symptoms is higher in these women.[15,16] The prevalence in the current study was found to be less, which maybe due to the low sensitivity to pick up antenatal depression in a Primary health centre, due to the inadequate training of medical personnel. This translates into a need for improved training in Primary health centres.[17] The current study was done during the COVID-19 pandemic. According to a systematic review with meta-analysis by Fan et al., the prevalence of depressive disorder among pregnant women grew significantly during the COVID-19 pandemic, and the prevalence was 25%.This difference could be attributed to various socio-cultural factors. Increased utilisation of maternal health care services by pregnant women in Kerala may be a reason for this.[19, 20]

In a systematic review by Pereira et al, the most common risk factors associated with depression in pregnancy were a past history of psychiatric illness- especially a history of depression; low income, financial difficulties, low education level, informal work, and lack of job; and poor social, family, or marital support. These factors are more common in disadvantaged socioeconomic circumstances such as those found in developing countries.[14] In a systematic review by Sahoo et al., in India, the most significant risk factors associated with antenatal depression included a history of abortions, marital conflict, and lack of social support.[21] The study by Hegde et al. found poor social support to be significantly associated with the incidence of depression.[2] In the study by George C et al., risk factors found to be significantly associated with antenatal depression were financial difficulties, previous history of miscarriage,

and stillbirth.[3] In the present study, 4.6% of the antenatal women had a history suggestive of depressive disorder in the past, 1.7% had a history suggestive of bipolar affective disorder, and another 1.7% had a history suggestive of psychotic disorder, and 88.6% reported no history of any psychiatric illness in the past. In the present study, a past history of psychiatric illness was found to be an important determinant of antenatal depression ($p<0.001$). It was also observed that out of the 175 antenatal women interviewed with an 18.85% prevalence of depressive symptoms, only one woman (0.57%) was currently on medication for psychiatric illness, major depressive disorder. In a meta-analysis done by Cao et al., over 19 observational studies were evaluated, and a history of premenstrual syndrome was found to be significantly associated with antenatal depression.[22] In the current study, 25.1% of the antenatal women reported symptoms suggestive of Premenstrual syndrome (PMS), and 74.9% reported no such symptoms. In the current study, a history suggestive of PMS was found to be a statistically significant risk for antenatal depression ($p=0.007$). Other socio-demographic and biological variables were not found to be statistically significant. This could be due to different socio-cultural factors. This maybe because women in Kerala have favourable health indicators compared to other states in India.[23]

The data was not normally distributed, which may be because of smaller sample size. The margin of error for calculating the sample size was taken as 20%, which is very wide. It is another limitation of the current study. Pregnant women getting antenatal healthcare services from private hospitals were not included in the current study. Another limitation of the study is that it relies on subjective reporting of symptoms. No diagnostic scale or criteria was used to ascertain PMS, and it was based on retrospective subjective reports of the symptoms by the pregnant women. In this study, all subjects were directly interviewed by the principal researcher. Hence, interviewer bias could be avoided. There is a dearth of cross-sectional studies in primary health care settings, and this study points to the fact that there is a need to screen and assess antenatal women for depressive symptoms in primary care settings.

CONCLUSION

In the current study, the prevalence of antenatal depression, according to EPDS, was 18.85%. Women with a past history of psychiatric illness and a history suggestive of premenstrual syndrome are more likely to develop antenatal depression.

More programs and policies must be implemented to increase general public awareness and healthcare professionals' awareness, thereby improving antenatal women's mental healthcare services. More studies need to be carried out in the area of antenatal depression, preferably longitudinal studies with larger sample sizes to assess risk factors and etiological factors for antenatal depression. Women with a past history of psychiatric illness and history suggestive of premenstrual syndrome need to be followed up to reduce the consequences due to antenatal depression.

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