

Research Article

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Prevalence of Stress among Pregnant Women Attending Antenatal Care in a Tertiary Maternity Hospital in Kathmandu

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Abstract

Objective: One of the important factors that have always been overlooked is the stress during pregnancy. Psychosocial stress during pregnancy has been linked as a predictor of adverse pregnancy outcome in various studies. One of the important factors that have always been overlooked is the stress during pregnancy. Psychosocial stress during pregnancy has been linked as a predictor of adverse pregnancy outcome in various studies.

Methodology: A cross-sectional prospective observational study was conducted among the pregnant women attending Antenatal Checkup at the general Antenatal Clinic of Department of Obstetrics and Gynaecology of Patan Hospital. Data was collected by using self-structured questionnaire using General Health Questionnaire (GHQ-12) and 21 item modified life events inventory during the late first trimester and early third trimester. Sample size calculated was based on the existing data of 25% and 10% prevalence of LBW among the stressed and non- stressed women. Data was entered using Epidata and analyzed using R 2.10.1 software.

Results and discussion: Most of the respondents were among the age group of 20-29 years with mean age of 25 years. The mean score on GHQ-12 was 9.79 and 9.69 in the first and third trimester respectively. Prevalence of stress during pregnancy was 35% in the first trimester and 34.2% in the third trimester.

Conclusion: There was high prevalence of stress among the women attending ANC clinic at Patan Hospital. As this is the data from one of the urban population of Nepal, the prevalence of stress in the rural areas might be even more than this number.

Keywords: Stress; Pregnancy; Low Birth weight; Prematurity; Patan hospital; Nepal

Introduction

Psychological stress and distress, typically in the late second trimester and third trimester has been linked with low birth weight [1-4]. Stress during pregnancy influences the growth and development of the baby in the later stages of life [5-6].

Many of the stressed women suffer from common mental health disorder during early pregnancy and in the postpartum period [7]. Prevalence of stress during pregnancy has been found to range from 6% to as high as 52.9% in developing countries [8,9].Stress during pregnancy is more among the teenagers, low educational status, discriminated group of population or with low socioeconomic status [10].

General Health Questionnaire (GHQ) is a screening tool to identify the severity of psychological distress experienced by an individual within the past few weeks [9].The GHQ, which was originally developed by Goldberg, has been widely used.It has been validated in many languages including Nepalese [10]. Sensitivity and specificity of GHQ-12 has been found to be as high as 85% and 79% respectively [11]. It has been well established in identifying stress during pregnancy [12]. Mean score of GHQ has been used as a reference to evaluate the level of stress [13,14].

Presence of major events in the life affects the daily activities of a person. Some of the studies have showedsignificant association of stressful life events during pregnancy on reducing age of gestation. Presence of two or more objective major life events during pregnancy has been linked to prematurity and low birth weight [15,16]. There has been a big gap in the level of knowledge of prevalence of stress during pregnancy and its association with low birthweight. This study aimed at reducing this gap.

Methodology

A prospective observational study was conducted in the Antenatal Clinic of Patan Hospital between March and December 2012. Pregnant womencoming to the ANC clinic of Patan Hospital were included in the study. Stress was measured using "GHQ -12" and "Modified Life Events Inventory" containing 21 items. Interview was conducted twice during pregnancy, first during the late first trimester or early second trimester (between 12-20 weeks of pregnancy) and then during the third trimester (mostly between 30-36 weeks of pregnancy). All the pregnant ladies with singleton fetus were included in the study. Exclusion criteria included multiple pregnancies, known co-morbidities during the first trimester of pregnancy and those who refused to give consent for the study. Those who refused to participate further were also excluded from the study.

Data was collected by using the validated Nepalese version of the General Health Questionnaire (GHQ-12). Stressful life events were

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identified using modified life events inventory. Some of the events that in particular will not fit into Nepalese social customwere removed. Life events as per modified life events inventory was also translated into Nepalese Language. Research tools were validated among a separate population of the pregnant women attending ANC clinic using 10% of the required sample size.Validation study revealed no difficulty in using the questionnaire. The average time taken by the respondents was around 7 minutes (5-11 minutes). Some minor changes and corrections were made to the final questionnaire after the validation study.

Principle investigator informed all the participants who agreed to take part in the study were well about the study and its objectives. They were made clear that their participation was voluntary. A written informed consent was obtained. Identifiable information, such as contact number was taken and kept confidential for follow up purpose. Interview was conducted using a semi-structured questionnaire. Principal investigator offered help to those respondents who needed assistance in filling out the questionnaire. Those respondents who couldn't be traced during the second visit in the scheduled date were contacted by telephone and requested to meet the principle researcher for the follow up interview. Using the Likert scoring system, the minimum score for each statement was "0" and maximum score was "3". We had scores ranging from 0-36. Mean value was the limiting point for stress. Women with scores above the mean value were considered "women with stress" and those with scores below the mean value were considered "women without stress".

Sample size calculation

The sample size calculation of the study was based on the major objective of the study, which was to determine the effect of stress with low birth weight and prematurity. With a hypothesis that the difference of fetal outcome between these two groups (stressed women and those with no stress) as 15%, with 95% confidence and a power to detect this difference of 80% and with a ratio of stressed and non-stressed pregnant women of 1:1, the total complete sample required was 226. Considering 5% loss to follow up and dropout rate of 19% in women attending ANC at various clinics and hospitals in Kathmandu Valley, a total sample size came out to be 275 [17,18].

Ethical approval

Approval for research was obtained from the Institutional Review Board of National Academy of Medical Sciences(NAMS). An approval for conducting research at Patan Hospital was also obtained from the Institutional review board of Patan Academy of Health Sciences (PAHS). Written informed consent was taken from all of the research participants.

Results

Among the 275 respondents contacted during the first trimester, 230 respondents could be contacted during the second trimester during regular ANC checkup. Rest of the respondent was contacted by telephone queries; 10 of them refused to take part further in the study and were excluded from the study. 8 of them had miscarriage or termination before the second data could be taken. 12 of them had already moved to different cities. 10 of them came after telephone queries and completed the second trimester questionnaire. 10 of the respondents who filled the second trimester questionnaire, 12 went to other hospital for delivery. Among the 228 respondents who delivered their babies at Patan Hospital, the first 226 were enrolled for the final study.

Age of the respondents ranged from 18 years to 44 years. Mean age was 25.96 years (Standard Deviation of 4.67 years). Approximately 76% of the respondents were among the age of 20-29 years. Very few of about 6% of the respondents were in their teenage. About 5% of the respondents were above 35 years of age.

Majorityof the respondents (43%) came from the ethnic community which formed Newar, Gurung, Rai and Limbu. Only a few belong to the socially outcaste group. About a quarter of the respondents (27%) had at least undergraduate level of education. Nearly half of the respondents had school level education or less. However, in contrast, around 32% of their partners had atleast graduate level of education.

Sixty five percent of the respondents lived in a joint family where as 35% of the respondents lived in a nuclear family.Majority (68%) of the respondents had their monthly income less than US\$ 110 (Nepalese Rupees 10,000) per month. Only 8 percent of the respondents had income more than US\$ 220(Nepalese Rupees 10,000) per month. Nearly three quarters of the respondents used to take non vegetarian diet.

Around 96 percent of the respondents did not smoke. Half of the remaining respondentscontinued to smoke even during pregnancy. Nearly three fourth of the respondents did not consume alcohol. Seventeenpercent of the remaining respondents still consume alcohol even after being pregnant. Alcohol consumption among the spouse of the respondent was nearly 38 percent. Smoking among the spouse was 28 percent.Nearly 4 percent of the respondents took medication for medical disorders during pregnancy including hypertension and diabetes.

Majority (58%) of the respondents were primi-gravida. Only around 10 percent of the respondents had been pregnant more than 2 times before present pregnancy, irrespective of the outcome of previous pregnancies. Fourteen percent of the respondents had a history of abortion in the past. Among them 45 percentage had medical termination of pregnancy in the past.

Fifty seven of the respondents used to work at home. Twenty seven percent were job holders whereas rests of the respondents were involved in their own business. More than half of the respondents (142) had to work during pregnancy, either house hold or in job. Average working hour was 5.8 hours during the first trimester (range 1-16 hours, standard deviation of 2.89 hours) and 5.2 hours (range 1-11 hours, standard deviation of 2.57 hours) during the third trimester.

Mean GHQ score in the first trimester was 9.79 (3 to 24, S.D. \pm 3.74) whereas 9.69 (2 to 29, S.D. \pm 4.43) in the second trimester. Median GHQ score for both trimesters was 9.The difference between the mean GHQ score in the two trimesters was not statistically significant. Mean score of GHQ (round figure of 10) was taken as landmark for identification of the level of stress.Respondents with GHQ score of less than 10 (<10) were considered as "not being stressed" and respondents with GHQ score more than 10 (>10) were considered as being "stressed" (Figure 1).

With this landmark level of GHQ score, 79 (35 percentage) of the respondents were stressed during the 1st trimester of pregnancy. There was negligible change in the number of stressed respondents during the third trimester which stood at 77 (34.1percentage).

Stress during 1st trimester was significantly related to the total score on modified life events inventory. A score of 3 or more in modified life events inventory was significantly associated with stress (p=0.027). The

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Figure 1: Prevalence of Stress during first and third trimester of Pregnancy.

Parameters	In first trimester (n=226)	In third trimester (n=226)
Mean GHQ score	9.79	9.69
Median GHQ score	9.00	9.00
Std. Deviation	3.744	4.427
Minimum GHQ score	3	2
Maximum GHQ score	24	29

Table 1 show that the mean GHQ score during first and third trimester were 9.79 and 9.69 respectively and the median score being 9 in each trimester of pregnancy. **Table 1:** GHQ score during first and third trimester

difference was not statistically significant with age of the patient, family setup, family income, smoking habit of the patient, drinking habit of the husband and other parameters that we looked into (Table 1 and 2).

Stress during 3rd trimester was significantly related to the total score on modified life events inventory and counseling done during the ANC visit. A score of 3 or more in modified life events inventory was significantly associated with stress (p=<0.001). There was statistically significant relation of stress with counseling during ANC visit. Respondents who were counseled during ANC visit were less likely to be stressed than those who were not counseled (p=0.044). The difference was not statistically significant with age of the patient, family setup, family income, smoking habit of the patient, drinking habit of the husband and other parameters that we looked into (Table 3).

Discussion

Teenage pregnancy was 6.6%, which is very less compared to the national data [19-22]. A significant number of the respondents (43%) belong to the ethnic community which has inhabited Kathmandu valley from the very 15thcentury [23,24]. Level of education was lower than the findings of the recent study done in this area [25]. Most of the educated women are working and working women find it difficult during office hours to queue up in the general ANC clinic that generally takes 4-5 hours per visit. Patan Hospital also runs private clinic and private practice in parallel to general outpatient clinic. Most of the working women tend to have their ANC checkup in those clinics. This might be the reason for lower economic status, lower education status among the respondents, despite of them being mostly inhabitants of Kathmandu Valley. This is also the reason for more than half of the respondents being house wives.

Majority of the respondents were primi-gravida. Studies done in this area showed tendency towards antenatal care gradually decreases

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	Non stressed	Stressed	P value
Total	147	79	i value
	Age group		0.065
<20	12 (8.2)	3 (3.8)	
20-34	131 (89.1)	69 (87.3)	
>34	4 (2.7)	7 (8.9)	
	Ethnicity		0.325
Brahmin	43 (29.3)	28 (35.4)	
Chhettri	32 (21.8)	10 (12.7)	
Etnnic group	0 (6 1)	34 (43)	
Educatio	9 (0.1)	7 (0.9)	0 355
Primary	31 (21.1)	18 (22.8)	0.000
Secondary	35 (23.8)	24 (30.4)	
Higher secondary	38 (25.9)	20 (25.3)	
Undergraduate	32 (21.8)	9 (11.4)	
Graduate and above	11 (7.5)	8 (10.1)	
Educa	tion of the husban	d	0.412
Primary	23 (15.6)	15 (19)	
Secondary	41 (27.9)	29 (36.7)	
Higher secondary	30 (20.4)	16 (20.3)	
Undergraduate	36 (24.5)	13 (16.5)	
Graduate and above	17 (11.6)	6 (7.6)	
Nueleen	Family Setup	25 (44.2)	0.057
Nuclear	45 (30.6)	35 (44.3)	
JOIN	onthly Income	44 (55.7)	0.063
<5000	24 (16 3)	16 (20 3)	0.000
5000-10000	69 (46 9)	46 (58 2)	
>10000	54 (36.7)	17 (21.5)	
S	moking Habit		0.082
No	142 (96.6)	74 (93.7)	
Sometimes	1 (0.7)	4 (5.1)	
Left after being pregnant	4 (2.7)	1 (1.3)	
Di	inking Alcohol		0.462
No	115 (78.2)	56 (70.9)	
Sometimes	23 (15.6)	16 (20.3)	
Left after being pregnant	9 (6.1)	7 (8.9)	0.004
F		40 (52 0)	0.064
INU Ves	90 (00.7)	42 (55.2)	
103	Occupation	07 (40.0)	0.633
Housewife	87 (59.2)	43 (54.4)	0.000
Job	39 (26.5)	21 (26.6)	
Business	21 (14.3)	15 (19)	
I	Gravida	. ,	0.376
Primi	85 (57.8)	44 (55.7)	
2-3	57 (38.8)	29 (36.7)	
>4	5 (3.4)	6 (7.6)	
Satisfacti	on during 1 st trime	ster	0.714
No	7 (4.8)	3 (3.8)	
Little	47 (32)	30 (38)	
Satisfied	/U (47.6)	32 (40.5)	
Can't say	23 (15.6)	14 (17.7)	0 477
vvork	110 (81)	60 (75 0)	0.477
>7	28 (10)	19 (24 1)	
-1 Nood	of standing work	13 (24.1)	0 561
Yes	82 (55 8)	48 (60 8)	0.001
No	65 (44.2)	31 (39.2)	
Knowld	lege on sex of fetu	S	0.96
Yes	11 (7.5)	5 (6.3)	
No	136 (92.5)	74 (93.7)	
Total MLI (Modifie	d Live Events Inve	ntory) score	0.027*
Two or less	139 (94.6)	67 (84.8)	
Three and more	8 (5.4)	12 (15.2)	

Note: *P<0.05

Table 2 shows stress during first trimester is significantly related to 3 or more stressful life events.

 Table 2: Association of stress during first trimester with demographic parameters.

	Non stressed Number (Percent)	Stressed Number (Percent)	P value
Total	149	77	
Age group			0.105
<20	10 (6.7)	5 (6.5)	
20-34	135 (90.6)	65 (84.4)	
>34	4 (2.7)	7 (9.1)	
	Ethnicity	(-)	0.209
Brahmin	42 (28.2)	29 (37.7)	
Chhettri	33 (22.1)	9 (11.7)	
Ethnic group	63 (42 3)	34 (44 2)	
Dalit	11 (7.4)	5 (6.5)	
Educat	ion of the responden	t ()	0.361
Primary	27 (18.1)	22 (28.6)	
Secondary	39 (26.2.)	20 (26)	
Higher secondary	43 (28.9)	15 (19 5)	
Undergraduate	27 (18 1)	14 (18 2)	
Graduate and above	13 (8 7)	6 (7.8)	
Fduca	tion of the husband	0 (1.0)	0.526
Primany	23 (15 4)	15 (10 5)	0.020
Secondary	42 (28 2)	28 (36.4)	
Higher secondary	32 (22.1)	13 (16.0)	
	34 (22.8)	15 (10.5)	
	34 (22.0)	13 (19.3)	
Graduate and above	I/ (II.4)	0 (7.0)	0.010
NL slass	Family Setup	00 (11 0)	0.213
Nuclear	48 (32.2)	32 (41.6)	
Joint	101 (67.8)	45 (58.4)	· · · -
N	Ionthly Income		0.445
<5000	25 (16.8)	15 (19.5)	
5000-10000	73 (49)	42 (54.5)	
>10000	51 (34.2)	20 (26)	
	Smoking Habit		0.178
No	145 (97.3)	71 (92.2)	
Sometimes	2 (1.3)	3 (3.9)	
Left after being pregnant	2 (1.3)	3 (3.9)	
D	rinking Alcohol		0.385
No	116 (77.9)	55 (71.4)	
Sometimes	22 (14.8)	17 (22.1)	
Left after being pregnant	11 (7.4)	5 (6.5)	
	Occupation		0.239
Housewife	91 (61.1)	39 (50.6)	
JOD	38 (25.5)	22 (28.6)	
Business	20 (13.4)	16 (20.8)	0.040
Dist	Gravida	44 (57.7)	0.312
Primi	85 (57)	44 (57.7)	
2-3	59 (39.6)	27 (35.1)	
>4	5 (3.4)	6 (7.8)	
Satisfact	ion during 3 rd trimes	ter	0.051
No	7 (4.7)	9 (11.7)	
Little	42 (28.2)	25 (32.5)	
Satisfied	81 (54.4)	29 (37.7)	
Can't say	19 (12.8)	14 (18.2)	
Wor	king hours per day		0.058
<7	124 (83.2)	55 (71.4)	
>7	25 (16.8)	22 (28.6)	
Nee	d of standing work		1
Yes	34 (22.8)	23 (29.9)	
No	115 (77.2)	33 (42.9)	
Knowl	edge on sex of fetus		0.32
Yes	11 (7.5)	5 (6.3)	
No	136 (92.5)	74 (93.7)	
	Counseling		0.044*
Yes	110 (73.8)	46 (59.7)	
No	39 (26.2)	31 (40.3)	
	Fotal MLI score		< 0.001*
Two or less	143 (96)	63 (81.8)	
Three or more	6 (4)	14 (18.2)	

Note: *P<0.05

Table 3 shows stress during third trimester is significantly related to 3 or more stressful life events and counseling done during the ANC visits.

Table 3: Stress during 3rd trimester of pregnancy with demographic parameters.

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as the birth order increases [26]. Smoking rate was significantly lower in comparison to findings of other studies done in Nepal [1, 27-30].

Seventeen percentage of the respondents still consumed alcohol even after being pregnant. This was higher than the rate of alcohol consumption among Nepalese women in Eastern Nepal [27, 29-30].

Nearly 30 percentage of the respondents told that they had not been counseled about different aspects of pregnancy even during the third trimester. Only around two thirds of the respondents had received counseling during the 1st trimester of pregnancy. More than half of the respondents were not satisfied with the services provided at the ANC clinic. There was not much in increase in number of the respondents even in the third trimester.

Stress during pregnancy

Mean GHQ score of the respondents was 9.79 in the first trimester and 9.69 in the third trimester. The median score for GHQ was 9. The ratio of the mean and median score for GHQ was 1.08, which is within the range of 0.9-1.1 for uniform distribution of the data. Present study showed 34% prevalence of stress during pregnancy. The number of stressed women was similar to findings in the other studies. The median score in this study equaled the median score in a study conducted by Wisborg [12]. In a population based cohort study by Bussel, mean GHQ-12 score in Likert Scale was 12 among the study group and 11 among the control group [7]. Rahman, in a study in Pakistan showed the prevalence of antenatal depression to be around 24% [31]. Although they looked for depression, the prevalence was lower than present study. Similarly, in a study in India, prevalence of antenatal psychosocial stress was 42% which is much higher than the findings of this study [32]. Similarly, a study in Sweden detected 14% prevalence of psychiatric morbidity during antenatal period [33]. Newton in his study found showed stress during pregnancy was significantly related with age of the respondent [15] whereas in our study stress, either in first trimester or in the third trimester, was not related with age of the respondent.

Stress during first trimester of pregnancy with different demographic parameters

Women experiencing more than 3 stressful life events during first trimester of pregnancy were more likely to score higher in GHQ score (p<0.001). Similarly women staying in nuclear family were more likely to be stressed (p<0.05). During the first trimester of pregnancy, women are more likely to experience nausea, vomiting and altered mood due to hormonal change due to pregnancy. Women with family support find easier to cope with these conditions compared to women who do not have family support with them.

Similarly, women who were satisfied with the ANC counseling and services were less likely to be stressed (p=0.05). Counseling about different aspects of pregnancy, pregnancy associated symptoms, minor ailments and their prevention, birth preparedness and during ANC visit makes women easy to cope up with the pregnancy events and reduces anxiety due to pregnancy. Stress during third trimester of pregnancy was related with satisfaction of the respondent towards ANC services (p=0.05), counseling during ANC visit (p=0.04), daily work for 7 hours or more (p=0.05) and presence of 3 or more stressful life events (p<0.001).

Present study showed respondents with two or more stressful life events were more likely to score more on GHQ. This was statistically significant both in the first and third trimester. This result is consistent to the results from other studies in the past. In a study in Eastern Nepal, women experiencing stressful life events were two times more likely to have depression compared to the women without stressful events [8].

Conclusion and Recommendation

Stress during pregnancy was 34% in our study. There was no significant difference of the stress among pregnant women in the first and third trimester. Stress was related with the number of stressful life events, level of satisfaction with the ANC services, heavy work during pregnancy.

These findings are from one of the leading institute in the maternity care in the capital city, prevalence of stress among the rural women might be even higher than present study. Further studies need to be done in order to determine stress among pregnant women in other areas of the country. Concerned authorities need to address to reduce the stress among the pregnant women. This can be made possible by providing counseling to the women regarding different aspects of pregnancy, possible pregnancy related complications that can occur. Providing effective counseling reduces the level of stress which in turn reduces the adverse outcomes associated with stress.

Limitations of the Study

Stress was measured by General Health Questionnaire-12, which just measures a probability of stress. Those respondents weren't reviewed by a psychiatrist. So, we couldn't really tell whether those stressful respondents had a psychiatric morbidity. Our study was conducted in one of the advanced centre in the readily accessible areas of the country. Findings of this study may not be generalized among the women of Nepal. Further researches need to be conducted before generalizing the results among the Nepalese women.

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