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ASSESSMENT OF STRESS AND ASSOCIATED FACTORS AMONG PREGNANT WOMEN AVAILING ANTENATAL CARE AT GOVERNMENT MEDICAL COLLEGE AND HOSPITAL, AURANGABAD, INDIA.

Pooja Roy[1] and Smita Andurkar[2]

[1]Junior Resident, Department of Community Medicine, Government Medical College and Hospital, Aurangabad.

[2]Associate Professor, Department of Community Medicine, Government Medical College and Hospital, Aurangabad.

[1]Department of Community Medicine,

[1]Government Medical College and Hospital, Aurangabad, India

Abstract:

BACKGROUND AND OBJECTIVE: Stress in pregnancy is associated with adverse obstetric outcomes. Antenatal perceived stress is still under-diagnosed during routine antenatal care. However, a very few studies have been done to explore the burden of antenatal stress and psychosocial predictors in context of the Indian sociocultural environment.

METHODS: Hospital based cross-sectional study was done from October 2020 to December 2020. Psycho-social variables were measured using antenatal psychosocial stress scale while the perceived stress was measured with the perceived stress scale (PSS 10). A total of 280 pregnant women were interviewed using structured and pre-tested questionnaires. Systematic sampling was done to select the participants. Data were collected using structured pretested questionnaire, entered in SPSS trial version for analysis. Pearson's Chi-square test was used to assess the association between stress and psychosocial and pregnancy related factors.

RESULTS: Out of total 280 women, 209 (74.64%) were diagnosed with stress using PSS score >14 in the study. Gravida (p value-0.001), parity (p value-0.001), time of initiation of ANC (p value-0.016), present obstetric complications (p value-0.020) and counselling about danger signs (p value-0.04) are the predictor of stress in pregnant women in our study. Even concern regarding husband's alcoholism, delivery complications and investigations done during pregnancy were significant in pregnant women.

INTERPRETATION AND CONCLUSIONS: The findings showed that the magnitude of perceived stress during pregnancy is high. Concern regarding husband's alcoholism, delivery complications and investigations done during pregnancy were the important predictors of stress in pregnancy. Obstetric factors like gravida, parity, time of initiation of ANC, present obstetric complications and counselling about danger signs were also associated with maternal stress. Assessment of emotional support for pregnant women is very crucial.

KEYWORDS: Antenatal care, Perceived stress, psychosocial stress, Pregnant women.

INTRODUCTION

Usually, it is supposed that pregnancy is a time of emotional well-being, but it can be a very difficult period for many women.[1] Women's mental health during this period has significant effects on successful childbirth, fetal health and lactation.[2] Stress is a complex pattern of a reaction of the human physiology to a demanding situation. Stress is a process in which we perceive the challenges and threats around us[3]. Perceived stress is the feelings or thoughts that an individual has about how much a stress event or situation generates at a given point in time or over a given time period.[4] Prenatal maternal stress, conceptualized to be a multidimensional entity, results from imbalance between environmental demands and individual resources and leads to increased stress perception and maladaptive coping.[5] Considerable evidence supports psychosocial stress may predict a woman's "attentiveness to personal health matters, her use of prenatal services, and the health status of her offspring".[6] It is normal for a pregnant woman to be psychologically tensed about her health, baby's wellbeing and the changes which will take place in her life after the birth of the child.

Mild stress during antenatal period, is good for optimal development of the fetus, but if it exceeds it may lead to long term effect on the fetus, and alter the development of the fetal nervous system.[3] Evidence suggests that this occurs via effects on development of the fetal nervous system and alterations in functioning of the maternal and fetal hypothalamic pituitary adrenal (HPA) axes.[7-10] It is well documented that stress during pregnancy can have a huge number of maternal as well as neonatal adverse effects. Many researchers have asserted that maternal stress during pregnancy has been associated with spontaneous pregnancy loss, preterm labor,

preeclampsia, miscarriage, low birth weight, immune system suppression, excessive nausea and vomiting of pregnancy and higher incidence of caesarean deliveries.[4,11-15]

Antenatal stress may have consequences that span generations. The majority of studies show that mild, moderate and severe stress can have negative influences on pregnancy outcome and different changes in behavioral and physiological development of fetus. Prenatal stress can indirectly affect infant health and development by increasing the risk of adverse birth outcomes.[16] In studies employed in Thailand[17], South-East Ethopia[18] and Kathmandu[19] show that the prevalence of perceived stress during pregnancy was 23.6%, 11.6% and 34% respectively. Similarly, the study conducted in Kerala shows that the prevalence of perceived stress during pregnancy is 77.31%[20].

Mental health, an important component of reproductive health, is often neglected.[1] Prominent sources of stress during pregnancy includes concerns that are pregnancy related, hospital related, work related and spousal related.[21] The stress may be amplified by hormonal changes that occur during pregnancy. Studies have also found that partner conflict during pregnancy is related to pregnancy related concerns and stress.[22] Evaluation of the stress and its impact on the individual in disease has been done using different approaches. In psychological tradition of assessment, stress is measured as perceived stress and the main focus is on individual's ability to cope with demands of specific events and their affective responses to that event.[23]

Although perceived stress during pregnancy adversely affects the mother and her baby and there are only a few research done in India among pregnant mothers but it has limited variables. Those missed variables include psychosocial variables like concerns regarding investigations done during pregnancy, illness during pregnancy, delivery complications, labor pains, behavior of doctors and sisters in labor room, communication with doctors regarding your illness in pregnancy, if you do not get adequate rest periods in between the job or domestic work, no help at home / in work place from anybody else, husband's alcoholism and husband's violence. Therefore, the aim of this study is to access the stress in pregnant mothers by adding some important variables. Therefore, this study will assess the prevalence of perceived stress and associated factors among pregnant women in GMCH, Aurangabad.

METHODOLOGY

Study design and setting

A cross-sectional study was performed among all pregnant women attending the antenatal clinic irrespective of maternal and gestational age in Government Medical College and hospital. This study was conducted in department of Obstetrics and Gynecology of a tertiary care hospital in the state of Maharashtra, India from 1st October 2020 to 1st December 2020.

Sample size

Sample size was determined by using formula based on the assumptions of 95% confidence level, p-value (77.31%) The sample size was determined using Cochran formula ($3.84pq/L^2$). A prevalence of stress among pregnant women as 77.31% (p=0.7731) was taken from a study conducted in Kerala[11] with 95% confidence interval (CI) to be 1.96 and absolute error to be 5%. Adding a nonresponse rate of 10%, the total sample size calculated was 280.

Study population

The study population included all pregnant women attending the antenatal clinic irrespective of maternal and gestational age. Pregnant women who had known severe psychiatric illnesses which might affect the stress status of women and a lack of desire to continue to participate in the study were excluded.

Every other eligible subject was recruited by systematic sampling to select 280 for this descriptive cross-sectional study. Signed informed consent was obtained from each participant prior to initiation of the study.

Subsequently, every other mother was included until the desired 280 sample size was achieved.

Data collection Structured questionnaire was used to collect data. It has four sections. It contains socio-demographic variables, obstetric variables, perceived stress scale questions[23] and antenatal psychosocial stress scale[15].

Data quality control

To maintain data quality the questionnaire was pretested on 14 (5%) pregnant mothers.

Measurement

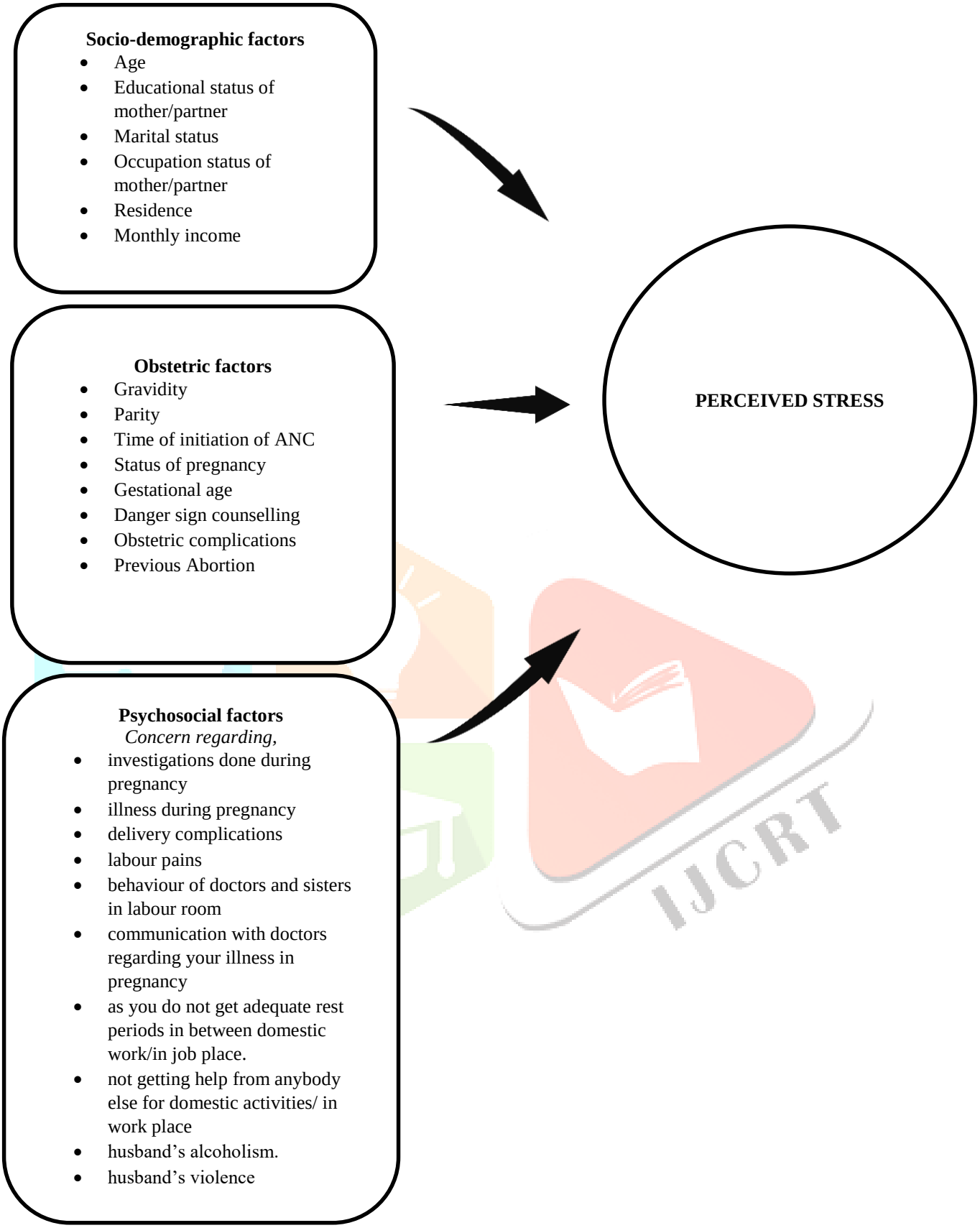
Perceived stress scale (PSS 10) was used to measure the perceived stress in the pregnant women. Perception of stress is measured by Perceived stress scale. This scale generates stress score that is based on general questions rather than focusing on any experiences.[24] The questions were designed to understand the degree and frequency of stressful thoughts during previous one month. Marathi version of the stress scale questionnaire was used to calculate the prevalence of stress in the present study. By reversing the responses, PSS scores are obtained (e.g. 0=4, 1=3, 2=2, 3=1 and 4=0) to four stated items which were positive (items 4, 5, 7, and 8) and then summing across all scale items. The scale has got scores ranging from 0 to 40 based on response to the given questions which categorizes individuals into three: 0 - 13, 14 - 26 and 27 - 40 representing low, moderate and severe perceived stress, respectively (Cohen et al., 1983)[31]. Psycho-Social Variables were measured using the antenatal psychosocial stress scale. The questions developed for the scale represented the four domains of 1 - pregnancy related, 2 - hospital related, 3 - work related, 4- spousal related. Obstetric variables were developed from various literatures[23,25]. The data was collected in a separate room to ensure the participant's privacy.

Assessment of risk factors: A validated questionnaire was designed and pretested for the assessment of risk factors. Socio-demographic details including age, educational status of mother/partner, marital status, occupation status of mother/partner, residence and monthly income was taken into account. Obstetric history included gravidity, parity, time of initiation of ANC, status of pregnancy, gestational age, danger sign counselling and present obstetric complications. Data obtained by interview were checked against medical records for obstetric history.

Statistical Analysis

Data was processed using IBM SPSS trial version. The descriptive data were presented using frequency, tables, figures, mean and standard deviation. The relationship of perceived stress with socio-demographic and clinical characteristics was evaluated using Chi square test. Values of $p < 0.05$ were considered significant.

Figure 1: Frame work of the Study**:**



RESULTS

Socio- demographic Factor:

A total of 280 pregnant mothers participated in this study. About 201 pregnant women were less than 25 years of age. About 190(67.9%) women were Hindu in religion. Around 278 (99.3%) women were married. With regards to occupational status and education of women, housewife takes larger proportion of 157 (56.1%) and 124 (44.3%) of the women had high school certificate. The majority 156 (55.7%) of the mothers were rural residents. 172 (61.4%) husbands attended high school education while 161 (57.5%) men are employed in elementary occupation. About 193 (68.9%) participants had the monthly family income below 10,001 rupees. 188 participants belonged to upper lower (IV) class of socioeconomic status according to Kuppuswami scale.

Table 1: Socio-demographic characteristics of pregnant women availing antenatal care in GMCH, Aurangabad (n = 280).

VARIABLE	CATEGORY	FREQUENCY	PERCENT
1. Age	• ≤24 years of age • 25-34 years of age • ≥35 years of age	201 67 12	71.8 23.9 4.3
2. Education of Mother	• Illiterate • Primary school certificate • Middle school certificate • High school certificate	15 48 93 124	5.4 17.1 33.2 44.3
3. Religion of Mother	• Hindu • Muslim • Christian	190 88 2	67.9 31.4 0.7
4. Marital Status	• Married • Widow	278 2	99.3 0.7
5. Occupational Status of Mother	• Housewife • Labourer • Government Employee • Farmer • Student	157 47 3 65 8	56.1 16.8 1.1 23.2 2.9
6. Residence of Mother	• Rural • Urban	156 124	55.7 44.3
7. Educational Status of Father	• Illiterate • Primary school certificate • Middle school certificate • High school certificate • Intermediate or diploma	7 33 66 172 2	2.5 11.8 23.6 61.4 0.7
8. Total Monthly Income of Family	• ≤10,001 • 10,002–29,972 • 29,973– 49,961	193 49 38	68.9 17.5 13.6
9. Occupation of Head	• Unemployed • Elementary Occupation • Plant and Machine Operators and Assemblers • Skilled Agricultural and Fishery Workers • Skilled Workers and Shop and Market Sales Workers • Crafts and Related Trade Workers • Professionals • Clerks • Technicians and Associate Professionals • Legislators, Senior Officials and Managers	6 161 12 35 15 9 10 21 6 5	2.1 57.5 4.3 12.5 5.4 3.2 3.6 7.5 2.1 1.8

Obstetric factors

From the total pregnant mothers participated in this study 180 (64.3%) of them were primigravida. Among the respondents 141(50.4) of them were nulliparous. 159 (56.8%) pregnant women in the study were in their third trimester. During current pregnancy, 226 (80.7) of the study subjects reported that they do not face any type of complication. 226 (80.7%) pregnancy were unplanned. About 247 (88.2%) of the mothers initiate antenatal care follow up before 16 weeks of gestation. Among the participants 262(93.6) of them said they were counselled on danger signs of pregnancy.

Table 2: Obstetric characteristics of pregnant women availing antenatal care in GMCH, Aurangabad (n=280).

VARIABLE	CATEGORY	FREQUENCY	PERCENTAGE
1. Gravida	• Primigravida • Multigravida	180 100	64.3 35.7
2. Parity	• Nulliparous • Primiparous • Multipara	141 33 106	50.4 11.8 37.9
3. Time of ANC initiation	• Before 16 weeks • After 16 weeks	247 33	88.2 11.8
4. Previous Abortion	• Yes • No	62 218	22.1 77.9
5. Gestational age	• First trimester • Second trimester • Third trimester	79 42 159	28.2 15.0 56.8
6. Status of Pregnancy	• Planned • Unplanned	54 226	19.3 80.7
7. Present obstetric complication	• Yes • No	54 226	19.3 80.7
8. Counselled about danger signs	• Yes • No	262 18	93.6 6.4

Psychosocial factors

Antenatal Psychosocial Stress Scale

In present study population, 74.3% of the participants reported that they are worried as they do not get adequate rest periods in between domestic work / in job place. 81.8 % of the participants responded that they are concerned about not getting help from anybody else for domestic activities/in work place.

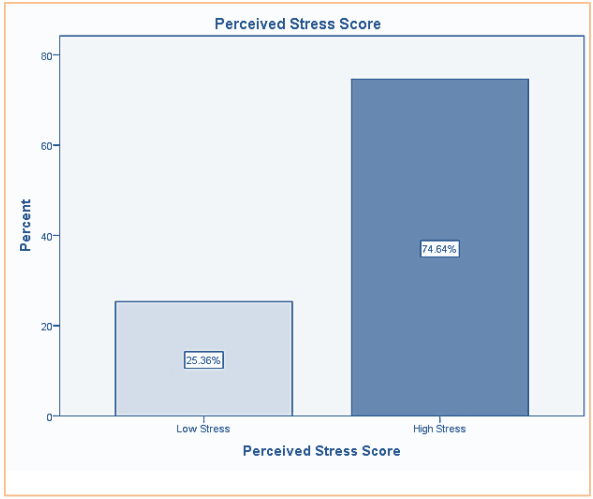
Table 3: Psychosocial characteristics of pregnant women availing antenatal care in GMCH, Aurangabad (n=280).

COMPONENTS	VARIABLE		FREQUENCY	PERCENTAGE
Pregnancy related	1. Concern regarding the investigations done during pregnancy.	Yes	83	29.6
		No	197	70.4
	2. Concern about illness during pregnancy	Yes	14	5
		No	266	95
	3. Concern about delivery complications	Yes	84	30
		No	196	70
Hospital /provider related	4. Concern regarding labour pains	Yes	14	5
		No	266	95
	5. Concern regarding the behaviour of doctors and sisters in labour room	Yes	14	5
		No	266	95
	6. Concern regarding communication with doctors regarding your illness in pregnancy	Yes	18	6.4
		No	262	93.6
Work related	7. Are you worried as you do not get adequate rest periods in between domestic work / in job place	Yes	208	74.3
		No	72	25.7
	8. Concern about not getting help from anybody else for domestic activities/in work place.	Yes	229	81.8
		No	51	18.2
Spousal related	9. Concern about husband's alcoholism	Yes	51	18.2
		No	229	81.8
	10. Concern about husband's violence	Yes	58	20.7
		No	222	79.3

Perceived stress

The mean value of perceived stress among pregnant women was 24.60 ± 10.81 (mean ± SD). Out of total 280 women, 209 (74.64%) were diagnosed with stress using PSS score >14 in the study. Overall, the prevalence of perceived stress among pregnant women availing antenatal care unit of GMCH, Aurangabad was 74.64%.

Figure 2.1 and 2.2: Perceived stress scale among pregnant women availing antenatal care in GMCH, Aurangabad.



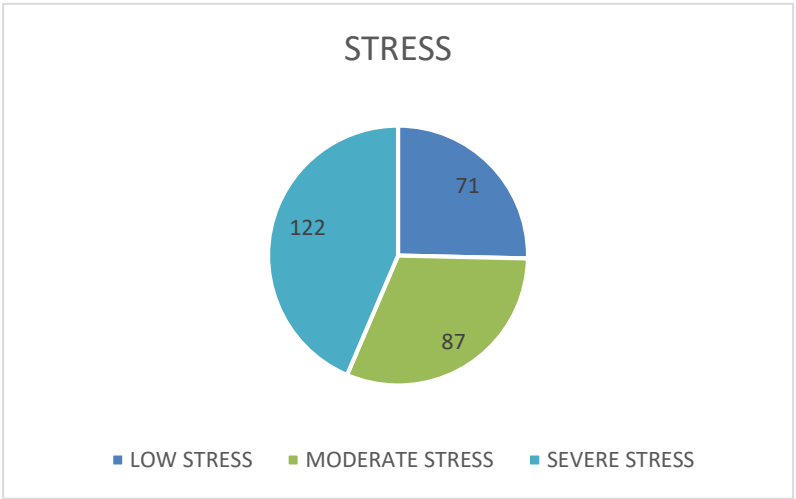


Table 4: Socio-demographic factors and stress in pregnant women. (n=280)

VARIABLE	CATEGORY	STRESS		CHI- SQUARE (X^2)	P- VALUE
		Low Stress	High stress		
Age	• ≤24 years • 25-34 years • ≥35 years	56 10 5	145 57 7	6.204	0.045*
Education of Mother	• Illiterate • Primary school certificate • Middle school certificate • High school certificate	2 12 21 36	13 36 72 88	2.413	0.491
Religion of Mother	• Hindu • Muslim • Christian	53 18 0	137 70 2	2.443	0.295
Marital Status	• Married • Widow	71 0	207 2	0.684	0.408
Occupational Status of Mother	• Housewife • Labourer • Government Employee • Farmer • Student	42 9 0 18 2	115 38 3 47 6	2.325	0.676
Residence of Mother	• Rural • Urban	41 30	115 94	1.59	0.69
Educational Status of Father	• Illiterate • Primary school certificate • Middle school certificate • High school certificate • Intermediate or diploma	1 7 20 42 1	6 26 46 130 1	2.238	0.68
Total Monthly Income of Family	• ≤10,001 • 10,002–29,972 • 29,973– 49,961	50 13 8	143 36 30	0.438	0.803
Occupation of Head	• Unemployed • Elementary Occupation • Plant and Machine Operators and Assemblers • Skilled Agricultural and Fishery Workers • Skilled Workers and Shop and Market Sales Workers • Crafts and Related Trade Workers • Professionals • Clerks • Technicians and Associate Professionals • Legislators, Senior Officials and Managers	1 42 4 7 5 1 3 6 1 1	5 119 8 28 10 8 7 15 5 4	3.232	0.954

Table 5: Obstetric factors and stress in pregnant women. (n=280)

VARIABLE	CATEGORY	STRESS		CHI-SQUARE (X^2)	P-VALUE
		Low Stress	High stress		
Gravida	• Primigravida • Multigravida	9 62	171 38	110.35	0.001*
Parity	• Nulliparous • Primiparous • Multipara	10 2 59	131 31 47	82.772	0.001*
Time of ANC initiation	• Before 16 weeks • After 16 weeks	54 14	190 19	5.757	0.016*
Previous Abortion	• Yes • No	11 60	51 158	2.440	0.118
Gestational age	• First trimester • Second trimester • Third trimester	14 14 43	65 28 116	4.084	0.130
Status of Pregnancy	• Planned • Unplanned	19 52	35 174	3.414	0.065
Present obstetric complication	• Yes • No	7 64	47 162	5.430	0.020*
Counselled about danger signs	• Yes • No	70 1	192 17	3.985	0.046*

Table 6: Psychosocial factors and stress in pregnant women. (n=280)

VARIABLE	CATEGORY		STRESS		CHI- SQUARE (X^2)	P- VALUE
			Low Stress	High stress		
Pregnancy related	Concern regarding the investigations done during pregnancy.	Yes	9	74	13.129	0.001*
		No	62	135		
	Concern about illness during pregnancy	Yes	2	12	0.954	0.329
		No	69	197		
	Concern about delivery complications	Yes	2	82	33.47	0.001*
		No	69	127		
Hospital /provider related	Concern regarding labour pains	Yes	3	11	0.12	0.729
		No	68	198		
	Concern regarding the behaviour of doctors and sisters in labour room	Yes	3	11	0.12	0.729
		No	68	198		
	Concern regarding communication with doctors regarding your illness in pregnancy	Yes	2	16	2.063	0.151
		No	69	193		
Work related	Are you worried as you do not get adequate rest periods in between domestic work / in job place	Yes	49	159	1.384	0.239
		No	22	50		
	Concern about not getting help from anybody else for domestic activities/in work place.	Yes	55	174	1.192	0.275
		No	16	35		
Spousal related	Concern about husband's alcoholism	Yes	0	51	21.184	0.001*
		No	71	158		
	Concern about husband's violence	Yes	9	49	3.742	0.053
		No	62	160		

Factors associated with perceived stress during pregnancy

The association between perceived stress and its associated factors among pregnant mothers was evaluated using Pearson's Chi square test. Comparison of the obstetric factors among women with varying degrees of perceived stress, showed that stress was not significantly associated with status of pregnancy, gestational age, danger sign counselling and obstetric complications.

Gravida, parity, time of initiation of ANC, present obstetric complications and counselling about danger signs was a predictor of stress in pregnant women (p value<0.05). Even concern about husband's alcoholism, delivery complications and investigations done during pregnancy worsened the stress scales significantly in pregnant women.

Discussion

The prevalence of perceived stress among pregnant women attending antenatal care unit GMCH, Aurangabad was found to be 74.64%. This finding was higher than the study conducted in Burdwan and Udupi, India with prevalence being 56.73%[27] and 33.1%.[28] Also, the finding was higher than the study conducted in Nigeria[24], Iran[29], Southeast Ethopia[18] and Thailand[17] which was 46.7%, 12.4%, 11.6% and 23.6% The reason for this difference might be due to the socio-cultural difference, geographical area, economic status and difference in life standard across the countries.

Inversely, the finding in this study was lower than study conducted in Nepal[1] and Kerala[20] which was 84% and 77.31%. The inconsistency can be due to small sample size.

In current study, maternal age is significant, where the pregnant women ≥ 35 years of age might be more exposed to risks which ultimately cause increase in perceived stress. This finding is supported by study findings conducted by Lampinen, Et al.[30]

Among the sociodemographic factors, we could not demonstrate any relevant association of pregnancy related stress with mother's education and occupation and husband's education, except that of maternal age, just like study done in South India.[23]

In the present study, pregnant women who initiate antenatal care after 16 weeks of gestation have significant association with perceived stress than those mothers who initiated antenatal care before 16 weeks of gestation. This finding is in contrary with the

study done in South-east Ethiopia[10] which states that early initiation of antenatal care is significantly associated with higher level of perceived stress. Mothers with present bad obstetric history is also significantly associated with higher level of perceived stress. In current study, primigravida women were more likely to have perceived stress than those who were multigravida This finding is supported by study findings conducted in Black and/or Latina young women.[29] a study in Bangalore also shows that multigravidas had low prenatal stress and primigravida have significant association with perceived stress during pregnancy.[26] This similarity may be due to the same sociocultural and living standard across the country especially with the study conducted in India. This finding is opposed with studies conducted in Bale zone, Ethiopia.[18]

In this study, there is no significant association between socio-economic status and stress among pregnant women. This is supported by study in Iran.[29]

Limitations of the study- The cross-sectional study could not help the researcher to establish cause - effect relationship. This study was a hospital-based study; hence findings may not reflect the stress of all pregnant women in the community.

Conclusions

In this research, concern regarding husband's alcoholism, delivery complications and investigations done during pregnancy were the predictors of stress in pregnancy. Obstetric factors like gravida, parity, time of initiation of ANC, present obstetric complications and counselling about danger signs were also associated with maternal stress.

Perceived stress during pregnancy adversely affects the mother and her baby, thus considering different adverse outcomes of foetus due to stress in pregnant mother, it is important to screen and treat the stress in pregnancy as a part of routine antenatal care in India. Pregnant women should discuss her emotional status with their partner or family members and also with the health care professionals. Health care professionals should screen for the perceived stress of primigravida women and provide adequate information on their pregnancy, provide emotional support and advise pregnant mothers.

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Reference:

1. Deo B K, Sapkota N, Kumar R, Shakya D R, Thakur A & Lama S. A Study on Pregnancy, Perceived Stress and Depression. Journal of BP Koirala Institute of Health Sciences. 2020; 3(1), 79–87.
2. Rabipoor S & Abedi M. Perceived Stress and Prenatal Distress during Pregnancy and its Related Factors. Journal of Research Development in Nursing & Midwifery. 2020; 17(1), 67–80.
3. Pais M & Pai M V. Stress among pregnant women: A systematic review. Journal of Clinical and Diagnostic Research. 2018;12(5), LE01–LE04.
4. Tanpradit K & Kaewkiattikun K. The effect of perceived stress during pregnancy on preterm birth. International Journal of Women's Health. 2020;12, 287–293.
5. Aneja J, Chavan B, Garg J, Huria A & Goel P. Does prenatal maternal stress affect the outcome of pregnancy? A prospective study from North India. Journal of Mental Health and Human Behaviour. 2018; 23(1), 12.
6. Woods S M, Melville J L, Guo Y, Fan M & Gavin A. Psychososial stress during pregnancy. American Journal of Obstetrics & Gynecology. 2011; 202(1), 1–14.
7. Dunkel Schetter C & Tanner L. Anxiety, depression and stress in pregnancy: Implications for mothers, children, research, and practice. Current Opinion in Psychiatry. 2012; 25(2), 141–148.
8. González-Ochoa R, Sánchez-Rodríguez E N, Chavarría A, Gutiérrez-Ospina G & Romo-González T. Evaluating Stress during Pregnancy: Do We Have the Right Conceptions and the Correct Tools to Assess It? Journal of Pregnancy, 2018.
9. Yaribeygi H, Panahi Y, Sahraei H, Johnston T P & Sahebkar A. The impact of stress on body function: A review. EXCLI Journal. 2017; 16, 1057–1072.
10. Zietlow A L, Nonnenmacher N, Reck C, Ditzen B & Müller M. Emotional stress during pregnancy – Associations with maternal anxiety disorders, infant cortisol reactivity, and mother–child interaction at pre-school age. Frontiers in Psychology. 2019; 10(SEP), 1–15.
11. Witt W P, Litzelman K, Cheng E R, Wakeel F & Barker E S. Measuring stress before and during pregnancy: A review of population-based studies of obstetric outcomes. Maternal and Child Health Journal. 2014;18(1), 52–63.
12. Vakilian K, Aghdam N S Z & Abadi M D. The Relationship between Nausea and Vomiting with General and Psychological Health of Pregnant Women Referral to Clinics in Arak City. The Open Public Health Journal. 2019; 12(1), 325–330.
13. Qu F, Wu Y, Zhu Y H, Barry J, Ding T, Baio G, Muscat R, Todd B K, Wang F F & Hardiman P J. The association between psychological stress and miscarriage: A systematic review and meta-analysis. Scientific Reports. 2017; 7(1), 1–8.
14. Menon A K. Risk Factors of Pre-Eclampsia : A Case-Control Study. 2017; 5(1), 5–10.
15. Christian L M. Stress and Immune Function during Pregnancy: An Emerging Focus Focus in Mind-Body Medicine. Physiology & Behavior. 2019; 176(3), 139–148.
16. Coussons-Read M E. Effects of prenatal stress on pregnancy and human development: Mechanisms and pathways. Obstetric Medicine. 2013; 6(2), 52–57.
17. Thongsomboon W, Kaewkiattikun K & Kerdcharoen N. Perceived stress and associated factors among pregnant women attending antenatal care in urban thailand. Psychology Research and Behavior Management. 2020; 13, 1115–1122.
18. Engidaw N A, Mekonnen A G & Amogne F K. Perceived stress and its associated factors among pregnant women in Bale zone Hospitals, Southeast Ethiopia: A cross-sectional study. BMC Research Notes. 2019; 12(1).
19. Pantha S. Prevalence of Stress among Pregnant Women Attending Antenatal Care in a Tertiary Maternity Hospital in Kathmandu. Journal of Women's Health Care. 2014; 03(05), 1–6.
20. T H S, K R & T S S. Screening for perceived stress among pregnant women availing antenatal care at a tertiary care teaching institution in Kerala, India. International Journal of Reproduction, Contraception, Obstetrics and Gynecology. 2020; 9(8), 3279.

21. Devisree R, Nirmala C, Indu P S & Remadevi S. Development of antenatal psychosocial stress scale for pregnant women in Kerala, India. International Journal of Reproduction, Contraception, Obstetrics and Gynecology. 2018; 7(4), 1473.
22. A BY, SO S JB D, PP, M D & A A. Perceived stress and anxiety among Ghanaian pregnant women. Journal of Medical and Biomedical Sciences. 2015; 4(2), 29–37.
23. Vijayaselvi R, Beck M M, Abraham A, Kurian S, Regi A, G R. Risk Factors for Stress During Antenatal Period Among Pregnant Women in Tertiary Care Hospital of Southern India. 2015; 1–5.
24. Yarube IU, Sani L, Saleh MIA, Alhassan A W. Assessment of perceived stress amongst primigravidae attending an ante natal clinic in Kano, Nigeria. Journal of African Association of Physiological Sciences. 2018; 6(1), 46–51.
25. Shishehgar S, Dolatian M, Majd H, Bakhtiary M. Socioeconomic Status and Stress Rate during Pregnancy in Iran. Global Journal of Health Science. 2014 Apr 22;6(4):p254
26. Pais M, Pai M V, Kamath A, George A, Noronhna J A & Nayak B S. Stress among Antenatal Women in India. International Journal of Nursing Care. 2015.
27. Chaudhuri, A., & Ray, M. Prevalence of stress and its relation to different precipitating factors among urban females of reproductive age group in Burdwan, India. Medical Journal of Dr. D.Y. Patil Vidyapeeth. 2019. 12(6), 495.
28. S RH, C RPT, Awati M. Impact of maternal stress on outcome of new born. 507 International Journal of Contemporary Pediatrics. 2018 Apr 20;5(3):928–32.
29. Estifanos W, Endashaw G, Abera W, Beyene K, Wosenyeleh T. Sciences, H., & Science, M. *Assessment of Perceived Stress and Associated Factors Among Pregnant Women Attending Antenatal Care At Arba Minch Town Governmental*.2020.
30. Lampinen R, Vehviläinen-Julkunen K & Kankkunen P . A Review of Pregnancy in Women Over 35 Years of Age. *The Open Nursing Journal*. 2009; *3*, 33–38.
31. Cohen S, Kamarck T, Mermelstein R. A Global measure of Perceived stress. J Health Soc Behav. 1983;24(4):385-96
32. Vallejo M A, Vallejo-Slocker, L, Fernández-Abascal E G & Mañanes G. Determining factors for stress perception assessed with the Perceived Stress Scale (PSS-4) in Spanish and other European samples. Frontiers in Psychology. 2018.
33. Cole-lewis H J, Kershaw T S, Earnshaw V A, Yonkers K A & Ickovics J R. Pregnancy-specific Stress, Preterm Birth, and Gestational Age Among High-risk Young Women. National Institute of Health. 2015;33(9), 1033–1045.