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Proportion of depression and its risk factors among antenatal women attending maternal and child health clinic in teaching hospital, GIMS, Gadag

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Abstract
Introduction: Depression is a mood disorder that affects 1 in 4 women at some point during their lifetime. Depressive symptoms during pregnancy often go unexpressed and this may negatively affect women's and child's health.
Aims and Objectives
1. To estimate the proportion of depression among antenatal women attending Maternal and Child Health clinic in Teaching Hospital, GIMS, Gadag.
2. To determine the risk factors associated with depression among antenatal women attending Maternal and Child Health clinic in Teaching Hospital, GIMS, Gadag.
Methodology: A cross sectional study was conducted among 185 antenatal women attending Maternal and Child Health clinic in Teaching hospital, GIMS, Gadag for a period of 3 months.
Results: Out of 185 antenatal women 31.9% had completed PUC/Diploma and 10.3% antenatal women were screened positive for depression.
Conclusion: The important predictors of antenatal depression were 25-39 weeks of gestational age, women with one living child and female child in previous pregnancy.

Keywords: depression, antenatal women, mood disorder, screening, risk factors

Introduction

Mental health is a core component and its integration with other dimensions of health is necessary to achieve the Millennium Development Goals, relating to women and child health [1]. With the continuous raise in prevalence, Depression will rank as second major cause of disease burden by 2020. Depression is a mood disorder that affects 1 in 4 women at some point during their lifetime [2]. Among the mental disorders, depression is the commonest mental illness among the women of reproductive years [3].

One in every ten persons in India suffers from depression and anxiety according to the National Mental Health Survey (NMHS) 2016 and 20% of these depressed Indians are pregnant women and new mothers [4]. Antenatal depression generally defined as the onset of depressive symptoms during pregnancy can occur at any time during the pregnancy [5]. Depressive symptoms during pregnancy often go unexpressed and this may negatively affect women's and child's health [2]. If untreated depression among antenatal women can lead to poor nutrition, drinking, smoking and suicidal behavior which affects the fetus leading to premature birth, low birth weight, developmental problems compared to babies born to mothers, who are not depressed [6]. According to the American Congress of Obstetricians and Gynecologists [ACOG] 14-23% of women suffers with some symptoms of depression during pregnancy [7]. Studies done in Navi Mumbai and Delhi stated that 9.18% and 17% of women experience antenatal depression respectively [8, 9].

Depression during pregnancy has negative impact on both mother and infant and can be easily prevented by early screening of depression. But screening of depression during the antenatal period is not much addressed at field levels and there are very few researches on antenatal depression in India, hence we have designed this study with the following

Objectives
1. To estimate the proportion of depression among antenatal women attending Maternal and Child Health clinic in Teaching Hospital, GIMS, Gadag.

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2. To determine the risk factors associated with depression among antenatal women attending Maternal and Child Health clinic in Teaching Hospital, GIMS, Gadag.

Methodology
An observational cross sectional study was conducted among antenatal women attending Maternal and Child Health clinic in Teaching hospital, GIMS, Gadag for a period of 3 months. Using formula $n = 4pq/L^2$ and based upon the prevalence of depression [10] of 14%, 95% confidence interval with 5% marginal error, Sample size(n) was 185 antenatal women. Purposive sampling was used to select antenatal women attending Maternal and Child Health clinic in Teaching Hospital, GIMS, Gadag. Antenatal Women with equal or more than 12 weeks of gestational age and willing to give consent were included in the study. Antenatal women having life threatening complications were excluded from the study. The Institutional Ethics Committee approval was obtained from the Gadag Institute of Medical Sciences, Gadag. Informed written consent in local Kannada language was taken from all the study participants for voluntary participation. A predesigned and pretested questionnaire including socio-demographic profile, antenatal obstetric history, medical conditions, other risk factors and Edinburg scale to diagnose depression was administered to the study subjects.

Edinburg Depression Scale [11] (EDS) is easy to administer and has proven to be an effective & reliable screening tool in India. The scale indicates how the mother has felt during the previous week. The 10 question Edinburgh Depression Scale is a valuable and efficient way of identifying people at risk for depression. The scores are given as 0, 1, 2 and 3 for each question. Maximum score = 30 and minimum score = 0. A study subjects if scored 13 and above are pointed towards the likelihood of presence of depression.

Statistical Analysis: Data was coded and entered in excel sheet. Descriptive statistics were analyzed for frequency, proportions and chi square test. Two-sided 'p' value of <0.05 was considered as statistically significant. Association between socio-demographic factors and other factors with depression were calculated using SPSS statistical software (version 16).

Results and Discussion
Out of 185 antenatal women (58.4%) majority of study subjects belonged to 21-25 years age group, 31.9% had completed PUC/Diploma and 30.8% High school, 82.7% are Hindus and 96.8% were Housewives. Majority (37.8%) of husbands of the antenatal women had completed PUC/Diploma and 58.4% were skilled workers. 81.1% of study subjects were from rural area and 56.2% had nuclear families whereas 43.8% had joint families which was almost similar to the study done by Sheeba et al. [12] in which majority (72.9%) pregnant mothers belonged to the age group of more than 20 years, (72.1%) were Muslim and 40.4% had completed High school. 92.1% were housewives, majority (33.9%) of spouses of the pregnant mothers completed high school and the spouses of over half of the respondents (51.8%) were semi- skilled workers. Majority (33.5%) of the study subjects belonged to Lower class followed by 28.1% Upper middle class and 26.5% to Upper lower class by modified B. G. Prasad socio-economic classification [13] (Table 1), the findings were in contrast to the study done by Johnson, et al. [14] were majority (40.4%) belonged to socioeconomic class II by B G Prasad classification.

Table 1: Distribution of the study participants according to socio-demographic characteristics.

S. No.	Characteristics	Antenatal	
		No.	%
	Age (years)		
1.	15-20	18	9.7
2.	21-25	108	58.4
3.	26-30	54	29.2
4.	31-35	3	1.6
5.	Above 35	2	1.1
	Total	185	100
	Education of women		
1.	Illiterate	9	4.9
2.	Literate	5	2.7
3.	Primary school	17	9.2
4.	Middle school	31	16.8
5.	High school	57	30.8
6.	PUC/Diploma	59	31.9
7.	Graduate	7	3.8
8.	Post graduate/above	0	0
	Total	185	100
	Religion		
1.	Hindu	153	82.7
2.	Muslim	31	16.8
3.	Christian	1	0.5
4.	Others	0	0
	Total	185	100
	Occupation of mother		
1.	Housewife	179	96.8
2.	Working	6	3.2
	Total	185	100

	Education of husband		
1.	Illiterate	12	6.5
2.	Literate	0	0
3.	Primary school	6	3.2
4.	Middle school	19	10.3
5.	High school	61	33
6.	PUC/Diploma	70	37.8
7.	Graduate	17	9.2
8.	Post graduate/above	0	0
	Total	185	100
	Occupation of husband		
0.	Unemployed	0	0
1.	Unskilled	18	9.7
2.	Semiskilled	9	4.9
3.	Skilled	108	58.4
4.	Clerk/Shopkeeper	35	18.9
5.	Semi professional	10	5.4
6.	Professional	5	2.7
	Total	185	100
	Area of residence		
1.	Rural	150	81.1
2.	Urban	35	18.9
	Total	185	100
	Type of family		
1.	Nuclear	104	56.2
2.	Joint	81	43.8
3.	Three generation	0	0
4.	Problem	0	0
5.	Broken	0	0
	Total	185	100
	Socio-economic status		
1.	Upper class	10	5.4
2.	Upper middle class	52	28.1
3.	Lower middle class	12	6.5
4.	Upper lower class	49	26.5
5.	Lower class	62	33.5
	Total	185	100

Table 2: Distribution of the study participants according to the obstetric history

Obstetrics history	Options	Frequency	Percentage
Age at menarche	11-13yrs	116	62.7
	14-16yrs	69	37.3
Age at marriage	15-20yrs	139	75.1
	21-25yrs	43	23.2
	26-30yrs	2	1.1
	31-35yrs	1	0.5
Type of marriage	Consanguineous	65	35.1
	Non consanguineous	120	64.8
Duration of marriage	1-5yrs	138	74.5
	6-10yrs	39	21.0
	11-15yrsyrs	8	4.3
Age at first pregnancy	15-20yrs	56	30.2
	21-25yrs	110	59.4
	26-30yrs	17	9.1
	31-35yrs	2	1.0
Gestational age	8-12weeks	1	0,5
	13-24weeks	21	11.4
	25-39weeks	163	88.1
Gravida	1	93	50.2
	2	52	28.1
	3	32	17.2
	4	8	4.3
Parity	0	94	50.8
	1	56	30.3
	2	29	15.7
	3	6	3.2
Living	0	99	53.5

	1	52	28.1
	2	28	15.1
	3	6	3.2
Abortion	0	173	93.5
	1	10	5.4
	2	2	1.1
Sex of previous children	Male	56	30.2
	Female	55	29.7
Present pregnancy	Planned	182	98.4
	Unplanned	3	1.6

Majority of antenatal women (62.7%) attained menarche at 11-13 years of age and most (75.1%) of them married at 15-20years of age. 64.8% study participants had non consanguineous marriage and 74.5% were married for 1-5years. Majority (59.4%) of study participants had first pregnancy in 21-25years of age. Majority (88.1 %) of study participants were in 25-39 weeks of gestational age. Majority (98.4%) of study subjects had planned pregnancy and 50.2% were primigravida. 30.2% of study subjects had male child and 29.7% had female child in their previous pregnancy (Table 2).

Table 3: Distribution of the study subjects according to the Edinburg Depression Scale.

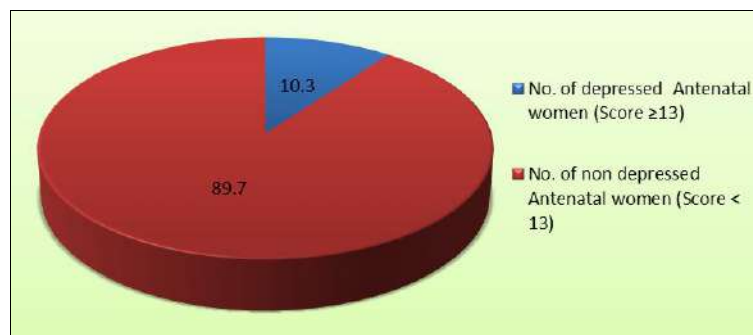| Edinburg Depression Scale	ANC	Percentage
Total no. of depressed women (Score ≥13)	19	10.3
Total no. of non depressed women (Score < 13)	166	89.7
Total	185	100

Fig 1: Distribution of the study subjects according to the Edinburg Depression Scale

According to Edinburg Depression Scale, 19 (10.3%) antenatal women who had score equal to or more than 13 were screened positive for depression and 166 (89.7%) antenatal women with score less than 13 were not depressed (Table 3), it was less than the 16% depression reported in India by Chandra *et al*. [15] and 35.7% in the study done by Sheeba *et al*. [12].

Table 4: Association between Socio-demographic characteristics and Proposition of Depression among Antenatal Women.

S. No.	Socio-Demographic Characteristics	Edinburg Depression Scale						P-value
		Depressed		Not-depressed		Total	%	
		No.	%	No.	%			
	Age (years)							
1.	15-20	2	1.0	16	8.6	18	9.7	x^2 -9.169 df-4 p = 0.057
2.	21-25	6	3.2	102	55.1	108	58.4	
3.	26-30	11	5.9	43	23.2	54	29.2	
4.	30-35	0	0	3	1.6	3	1.6	
5.	Above 35	0	0	2	1.0	2	1.1	
	Total	19	10.3	166	89.7	185	100	
	Education of women							
1.	Illiterate	3	1.6	6	3.2	9	4.9	x^2 -11.905 df-6 p = 0.064
2.	Literate	0	0	5	2.7	5	2.7	
3.	Primary school	4	2.1	13	7.0	17	9.2	
4.	Middle school	4	2.1	27	14.5	31	16.8	
5.	High school	5	2.7	52	28.1	57	30.8	
6.	PUC/Diploma	3	1.6	56	30.2	59	31.9	
7.	Graduate	0	0	7	3.7	7	3.8	
8.	Post graduate/above	0	0	0	0	0	0	
	Total	19	10.3	166	89.7	185	100	
	Religion							x^2 -0.132 df-2 p = 0.936
1.	Hindu	16	8.7	137	74.1	153	82.8	
2.	Muslim	3	1.6	28	15.1	31	16.7	

							P-value
3.	Christian	0	0	1	0.5	1	0.5	
	Total	19	10.3	166	89.7	185	100	
Occupation of mother								
1.	Housewife	19	10.3	160	89.7	179	96.8	x^2- 0.710
2.	Working	0	0	6	0	6	3.2	df-1
	Total	19	10.3	166	89.7	185	100	p = 0.400
Education of husband								
1.	Illiterate	2	1.0	10	5.4	12	6.5	
2.	Literate	0	0	0	0	0	0	
3.	Primary school	1	0.5	5	2.7	6	3.2	x^2- 4.812
4.	Middle school	1	0.5	18	9.7	19	10.3	df-5
5.	High school	9	4.8	52	28.1	61	33	p = 0.439
6.	PUC/Diploma	6	3.2	64	34.5	70	37.8	
7.	Graduate	0	0	17	9.1	17	9.2	
8.	Post graduate/above	0	0	0	0	0	0	
	Total	19	10.3	166	89.7	185	100	
0ccupation of husband								
0	Unemployed	0	0	0	0	0	0	
1.	Unskilled	2	1.0	16	8.6	18	9.7	x^2 - 3.178
2.	Semiskilled	2	1.0	7	3.7	9	4.9	df-5
3.	Skilled	11	5.9	97	52.4	108	58.4	p = 0.673
4.	Clerk/Shopkeeper	4	2.1	31	16.7	35	18.9	
5.	Semiprofessional	0	0	10	5.4	10	5.4	
6.	Professional	0	0	5	2.7	5	2.7	
	Total	19	10.3	166	89.7	185	100	
Area of residence								
1.	Rural	18	9.7	132	71.3	150	81.1	x^2- 2.574
2.	Urban	1	0.5	34	18.3	35	18.9	df-1
	Total	19	10.3	166	89.7	185	100	p = 0.089
Type of family								
1.	Nuclear	9	4.8	95	51.3	104	56.2	
2.	Joint	10	5.4	71	38.3	81	43.8	x^2 - 0.673
3.	Three generation	0	0	1	0.5		0	df-1
4.	Problem	0	0	0	0	0	0	p = 0.412
5.	Broken	0	0	0	0	0	0	
	Total	19	10.3	166	89.7	185	100	
Socio-economic status								
1.	Upper class	0	0	10	5.4	10	5.4	
2.	Upper middle class	6	3.2	46	24.8	52	28.1	x^2 - 4.215
3.	Lower middle class	1	0.5	11	5.9	12	6.5	df-4
4.	Upper lower class	8	4.3	41	22.1	49	26.5	p = 0.378
5.	Lower class	4	2.1	58	31.3	62	33.5	
	Total	19	10.3	166	89.7	185	100	

Among 10.3% of depressed antenatal women, majority (5.9%) belong to 26-30years age group, most (2.7%) of them had completed High school, 8.7% were Hindus and all were housewives, which were statistically insignificant. Among the depressed study subjects 4.8% of their husband completed high school and 5.9% were skilled workers, 9.7% were from rural area and 5.4% had joint family and 4.3% belonged to Upper lower class according to modified B. G. Prasad socio-economic classification, which were statistically insignificant (Table 4), the findings were similar to the study done by Sheeba et al. [12].

Table 5: Association between obstetric history and depression among antenatal women

Obstetrics history	Options	Depressed		Not-depressed		Total frequency	Total Percentage	P-value
		Frequency	Percentage	Frequency	Percentage			
Age at menarche	11-13yrs	15	8.1	101	54.5	116	62.7	x^2- 2.389
	14-16yrs	4	2.1	65	35.1	69	37.3	df-1 p = 0.122
Age at marriage	15-20yrs	15	8.1	124	67.0	139	75.1	x^2- 0.428 df-3 p =0.934
	21-25yrs	4	2.1	39	21.0	43	23.2	
	26-30yrs	0	0	2	1.0	2	1.1	
	31-35yrs	0	0	1	0.5	1	0.5	
Type of marriage	Consanguineous	10	5.4	55	29.7	65	35.1	x^2- 2.844 df-1 p = 0.092
	Non consanguineous	9	4.8	111	60.0	120	64.8	
Duration of marriage	1-5yrs	9	4.8	129	69.7	138	74.5	x^2-13.018 df-2 p = 0.001
	6-10yrs	10	5.4	29	15.6	39	21.0	
	11-15yrs	0	0	8	4.3	8	4.3	

		Depressed Frequency	Depressed Percentage	Not-depressed Frequency	Not-depressed Percentage	Total frequency	Total Percentage	P-value
Age at first pregnancy	15-20yrs	8	4.3	48	25.9	56	30.2	x^2- 3.163 df-3 p = 0.367
	21-25yrs	11	5.9	99	53.5	110	59.4	
	26-30yrs	0	0	17	9.1	17	9.1	
	31-35yrs	0	0	2	1.0	2	1.0	
Gestational age	8-12weeks	0	0	1	0.5	1	0,5	x^2- 10.905 df-2 p = 0.004
	13-24weeks	4	2.1	17	9.1	21	11.2	
	25-39weeks	15	8.1	148	80.0	163	88.1	
Gravida	1	4	2.1	89	48.1	93	50.2	x^2- 8.551 df-3 p = 0.036
	2	7	3.7	45	24.3	52	28.0	
	3	6	3.2	26	14.0	32	17.2	
	4	2	1.0	6	3.2	8	4.2	
Parity	0	4	2.1	90	48.6	94	50.7	x^2- 8.353 df-3 p = 0.039
	1	8	4.3	48	25.9	56	30.2	
	2	6	3.2	23	12.4	29	15.6	
	3	1	0.5	5	2.7	6	3.2	
Living	0	4	2.1	95	51.3	99	53.4	x^2- 9.695 df-3 p = 0.021
	1	8	4.3	44	23.7	52	28.0	
	2	6	3.2	22	11.8	28	15.0	
	3	1	0.5	5	2.7	6	3.2	
Abortion	0	17	9.1	156	84.3	173	93.4	x^2-1.293 df-2 p = 0.524
	1	2	1.0	8	4.3	10	5.3	
	2	0	0	2	1.0	2	1.0	
Sex of previous children	Male	9	4.8	47	25.4	56	30.2	x^2- 3.256 df-3 p = 0.354
	Female	12	6.4	43	23.2	55	29.6	x^2- 11.931 df-3 p = 0.008
Present pregnancy	Planned	18	9.7	164	88.6	182	98.3	x^2- 2.194 df-2 p = 0.334
	Unplanned	1	0.5	2	1.0	3	1.5	
Contraceptive used previously	Not used	16	8.65	144	77.84	160	86.49	x^2-1.327 df-2 p=0.515
	Condom	3	1.62	16	8.65	19	10.27	
	Copper T	0	0.00	6	3.24	6	3.24	
	Total	19	10.27	166	89.73	185	100.00	

Majority of depressed antenatal women (5.4%) had 6-10 years of marriage, most of them (8.1%) were in 25-39 weeks of gestational age, 2.1% were primigravida, 4.3% of antenatal women had one living child and 6.4% of antenatal women had female child in previous pregnancy which were statistically significant (Table 5) and in the study done by Escriba-Aguir et al. [16] the negative reactions of family members toward the birth of a female, initiates or exacerbates depression.

Table 6: Association between medical condition of Mother and Depression among Antenatal Women.

		Depressed		Not-depressed				
	Options	Frequency	Percentage	Frequency	Percentage	Total frequency	Total Percentage	P-value
Medical condition of mother	None	17	9.19	152	82.16	169	91.35	x^2-0.999 df-3 p=0.802
	Hypertension	2	1.08	10	5.41	12	6.49	
	Hypertension & Diabetes mellitus	0	0.00	1	0.54	1	0.54	
	Diabetes mellitus	0	0.00	3	1.62	3	1.62	
	Total	19	10.27	166	89.73	185	100.00	
Congenital anomaly	Yes	0	0	02	1.08	2	1.1	x^2- 0.231 df-1 p= 0.63
	No	19	10.27	164	88.65	183	98.9	
	Total	19	10.27	166	89.73	185	100.0	

Table 7: Association between Family relations and Depression among Antenatal Women.

Family relations	Options	Depressed Frequency	Depressed Percentage	Not-depressed Frequency	Not-depressed Percentage	Total frequency	Total Percentage	P-value
Relationship with husband	Satisfied	18	9.73	166	89.73	184	99.46	x^2-8.784 df-1 P=0.003
	Unsatisfied	1	0.54	0	0	1	0.54	
	Total	19	10.27	166	89.73	185	100.00	
Relationship with in-laws	Satisfied	15	8.11	143	77.30	158	85.41	x^2 -5.129 df-2 p=0.077
	Unsatisfied	4	2.16	12	6.49	16	8.65	
	Not in relationship	0	0.00	11	5.95	11	5.95	
	Total	19	10.27	166	89.73	185	100.00	
Any family problems issues	No issues	19	10.27	163	88.11	182	98.38	x^2 - 0.349 df-3 p=0.951
	Quarrel with in-laws	0	0	1	0.54	1	0.54	
	More work given to her	0	0	1	0.54	1	0.54	
	Quarrel with brother in-law	0	0	1	0.54	1	0.54	
	Total	19	10.27	166	89.73	185	100	

Statistical association between depression of antenatal women with congenital anomaly and medical conditions of mother were not found (Table 6). Most of depressed antenatal women had good relationship with their husband, which was statistically significant (Table 7) in contrast to the study done by Johnson *et al*. [14] were poor relationship with spouse, siblings and in-laws were significantly associated with the presence of antepartum mental morbidities compared to women who reported good relationships.

Conclusion and recommendation
The proportion of antenatal depression was 10.3% among antenatal women attending Maternal and Child Health clinic in Teaching Hospital, GIMS, Gadag which represents only the tip of iceberg. The important predictors of antenatal depression were 25-39 weeks of gestational age, women with one living child and female child in previous pregnancy. Routine antenatal care may include verbal screening of depression, which may help in early diagnosis and management of depression. Further researches are necessary to study the potential benefits of health education, screening and treating depression during pregnancy especially at the community level.

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