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Original Research Article

A cross sectional study of depression during pregnancy and its risk factors among pregnant women attending a tertiary care hospital in Puducherry, India

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ABSTRACT

Background: Depression during pregnancy is a recognized global health issue which can lead to wide range of maternal and neonatal complications to extremes like maternal suicide to infanticide. This study was done to estimate the magnitude of depression during pregnancy and its risk factors among pregnant women attending a tertiary care hospital in Puducherry.

Methods: A descriptive cross sectional study was done among 220 pregnant women attending routine antenatal checkup in outpatient department of a tertiary care hospital in Puducherry, using a systematic random sampling technique. A semi structured questionnaire using Patient Health Questionnaire-9 was used to screen the mothers for antenatal depression.

Results: 220 pregnant women were evaluated for antenatal depression. Mean age of the study participants was 25.02±3.13 years. Using PHQ-9 authors found that 19.5% pregnant women were having risk for antenatal depression, of which the mild, moderate and moderately severe levels of depression were 16.4%, 1.4% and 1.8% respectively. The risk of antenatal depression was statistically significant among the women age more than 30 years, husband's educational status as higher secondary and below, residence in rural area, multigravida, having a male child, strained relationship, no support during pregnancy and pressure for a male child. Logistic regression analysis revealed age ≥30 years (aOR 3.03, 95% CI 1.04-8.82), and no support during pregnancy (aOR 3.30, 95% CI 1.10-9.90) were the significant factors.

Conclusions: Since the risk for antepartum depression is huge in this region, there is a need for screening for antepartum depression as a routine antenatal checkup in the out patient department. Reinforcing the importance of appropriate for conception and support for the mother during pregnancy plays a vital role in reducing the magnitude of this depression.

Keywords: Antenatal, Depression, PHQ-9, Support

INTRODUCTION

Depression during pregnancy is recognized as a global health issue due to its high prevalence, negative influence on the maternal and foetal outcome and susceptibility for postnatal depression.[1-6] This substantial effect on child and women can lead to wide range of maternal and neonatal complications to extremes like maternal suicide to infanticide. Several studies have documented prevalence ranges from 4% to 25%.[2,4,5,7-13] Other studies

using a variety of depression assessment tools have reported antenatal depression prevalence of 9% to 28% for predominantly middle class samples and 25% to 50% for low income populations.[14-16] It is persistently under diagnosed and treated during antenatal care and is largely ignored especially in developing countries as it is attributed to the insignificant changes during pregnancy. Even in the history less attention has been paid to the depression in the antepartum period than postpartum. As there is 45% increase in the antepartum depression (APD) recent past makes it a matter of great importance.[17]

Risk factors attributable for the development of antenatal depression include young age, multiparity, place of residence, low income, lower educational attainment, history of depression, previous poor obstetrical outcome, previous history of depression, strained relationships with family members, type of family and support from family ,gender preference and pressure ,history of childhood sexual abuse, adverse events in the recent past and low social support. The prevalence of depression is to some extent higher in rural population compared to those in urban areas. Studies have reported different prevalence in rural and urban population, south India-16.2%, rural Chennai-65%, urban areas like Navi-Mumbai 18% and Delhi 5-26%.[9,17-20] Different types of scales were used in these studies. Despite being an important public health issue, there is paucity of data on depression during pregnancy. Hence, this study was conducted with an aim to find the prevalence of depression during pregnancy, its attributable risk factors and to find out the pattern of prevalence and risk factors between urban and rural pregnant women attending tertiary care hospital in Puducherry.

METHODS

This is a descriptive cross-sectional type of study in the outpatient department (OPD) of obstetrics in a tertiary care hospital in Puducherry. The total sample size taken was 220 pregnant women attending routine antenatal checkup in outpatient department of Indira Gandhi Medical College and Research Institute, Puducherry. The study was done after getting informed consent. Pregnant women with pre-existing medical and surgical complications requiring hospitalization and pregnant women with pre-existing known psychiatric illness were excluded from this study.

Assuming the prevalence of antepartum depression as 10%, with error of margin as 10% and design effect as 2, the sample size was calculated as 193. With the addition of 10% non-response rate, the final sample size was rounded to 220. Systematic random sampling method (every third eligible study participant) was used as sample collecting procedure. After obtaining the social and demographic data a standardized and internationally accepted questionnaire, Patient Health Questionnaire-921 (PHQ 9) was used for the diagnosis of depressive disorders and was applied to screen all the subjects. The subjects identified as having depressive disorder was referred to psychiatry department and confirmed by a psychiatrist. The identified cases were treated as per treatment protocol followed at Psychiatry Unit in Indira Gandhi Medical College and Research Institute.

Statistical analysis

Descriptive data was tabulated as means, standard deviation, frequency and percentages. Fisher's Exact test or Chi-square test was applied to study the association between antenatal depression and the risk factors. Logistic regression analysis was also done to find the confounding factors and determine the adjusted odd's ratio for the risk factors. Data processing and analysis was done in MS Excel 2013, Epi info and SPSS version 20.0. P value<0.05 was considered as significant.

RESULTS

A total of 220 pregnant women participated in this study. Mean age of the study participants was 25.02+3.13 years. The prevalence of different levels of depression assessed using PHQ-9 of the study subjects has been shown in Table 1. Overall 19.5% of the pregnant women were having depression where 16.4%, 1.4% and 1.8% were suffering from mild, moderate and moderately severe levels of depression respectively.

The descriptive profile socio-demographic characteristics and its association with antepartum depression have been shown in Table 2. About 10% of the study subjects were aged 30 years and above. All of the pregnant mothers were married. Almost half of the pregnant women were graduate whereas approximately 3/4th of their husbands were graduate.

Table 1: Prevalence of different levels of depression among pregnant women.

Depression levels	Frequency	Percent	Depression category	Frequency	Percent
None-minimal	177	80.5	Depression absent	177	80.5
Mild	36	16.4	Depression present	43	19.5
Moderate	3	1.4			
Moderately severe	4	1.8			
Total	220	100.0		220	100.0

Table 2: Association between socio-demographic characteristics and antepartum depression.

Variable		Depression present (%)	Depression absent (%)	Total (%)	Odd's ratio (95% CI)	p value
Age group (years)	≥30	10 (45.5)	12 (54.5)	22 (10.0)	4.17 (1.67-10.44)	0.003*
	<30	33 (16.7)	165 (83.3)	198 (90.0)	-	-
Marital status	Married	43 (19.5)	177 (80.5)	220 (100.0)	-	-
Educational status of the subjects	Up to higher secondary	22 (20.8)	84 (79.2)	106 (48.2)	1.16 (0.6-2.26)	0.663
	Graduate/Post graduate	21 (18.4)	93 (81.6)	114 (51.8)	1	-
Educational status of the husband	Up to higher secondary	16 (32.0)	34 (68.0)	50 (22.7)	2.49 (1.21-5.13)	0.012
	Graduate/Post graduate	27 (15.9)	143 (84.1)	170 (77.3)	1	-
Monthly income	Up to 3126	4 (33.3)	8 (66.7)	12 (5.5)	2.17 (0.62-7.56)	0.215
	3127 and above	39 (18.8)	169 (81.2)	208 (94.5)	1	-
Type of family	Joint	18 (18.8)	78 (81.2)	96 (43.6)	0.91 (0.47-1.79)	0.793
	Nuclear	25 (20.2)	99 (79.8)	124 (56.4)		
Residence	Rural	30 (27.3)	80 (72.7)	110 (50.0)	2.80 (1.37-5.72)	0.004
	Urban	13 (11.8)	97 (88.2)	110 (50.0)		
Family h/o psychiatric disorders	No	42 (19.4)	175 (80.6)	217 (98.6)		
	Yes	1 (33.3)	2 (66.7)	3 (1.4)	2.08 (0.19-23.52)	0.481*
Past h/o abortions	No	38 (18.7)	165 (81.3)	203 (92.3)	0.55 (0.18-1.66)	0.337*
	Yes	5 (29.4)	12 (70.6)	17 (7.7)		
Past h/o stillbirth	No	42 (19.4)	174 (80.6)	216 (98.2)	0.72 (0.07-7.14)	0.584*
	Yes	1 (25.0)	3 (75.0)	4 (1.8)		

*Fisher's Exact test. Chi-square test.

Table 3: Association between anticipated risk characteristics and antepartum depression.

Variable		Depression present (%)	Depression absent (%)	Total (%)	Odd's ratio (95% CI)	p value
Multigravida	Yes	21 (29.2)	51 (70.8)	72 (32.7)	2.36 (1.19-4.66)	0.012
	No	22 (14.9)	126 (85.1)	148 (67.3)		
Male	One	15 (36.6)	26 (63.4)	41 (18.6)	3.11 (1.47-6.60)	0.002
	None	28 (15.6)	151 (84.4)	179 (81.4)		
Female	One/Two	7 (21.2)	26 (78.8)	33 (15.0)	1.13 (0.45-2.81)	0.793
	None	36 (19.3)	151 (80.7)	187 (85.0)		
Previous pregnancy complications	No	40 (19.2)	168 (80.8)	208 (94.5)		
	Yes	3 (25.0)	9 (75.0)	12 (5.5)	1.40 (0.36-5.38)	0.707*
Strained relationship	No	36 (17.9)	165 (82.1)	201 (91.4)		
	Yes	7 (36.8)	12 (63.2)	19 (8.6)	2.67 (1.01-7.05)	0.066*
Support pregnancy	Yes	34 (16.8)	168 (83.2)	202 (91.8)		
	No	9 (50.0)	9 (50.0)	18 (8.2)	4.94 (1.83-13.36)	0.002*
Husband alcoholic	Yes	11 (20.0)	44 (80.0)	55 (25.0)	1.04 (0.48-2.23)	0.922
	No	32 (19.4)	133 (80.6)	165 (75.0)		
Expectation male child	Yes	8 (33.3)	16 (66.7)	24 (10.9)	2.30 (0.91-5.80)	0.098*
	No	35 (17.9)	161 (82.1)	196 (89.1)		
Fear of female child	Yes	2 (66.7)	1 (33.3)	3 (1.4)	8.59 (0.76-96.97)	0.098*
	No	41 (18.9)	176 (81.1)	217 (98.6)		
Pressure male child	Yes	3 (75.0)	1 (25.0)	4 (1.8)	13.20 (1.34-130.23)	0.024*
	No	40 (18.5)	176 (81.5)	216 (98.2)		
Worried about child health	Yes	41 (19.0)	175 (81.0)	216 (98.2)	0.23 (0.03-1.71)	0.172*
	No	2 (50.0)	2 (50.0)	4 (1.8)		

*Fisher's Exact test. Chi-square test.

Table 4: Logistic regression analysis to predict risk factors antepartum depression.

Variable	p value	AOR	95% C.I. for AOR	
			Lower	Upper
Age (≥30 years)	0.042	3.030	1.040	8.822
Husband education (up to higher secondary)	0.153	1.936	0.782	4.795
Residence (rural)	0.224	1.723	0.717	4.138
Previous neonatal outcome (yes)	0.968	0.978	0.325	2.941
Male (yes)	0.164	2.310	0.711	7.507
Support (No)	0.033	3.299	1.099	9.899
Constant	0.010	0.145		

About 5.5% pregnant mothers family were earning lesser than 3126Rs per month. Most of them (46%) were living in a nuclear family. Half of the pregnant mothers were from rural area. About 1.4% of the pregnant mothers were having family history of psychiatric disorders. About 7.7% of the pregnant mothers were having a past history of abortion and 1.8% were having past history of stillbirth. In the univariate analysis, the significant factors associated with antepartum depression were age more than 30 years, husbands' educational status as higher secondary and below and residence in rural area

The descriptive characteristics and some factors associated with antepartum depression have been shown in Table 3. About 33% of the pregnant women were multigravida. Out of these 33% multigravida, almost 57% of the women were having a male child and 46% were having one or two female children. About 5.5% mothers had complications during previous pregnancy. Almost 9% of the pregnant mothers had strained relationship and about 8% were not having any support during pregnancy. One fourth of the husbands were alcoholic. Approximately 11% of the mothers were expecting a male child. 1.4% of the mothers were having a fear for female child. 1.8% of the mothers were having a pressure for a male child. Majority (98%) were worried about child's health. In the univariate analysis, the significant factors associated with antepartum depression were multigravida, having a male child, strained relationship, no support during pregnancy and pressure for a male child.

Table 4, the variable which were found to significant from univariate analysis ($p<0.05$) in Table 2 and 3 were considered for logistic regression analysis. However, on further analysis using binary logistic regression, only two risk factors were found to be associated significantly with high risk of depression out of 8 variables in the univariate analysis. These were age ≥30 years (aOR 3.03, 95% CI 1.04-8.82), and support during pregnancy (aOR 3.30, 95% CI 1.10-9.90), as presented in Table 4.

DISCUSSION

In present study the prevalence of depression among antenatal mothers was 19.4% which was contributed by equal number of rural and urban mothers and our prevalence is within the range of (5-25%) reported by several other studies with different rating scales.[2,4,5,7-13] There are many risk factors for APD. present study mainly concentrated on socio demographic characteristics, previous pregnancy outcomes, type of family, support during pregnancy, past medical history, events in the recent past and abuse history. The results showed that all were married and had planned pregnancies. There were no unwanted pregnancies in present study. In accordance to the study conducted in America, present study also showed that as the maternal age increases the chance of developing depression during pregnancy increased.[7] The risk of depression is higher among the multigravida (29% vs14%) than primigravida. studies done at Turkey, south India and Navi Mumbai also showed greater prevalence among multigravida and multipara whereas Set N al showed contrary findings that the risk of development of depression due to the acute mental stress experiences by pregnant women was same in the primi and multi gravidas.[17-19,22]

Peen et al, reported that the prevalence of depression during pregnancy was higher among urban mother than their counterparts in rural areas similarly crossmatched community based study from urbanized village of East Delhi showed the prevalence rates are 25.5% while other studies found an inverse correlation similar to present study.[23-26]

Present study found that educational status of spouse shows higher rate of depression with low literacy (up to higher secondary) but mother educational status did not have any effect. Probably the educational status of the male was lower than the female gives rise to stress to female to get adjusted in the family situations.

Other social factors like family income, type of family, expectation of male child, previous two female child, husband alcoholism, fear of female child and strained relationship, previous obstetrical outcome, past adverse life events, past and family history of depression does not have any effect on the development of depression during pregnancy. However, Nivetha et al study, showed all of these are attributable risk factors for development of depression during pregnancy.[17] Authors found that lack

of support from the family during pregnancy and pressure of male child were significant risk factors

Present study is a cross sectional study, but sensitive issues can be picked up only after repeated probing on several occasions during their antenatal care. So present antenatal visits are ideal option to screen these women during antenatal period and preventive steps can be taken for the development of postpartum depression. Early diagnosis of these conditions allow us to interfere with treatment so that maternal and child health can be taken care.

Longitudinal study designs are recommended to evaluate risk factors in detail. Increasing trend of depression in rural community needs to be evaluated further by taking comparative longitudinal studies with their urban counter parts.

CONCLUSION

To conclude, present study had shown that depression during pregnancy is prevalent in the age group of >30 years, with less literacy of husband and residing at rural areas and multiparity. Support from family and pressure male child was also significant risk factors for the development of depression during pregnancy.

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