

Social Determinants of Stress among Antenatal Women: A Mixed Method Study from Kerala, India

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Abstract

Background: *Pregnancy is a transitional period to parenthood which requires physical, psychological as well as social adaptations. Derangement in the process of transformation results in maternal stress and it leads to adverse pregnancy outcomes. The primary objective of the study was to identify the social determinants of stress among antenatal women.*

Materials and methods: *Mixed method approach, triangulation design (qual → QUAN) was used for the study. The setting was government hospitals rendering both antenatal and delivery services, they were selected randomly. Data for qualitative strand of the study were collected from health care providers through in-depth interviews. In the quantitative strand the data were collected from 703 antenatal women in the gestational age of 20 to 24 weeks using Antenatal Psychosocial Stress Scale (APSS) and structured interview schedule.*

Result: *Findings revealed that there is statistically significant association between high stress and lack of family support for marriage (OR 13.34, 95% CI: 7-25.43), inadequate housing facilities (OR 6.95, 95% CI 3.97 – 12.18) and deficient social support (OR 3.06, 95% CI: 2.03 – 4.62). Qualitative analysis regarding perceptions of health care providers on social determinants of antenatal stress evolved major themes like distribution, interpersonal & environmental with subthemes residential location, familial categories, support of husband and family, cultural perspectives, financial patronage and housing torments. Integration of the findings from both strands of study showed that the social determinants evolved in quantitative strand were exactly identical with the perceptions of health care providers.*

Conclusion: *Health care providers should render professional support to those who are at risk for stress. It also suggests the demand for family centred maternity care.*

Key words: *Antenatal stress, social support, determinants, family*

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I. Introduction

Motherhood holds a consequential phase in the life process of a woman. Pregnancy is a span of transition to motherhood. It requires a lot of adaptations which include physical, physiological, psychological as well as social. Factors which hinder this process of adaptation result in difficulty during pregnancy and stress.

Life exists through the maintenance of a complex dynamic equilibrium termed as homeostasis which is persistently challenged by both internal as well as external adverse forces stated as stressors. Stressors can be either emotional or physical in nature. Stress is defined as a state of threatened or perceived by the individual as threatened homeostasis and it is re-established by a complex repertoire of behavioral and physiologic adaptive responses of the organism. Neuroendocrine hormones have a major contribution in coordinating the basic and threatened homeostasis. When a verge of any stressor is outstripped, a stress system located in the central as well as peripheral nervous system gets activated. It plays a coordinator stint in the re-establishment of equilibrium by drawing out a multiplex behavioral as well as physical adaptive reaction. This response is known as stress syndrome.¹

The effect of psychological health status during pregnancy on clinical outcomes such as preterm labour, pre-eclampsia, use of epidural anaesthesia, caesarian delivery, instrumental deliveries and admission of newborns in intensive care unit are reported. The evidence of fetal asphyxia, congenital anomalies and stillbirths are high among women with increased degrees of stress and anxiety at the time of gestation.²

Kerala is a state with 100% literacy and nearly 100% institutional deliveries. Still maternal mortality & morbidity rate, neonatal mortality & morbidity rate as a result of preterm labor as well as low birth weight are on a standstill. The etiology of preterm labor still remains ambiguous. In spite of quality antenatal care, role of other factors contributing to deviant maternal and perinatal outcomes should be estimated. In a state like Kerala where social and other family structures are undergoing a change pregnancy has become a matter of stress for many families. The contribution of stress to high maternal mortality & morbidity is being studied in western countries and many intervention strategies are implemented in developed countries. Hence it is essential to

explore psychosocial stress during pregnancy in Kerala as our social development indicators are in par with developed countries.³

Mixed method approach was executed to identify the types and magnitude of stressors during pregnancy among African American women. For the measurement of stressors, the healthy pregnancy stress scale (HPSS) was developed and administered. Scale entails 17 items with an inter- item covariance of .68 and reliability coefficient of .82. A two factor model was identified consisting of general pregnancy stressors and relationship strain.⁴

A cross sectional study investigated perceived antenatal stress without risk factors for obstetric complications to ascertain the determinants of stress. It was conducted in a tertiary care hospital of southern India. Women at the gestational age of 28 wks to 34 weeks were selected. The study revealed that majority of the sample (65.4%) scored higher than the mean value of total score in perceived stress scale. Unplanned pregnancy and husband's employment status were significantly associated with high gestational stress.⁵ Research regarding the determinants of high antenatal stress may put forward targets for interventions, resulting in increased maternal well-being and a possible reduction in adverse birth outcomes. The primary aim of this study was to identify social determinants of high antenatal psychosocial stress.

II. Materials And Methods

Objective of the present study was to find out the social determinants of high antenatal psychosocial stress. Mixed method approach - Triangulation design (qual → QUAN) was employed in the study to gather enriched evidence through judicious triangulation of qualitative and quantitative data. Study started with qualitative strand and the data were collected through qualitative interviews of health care providers (nurses and doctors) working in obstetric services at secondary and tertiary care centres. This enabled the researcher to refine the prepared tool regarding social determinants of antenatal stress. Quantitative strand was utilized for the identification of social determinants of antenatal stress. Investigator collected and analyzed qualitative and quantitative data, the results were integrated and drawn inferences by means of convergence of the results of qual, QUAN strands. According to priority options quantitative strand has got the dominant status. Mixing strategy followed was to build from qualitative findings to quantitative data collection and integration of results at interpretation stage of the study. The sequence of qual, QUAN strands are shown in fig 1

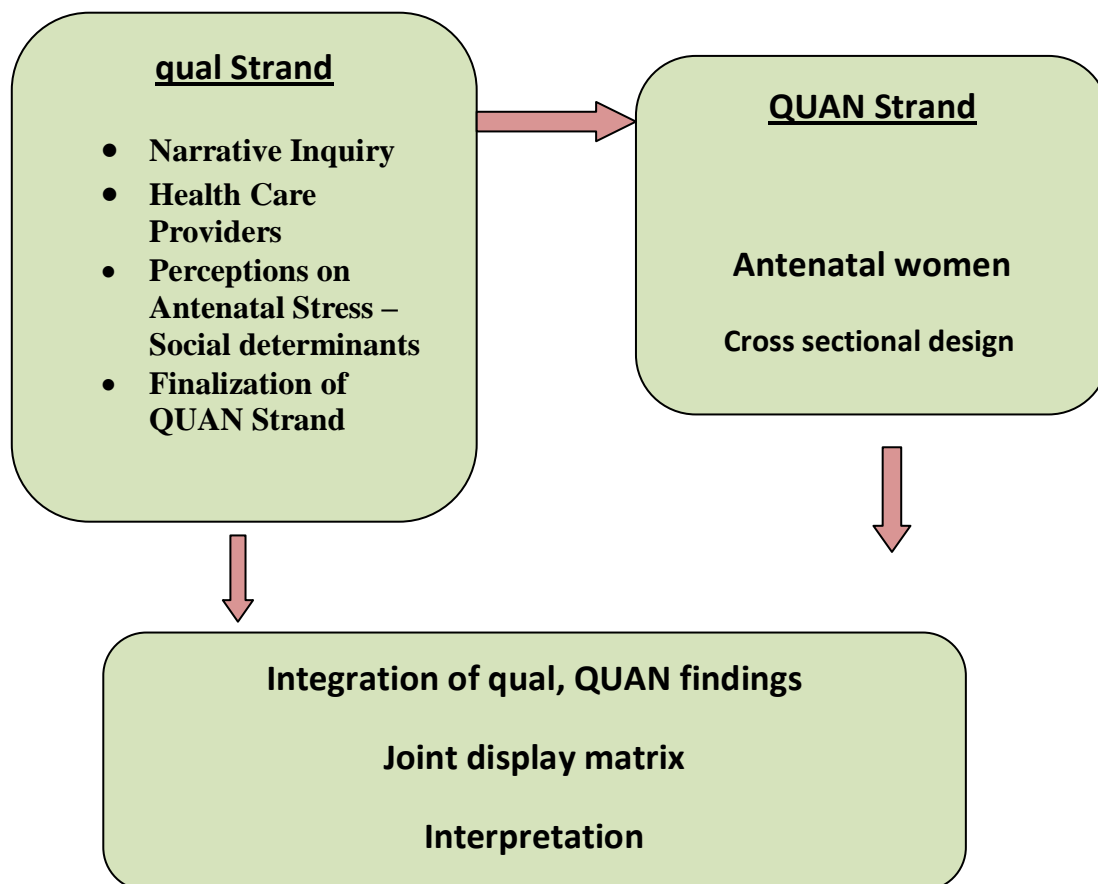


Figure I Sequence of qual, QUAN Strands

Narrative inquiry was executed for exploring perceptions of health care providers regarding social determinants of antenatal stress. Cross sectional design was used for the identification of social determinants of stress in pregnancy. Exposure variables of the study were sociodemographic factors, availability of support and housing facilities. Outcome variable was antenatal stress. Study was conducted in selected hospitals of Thiruvananthapuram district which extends antenatal and delivery services. Inclusion criteria for Qualitative strand were Obstetricians & nurses working in maternity services of selected hospitals for a minimum of one year, who were willing to participate. Inclusion criteria for Quantitative strand were Pregnant women who were willing to participate in the study, who could understand Malayalam or English and in the gestation age of 20-24 weeks. Antenatal women who were too sick to participate in the study were excluded from the study.

In Qualitative strand two obstetricians and two nurses from each selected hospitals were recruited for the study. The data collection started from a nurse and a doctor each from the selected hospitals. It was continued till the data reached the level of redundancy (Total number of informants required for data saturation was - 16). Purposive sampling technique was used in qualitative part of the study. For quantitative strand stratified sampling method was used to select samples.

Interview technique was used for data collection. Tool for qualitative data was interview guide prepared by the investigator. In quan part, tools used were Antenatal psychosocial stress scale (APSS) and semi structured interview schedule to assess social determinants of stress during pregnancy. Stress during pregnancy was measured using Antenatal Psychosocial Stress Scale (APSS).(3) Sections of semi structured interview schedule to assess social determinants of stress during pregnancy include socio demographic factors and Multidimensional Scale of Perceived Social Support Assessment. Social support was measured using Multidimensional Scale of Perceived Social Support Assessment. The Multidimensional Scale of Perceived Social Support (MSPSS) is a brief research tool designed to measure perceptions of support from three sources: family, friends and a significant other.

III. Result

The data collected were analyzed by carrying out descriptive and inferential statistics using SPSS version 16. Sample characteristics were analyzed using frequencies and percentages. Association of stress and its determinants were analyzed using chi square test & odds ratios were found out. The qualitative data were interpreted by content analysis.

Qualitative strand

Perceptions of health care providers regarding social determinants of stress during pregnancy

The data were interpreted by qualitative content analysis. During in-depth interviews, the verbatim were recorded as hand written field notes and use of audio records. The verbatim are transcribed. Then the data were coded by labeling of interview texts. After that data reduction or organization of data were carried out to make it meaningfully reduced or reconfigured. Finally themes were identified which encompassed the meanings of the text and merged the categories in a more theoretical way. With the help of their categories and themes a frame work to improve the understanding of stress among antenatal women were constructed.

Findings

Different themes emerged during analysis. They are detailed below as themes, subthemes, condensed units, interpretations and verbatim quotes.

Distribution:

Residential location

Considering the distribution of the problem, both rural as well as urban people are affected. Women hailing from remote areas have more stressors related to accessibility to the antenatal services. They have to travel a lot and needs money for that. Husbands may be the earning members. When they accompany the women to the hospital, may not be able to go for job, resulting in financial problems.

“Women from extreme remote areas and tribal places find it very difficult to understand the communication by the staff and doctors. They are not able to follow the instructions regarding investigations, medications and other health care regime. They are often found to be nervous and anxious.”

“In urban women stress is often due to inadequate support providers. Rural women are worried about financial problems and difficulties in availing health care services.”

Familial categories

Regarding the type of family people belonging to nuclear family have no one to open up and clear their doubts. They have no previous exposure to pregnant women or child bearing practices. Learning of pregnancy changes and other aspects during gestation is not taking place by observation of real life situation. There are no

role models and not getting opportunities to involve or observe women during pregnancy. Practices like management of minor disorders as well as diet during pregnancy are learned through generations in joint families. In nuclear families there are no opportunities for this. More over support of elder women are not available to women in nuclear families. So they are not sure about the recognition of abnormalities in pregnancy progression.

“In nuclear families each pregnancy is a novel experience. They may not have seen the experiences of pregnant women earlier. So it becomes a perplexing situation. With physiological changes and progress of pregnancy they are not able to recognize whether it is normal or abnormal.”

Interpersonal considerations

Support from husband and family

All the respondents reported inadequate support during pregnancy as a major determinant of antenatal stress. Support from the husband, family and near ones are considered as highly essential.

One of the responses was that *“when marital relationship is not satisfactory, women will not feel companionship with their husbands. She can not share problems or ventilate her feelings. Neglect from the part of husbands increase distress”*

Necessity of different types of support is stated by majority of the participants. It can be grouped as informational, emotional, financial and materialistic. *“There should be persons available for sharing knowledge regarding management of pregnancy and for the timely clarification of doubts. Individuals for extending emotional support at time of nervousness are of utmost importance. They will help in reducing tensions.”*

Lack of support from family members is a stress causing factor. This is profound in case of love marriage. Conflicts with in laws are a contributor for stress. Dowry problems even lead to suicides.

Cultural perspectives:

There are many culturally sanctioned practices in the society. They are traditionally followed which support women and her family during pregnancy and childbirth.

“Pregnant women are given a special consideration in many families. They are frequently visited by the relatives, friends and other well wishers. Practical as well as emotional support is rendered by them.”

Antenatal mothers receive advices and encouragement from the elder women and other family members. Nutritious and delicious food items are supplied by the neighbors and relatives.

“During some rituals like “baby showers”, “vala kappu” etc mothers get money as well as child care articles as gift.”

Environmental properties

Financial patronage

Majority of the participants mentioned economic factors as a determinant for stress in pregnancy. Low income, joblessness, financial problems, financial insecurity etc are some of the factors. Women belonging to low socioeconomic status are worried about their inability to spend for investigations, travelling expenses and medications.

Another person commented that *“There are occasions when the women cannot afford for the investigations, spent all money for that purpose and not having money to go back to their home.”*

Someone should take care of financial needs involved in antenatal care. Accompaniment to the OPD, staying in the hospital during admission for labor, offering special food which they like, helping with household chores, taking care of elder children etc are included in the content of materialistic support.

Housing torments

As per the reports of participants it is clear that inadequate housing facility is a contributing factor for stress. Over crowded houses, inadequate space for rest, homelessness, rented houses etc are the housing problems usually seen. Women are not getting a resting place. More over they are worried about welcoming a new member to this situation.

“Even women who are not having home and residing in some shelters nearby roads are coming to our hospitals.”

Quantitative results

Socio demographic characteristics

Distribution of antenatal women based on socio demographic characteristics are shown in table 1. Among the participants 12.8% were between the ages of 18 to 20 years. Majority of (76.9%) women were in the age group of 21 to 30. Majority of the women (66.7%) reside at rural areas. About half (53.2%) of the antenatal women belong to nuclear family and a few (3.27%) belong to joint family. Among the participants 0.6% were

educated up to lower primary level, 30.2% up to high school, and 11.8% had professional education. Majority of the antenatal women (67.7%) were unemployed and 9.39% were professionals. Majority of participants (67.57%) belong to below poverty line income category.

Table 1
Distribution of antenatal women based on sociodemographic characteristics

n =703

Characteristics		Frequency	Percentage
Age in years	≤20	90	12.8
	21-30	540	76.9
	>30	73	10.4
Place of residence	Urban	234	33.3
	Rural	469	66.7
Type of family	Nuclear	374	53.2
	Joint	23	3.27
	Extended	306	43.53
Education	Lower Primary	4	0.6
	Upper Primary	3	0.4
	High school	212	30.2
	Higher secondary	209	29.7
	Degree/PG	192	27.3
	Professional	83	11.8
Occupation	Unemployed	476	67.7
	Unskilled laborer	41	5.83
	Skilled Laborer	41	5.83
	Office	65	9.25
	Business	14	1.99
	Professional	66	9.39
	APL	228	32.43
	BPL	475	67.57

Social determinants of Antenatal Stress

Bivariate Analysis of Antenatal Stress with Sociodemographic factors are shown in Table No 2, which shows that age groups of antenatal women are not associated with stress level as evidenced by $\chi^2 = 2.97$ and *p* value is .09. Stress level is not associated with place of residence ($\chi^2 = 0.18$, *p* = .092), or type of family ($\chi^2 = 1.55$, *p* = .21).

Table 2
Bivariate Analysis of Antenatal Stress with Sociodemographic Factors

n =703

Variable	High stress		Low & moderate stress		Chi-square	P value	Odds ratio (95%CI)
	N	%	N	%			
Age in years							
≤30	121	93.8	509	88.7	2.97	0.09	1.93 (.90-4.13)
>30	8	6.2	65	11.3			
Place of residence							
Urban	45	34.9	189	32.9	0.18	0.67	0.92 (0.61-1.37)
Rural	84	65.1	385	67.1			
Type of family							

Nuclear	75	58.1	299	52.1	1.55	0.21	1.28 (.87-1.88)
Non nuclear	54	41.9	275	47.9			

Bivariate Analysis of Antenatal Stress with Socioeconomic factors are shown in table 3. It is evident that no statistically significant association was found between level of stress and educational status of antenatal women ($\chi^2 = 0.64, p = .42$) There is no significant association between level of stress and occupation of antenatal women ($\chi^2 = 3.17, p = .08$) No statistically significant association was found between stress level and economic status ($\chi^2=2.89,p = .09$).

Table 3
Bivariate Analysis of Antenatal Stress with Socioeconomic Factors

Characteristics	High stress		Low & moderate stress		Chi- square	P value	Odds ratio	95%CI
	N	%	N	%				
Education								
Up to high school	44	34.1	175	30.5	.64	.42	1.18	.79-1.77
Higher secondary & above	85	65.9	399	69.5				
Occupation								
Low grade	95	73.6	463	80.6	3.17	.08	.67	.43-1.04
High grade	34	26.4	111	19.3				
Economic status								
BPL	79	61.2	396	69	2.89	0.09	1.41	0.95-2.1
APL	50	38.8	178	31				

n=703

Bivariate Analysis of Antenatal Stress with Availability of Support is given in table 4. Significant association was found between high antenatal stress and inadequate social support during pregnancy ($\chi^2 = 29.92, p < .001, OR = 3.06, 95\% CI = 2.03-4.62$). Significant association was found between high antenatal stress and absence of family support for marriage ($\chi^2 = 91.54, p < .001, OR = 13.34, 95\% CI = 7 - 25.43$). There is 3.06 times risk for developing high stress in women with inadequate social support and the risk is 13.34 times in women who got married with out the support of family.

Table 4
Bivariate Analysis of Antenatal Stress with Availability of Support

Characteristics	High stress		Low & moderate stress		Chi- square	p value	Odds ratio	95%CI
	N	%	N	%				
Social support								
Inadequate	91	70.5	252	43.9	29.918	<0.001	3.06	2.03-4.62
Adequate	38	29.5	322	56.1				
Family support for marriage								
Absent	34	26.4	15	2.6	91.57	<0.001	13.34	6.7-25.43
Present	95	73.6	559	97.4				

n = 703

Bivariate Analysis of Antenatal Stress with Perceived Inadequacy of Housing Facilities is shown in table 5. It is evident that there is significant association between inadequacy of housing facilities and high stress during pregnancy ($\chi^2 = 57.21, p < .001, OR = 6.95, 95\% CI = 3.97-12.18$). Women without adequate housing facilities have 6.95 times more probability of getting high stress.

Table 5

Bivariate Analysis of Antenatal Stress with Perceived Inadequacy of Housing Facilities

n = 703

Inadequacy of housing facilities	High stress		Low & moderate stress		Chi- square	p value	Odds ratio	95% CI
	N	%	N	%				
Yes	32	24.8	26	4.5	57.21	.000	6.95	3.97-12.18
No	97	75.2	548	95.5				
Total	129	100	574	100				

Integration of qualitative findings and quantitative results

In the present study qualitative and quantitative findings were integrated at interpretation level. Integrated findings of mixed methods are shown in table 6.

Table 6

Integrated findings of mixed methods

Domains	Available evidence		Convergence
	qual	QUAN	
Type of family	+	-	No
<i>Interpretation:</i> There is no significant difference in the available support system between nuclear and other type of families.			
Economic status	+	-	No
<i>Interpretation:</i> This divergence is a reflection of imprecise segregation of women only on the basis of APL and BPL categories in quantitative strand. Significance of very low economic status as a predictor is evident from the strength of association between stress and housing problems which was agreed by both strands.			
Social and family support	+	+	Yes
<i>Interpretation:</i> This finding highlights the potential role that the social and family support play in buffering antenatal women from stress.			
Inadequate housing facilities	+	+	Yes
<i>Interpretation:</i> Housing problem was emerged as a strong predictor of antenatal stress in both strands of the study.			

Interpretation and explanation

Information related to social determinants were validated quantitatively. Majority of the conclusions extended by the health care providers were confirmed by quantitative results.

Convergence between quantitative results and qualitative findings

Most of the quantitative and qualitative findings have converged. Both sets of the findings revealed that support by the family, spouse, friends and significant others facilitate psychosocial wellbeing during pregnancy. This finding highlights the potential role that the social and family support play in buffering antenatal women from stress. Housing problem was emerged as a strong predictor of antenatal stress in both study strands. This highlights the necessity of focused support for the marginalized sections of the community.

Divergence between qualitative findings and quantitative results

Influence of low economic status did not predict antenatal stress in the quantitative results. Even so the effect of financial insecurity was seen as significant in the qualitative findings. This divergence is a reflection of imprecise segregation of women only on the basis of APL and BPL categories in quantitative strand. The significance of very low economic status as a predictor is evident from the strength of association between stress and housing problems which was agreed by both strands. Nuclear families have a negative influence on mental health as per the observations in qualitative part. Evidence for the same is not available through quantitative segment. It can be inferred that there is no significant difference in the available support system between nuclear and other type of families.

IV. Discussion

Significant association was found between high antenatal stress and inadequate social support during pregnancy as per the findings of present study. Association between social support and stress during pregnancy is evident in the following studies. Social support influences symptoms of depression and anxiety during pregnancy (Glazier, et al.).⁶ Social support acts as a buffer against depression during pregnancy (Collins).⁷ Skurzak, et al. reported that sufficient social support for an antenatal woman helps to reduce negative emotions and concerns. Social support is associated with quality of coping with stress during pregnancy. Most of important sources of support are partner, family, friends, midwife and doctor.⁸ Sturgis reported that social support was the strongest resource for reducing stress during pregnancy.⁹

Most important types of pregnancy support during pregnancy included practical help with routine activities, information or advice, emotional support and assurance and provision of material goods & resources. Sources of support were mothers, mothers in law, sisters in law and husbands (Edmonds, et al.).¹⁰ Lack of Social Support was found to be an important risk factor for reduced maternal well being during pregnancy revealed from a study conducted in Berlin, Germany.¹¹

Psychological distress during pregnancy increased with decrease in effective social support.¹² Poorer antenatal women are deficient of social networks, which act as a buffer to the adverse effects of stress.¹³ Poor partner relationship is associated with antenatal depressive symptoms (*OR* - 2.23, *CI* 3.37 -3.62). Lack of practical support is associated with antenatal anxiety symptoms also.¹⁴ Practical lack of social support is associated with depression during pregnancy. Social support is a protecting factor against distress during antenatal period. Quality of marital relationship influences antenatal psychological distress.¹⁵ Women who reported stressors related to relationship had high child birth anxiety and fear during pregnancy.¹⁶ One contradictory finding was reported by Manjari which revealed that perceived social support is not associated with psychological symptoms during second and third trimester of pregnancy.¹⁷

It is evident from the present study that there is significant association between inadequacy of housing facilities and high stress during pregnancy ($\chi^2 = 57.21, p < .001, OR = 6.95, 95\% CI = 3.97-12.18$). Women without adequate housing facilities have 6.95 times more probability of getting high stress. Unsafe environment is a significant stressor affecting maternal & child health.¹⁸ Based on the reports of a study from USA, among antenatal women four percent were homeless. Homeless women were likely to experience stressful life events during pregnancy.¹⁹ Poor household economy is associated with antenatal anxiety symptoms.¹⁴ Women who reported stress related to housing had high levels of child birth anxiety and fear.¹⁶

V. Conclusion

Social support and support from family are protective factors against stress. Majority of the participants with high stress reported deficiency of support from family, husband, friends and significant others.

Association of stress among women with inadequate housing facilities shows the link between stress and economic status. Based on the findings of the study, following conclusions were made in a broad sense. Health care providers need to focus their attention and render professional support to those who are at risk for stress. Improvement in the quality of antenatal services in the public sector focusing on the psychosocial needs of pregnant women also is essential. Holistic care of women should be the policy of antenatal services. All antenatal women should be screened for psychosocial stress and stressors. Antenatal women with inadequate support system should receive supplementary attentiveness for a favorable pregnancy outcome. Women in the marginalized sectors should be supported with money, information and guidance services. Web based support system for continued support throughout pregnancy as well as all time available helpline services are also beneficial. Importance of psychosocial wellbeing during pregnancy should be sensitized to the public through mass media, awareness campaigns as well as information, education and communication programme

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