Determinants of Antenatal Psychological Distress in Pakistani Women

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ABSTRACT

Introduction: An increasing number of evidence has demonstrated that poor antenatal psychological health can lead to adverse pregnancy outcomes. Studies conducted in various countries demonstrated a wide range of factors associated with psychological distress during pregnancy.

Methods: A cross-sectional study was conducted between September 2011 and December 2012 in Peshawar, north-west Pakistan. A total of 230 women in their third trimester of pregnancy fulfilled the inclusion criteria. The antenatal psychological health status of women was measured using the Depression Anxiety Stress Scale. Relevant data regarding health and demographic–socioeconomic status were collected through personal interviews using standardized questionnaires.

Results: Overall, 45% (n=104) of women exhibited symptoms for composite depression, anxiety, and stress (composite DAS). In the univariate analysis, maternal age, husband support, monthly income, family size, stressful life events, lack of confidence, domestic violence, and pregnancy-related concerns were strongly associated with antenatal composite DAS (p<0.01). The association of maternal composite DAS symptoms with age, monthly income, family size, and lack of confidence remained significant in the multivariate analysis (p<0.01).

Conclusion: A major proportion of women exhibited symptoms of antenatal composite DAS, and various factors were found to be related to their psychological distress. A young maternal age, low husband support, low income, large family size, adverse life events, lack of confidence, pregnancy-related concerns, and domestic violence were stronger determinants of poor antenatal psychological status. The study findings concluded that policymakers at the government level should launch special intervention programs to improve maternal perinatal mental and psychological health at the community level.

Keywords: Antenatal psychological distress, determinants, Pakistan

INTRODUCTION

Pregnancy is the stage of life wherein women experience physiological, psychological, hormonal, and social changes. Chances of emotional disturbance and psychological distress during pregnancy may be increased while attempting to adapt to these changes. These disturbances usually encompass a number of negative emotional and mood states such as anxiety, stress, sadness, depression, and frustration (1). A previous study suggested a wide variation in the prevalence of antenatal psychological distress, such as depression, anxiety, and stress; an estimate of the prevalence of depression from a recent systematic review is 6.5%–12.9% globally (2). Similarly, other psychological items, such as anxiety and stress, are also widely prevalent in the antenatal stage (3,4,5). In particular, focusing on South Asia, the prevalence of depressive disorders during the third trimester of pregnancy has been reported to be up to 25% (6). A systematic review of 20 studies revealed the prevalence of various psychological disorders in a range of 29%–66% in women from different cities of Pakistan (7). Similarly, some prior studies on pregnant women in Pakistan reported the prevalence of antenatal psychological distress and emotional disturbances to be up to 70% (6,8,9,10). There is an increasing number of evidence that antenatal psychological distress can lead to adverse birth and child outcomes such as premature birth, low birth weight, impaired neurological development, and low IQ (11,12,13,14,15).

Several studies from different countries have attempted to identify various biological and demographic–socioeconomic factors associated with antenatal psychological distress. Major factors that were reported in prior studies included low income levels and unemployment (5,16), lack of social and partner support (16,17), stressful events in the past (6,18), domestic violence (19), and unwanted pregnancies (20). Some prior studies conducted in Pakistan also attempted to identify factors associated with psychological distress in women from different cities (21,22); however, very limited studies have investigated the determinants of psychological and emotional disorders, specifically during preg-

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nancy. Similarly, studies that explored determinants of antenatal anxiety and depression were conducted in major cities located in Eastern and Southern Pakistan such as Rawalpindi (6) and Karachi (8,23).

To the best of our knowledge, no study from the north-west region of Pakistan has investigated the factors associated with antenatal psychological distress. In general, people living in the north-west region have different customs, culture, language, food and health attitudes, dietary behaviors, and social characteristics (24) compared people living in other regions of Pakistan. People of the north-west region speak the *Pashto* language and are known as *Pashtun*. Considering these important differences, this study was designed to investigate potential factors associated with antenatal psychological distress in women living in Peshawar, located in the north-west region of Pakistan.

METHODS

This study was conducted between September 2011 and December 2012 and included women receiving antenatal care in the Obstetrics and Gynaecology unit of the *Mian Rashid Hussain Shaheed* Memorial hospital, located in *Pabbi*, a semi-urban area in the Peshawar region. Ethical approval was obtained from the University Research Ethics Committee and medical executives of the hospital. Financial support to access study subjects and collect data was provided by the University of Agricultural, Peshawar. Inclusion criteria for the enrolling women were age of >18 years, having gestational age of >27 weeks (last trimester) but previously registered in the hospital in the first trimester, and free from any chronic diseases. Informed consent was obtained from each study subject prior to data collection.

Antenatal psychological health status was measured using the Urdu-(national language that is widely understood in Pakistan) translated version of the Depression Anxiety Stress Scale (DASS-42) (25), which contains 42 relevant items (14 statements each for depression, anxiety, and stress subscales) to recognize the presence and severity of symptoms of the three psychological items. DASS-42 has not only been demonstrated to be a valid and reliable measure of the dimensions of depression, anxiety, and stress separately but also covers more general dimensions of psychological distress (26, 27). It has been widely used in studying perinatal psychological health (20, 28, 29). Each item in DASS-42 is rated using a 4-point scale (0 for *always false or not applicable* to 3 for *always true or totally applicable*). Higher scores indicate greater distress levels. Women in this study were assigned to different groups based on the cut-off values for depression, anxiety, and stress. Internal consistency and reliability of DASS-42 for each subscale and the overall scale were determined using Cronbach's alpha (30). Cronbach's alpha coefficients were 0.85, 0.82, 0.87, and 0.89 for DASS depression, anxiety, stress, and total scales, respectively. These coefficients demonstrated good internal consistencies. Women with symptoms of DAS were those who had scores for depression, anxiety, and stress higher than the cut-off values for all the three negative psychological items. These women had mild to severe DAS symptoms (n=104). The rest of the sample were women with scores below the cut-off for all three items (n=126). Women who exhibited symptoms above the cut-off for only one or two of the psychological items and not for the third were excluded from analysis (n=30). Women were labeled as "with and without DAS symptoms" for examining statistical differences in various demographic, economic, and social characteristics.

Relevant information, such as the women's level of confidence, sociodemographic status of families, and family's and partner's support during pregnancy were obtained through personal interviews using standardized pre-tested questionnaires.

Statistical Analysis

All data were analyzed using the Statistical Package for the Social Sciences, version 18 (SPSS Inc. Chicago, IL, USA). Descriptive analysis was first performed to clean the data from errors. Appropriate statistical tests were performed at a significance level of 0.05 for continuous and categorical variables. The Student's *t*-test and chi-square tests were used to compare the sociodemographic characteristics among DAS groups. For identifying the risk factors for psychosocial and emotional disorders during pregnancy, cases were compared with normal subjects using logistic regression. Odds ratios (OR) and their corresponding 95% confidence intervals (CI) were estimated using the logistic regression analysis to evaluate association between psychological distress and risk factors. Univariate logistic regression analysis was first applied to explore the unadjusted association between each factor and the risk of psychological distress. All variables having a p value of <0.25 at the univariate level were considered eligible for the multivariate analysis. This was based on the Wald test from logistic regression analysis and the p value cut-off point of 0.25 (31). A multivariate logistic model was then developed that included all eligible variables to obtain a more precise estimate of associations between dependent and independent variables. Multivariate logistic regression analysis provided OR control for confounders. The Wald test was reported at a p value of <0.05.

RESULTS

Sociodemographic Characteristics
Table 1 reveals the results on general demographic–socioeconomic characteristics of the groups. Distressed women were more likely to be younger, primiparas, having lower monthly income, living in a rented accommodation, and in joint families (p<0.05). These findings suggest that on an average, women without DAS symptoms had relatively better socioeconomic backgrounds than distressed women.

Status of Psychological Distress in Women
Results on the prevalence of DAS in study subjects are given in Table 2. Overall, 55% (n=126) of subjects did not exhibit symptoms for either depression or anxiety and/or stress at all. These women had scores in the normal range for depression, anxiety, and stress. In the cohort, 29% (n=67), 42% (n=96), and 36% (n=83) of women exhibited symptoms of depression, anxiety, and stress, respectively.

Factors Associated with DAS
Table 3 displays the results on risk predictors of composite DAS in the study cohort as shown by crude and adjusted ORs. The ORs (95% CI) in the table are the results of binary logistic regression analysis, in which the dependent variable was "presence or absence of composite depression, stress, and/or anxiety" in the study subjects (Yes=104, No=126).

In the univariate analysis (crude OR), maternal age, husband support in pregnancy, monthly family income, family size, stressful life events, lack of confidence in day-to-day life, domestic violence (both verbal and physical by husband and/or a family member), and pregnancy-related concerns were found to be strongly associated with composite DAS in the study subjects (p<0.01). Other factors, including family/social problems (with in-laws), history of depression, home ownership status, family type, and gravidity, were found to be moderately associated with poor maternal psychosocial status (p<0.05).

Results of multivariate logistic regression analysis revealed that after simultaneous adjustments for all variables, the association of maternal composite DAS symptoms with age, monthly income, family size, and lack of 153

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Table 1. General demographic–socioeconomic characteristics of the study sample

Characteristics	Depression/Anxiety/Stress symptoms		p
	No (n=126)	Yes (n=104)	
	Mean (95% CI)/ No. of women (%)		
Maternal age (year)	24.44 (23.74; 25.15)	23.30 (22.47; 24.14)	0.038
Monthly income in thousands (Rupees.)	27.41 (25.83; 28.99)	24.91 (23.08; 26.75)	0.041
Parity			
Primiparas	39 (31%)	49 (47%)	0.018
Multiparas	87 (69%)	55 (53%)	
Home status			
Own	105 (83%)	72 (69%)	0.011
Rented	21 (17%)	32 (31%)	
Family type			
Joint	76 (60%)	79 (76%)	0.017
Nuclear	50 (40%)	25 (24%)	
CI: confidence interval			

Table 2. Prevalence and intensity of depression, anxiety, and stress in the study cohort

Psychological Traits		No. of women (%)
Depression	Total depressed women	67 (29)
	Normal (no symptoms for depression*)	163 (71)
Anxiety	Total anxious women	96 (42)
	Normal (no symptoms for anxiety*)	134 (58)
Stress	Total stressed women	83 (36)
	Normal (no symptoms for stress*)	147 (64)
Overall prevalence	Depressed, anxiety, and stress**	104 (45)
	Free of all symptoms***	126 (55)

*Women with DASS depression score <9, DASS-anxiety score <7 and DASS stress score <14 **women who had DASS depression, anxiety, and stress scores more than 9.7and 14 respectively ***No depression, anxiety, and/or stress at all

confidence strongly remained significant (p<0.01). Life events, husband support, domestic violence, and pregnancy-related concerns were found to be moderately associated with maternal composite DAS (p<0.05). However, mild significant associations of maternal composite DAS with family social problems (p=0.051), family type (p=0.054), and presence of young children in the family (p=0.055) were evident. History of depression and home ownership status were not found to be significant and lost their association with maternal composite DAS after this adjustment (p=0.126 and p=0.241 respectively).

DISCUSSION

This study examined various demographic–socioeconomic factors with respect to psychological health in a cohort of pregnant women living in the semi-urban area of the Peshawar region in north-west Pakistan. Women from diverse socioeconomic backgrounds who were seeking antenatal care services were selected and enrolled for the study; although the sample size was small, there was a high compliance rate. Women were

allocated to two groups on the basis of their answers to validated scales that were frequently used for psychological testing. A high proportion of women (45%) exhibited symptom levels above the cut-off values in all three psychological domains; these women were compared with the rest of the study subjects (55%, n=126). The number of pregnant women with symptoms was high; this could be attributed to factors such as low overall socioeconomic status of families and poor current maternal physiological status. These factors are associated with mild to severe distress levels, particularly in developing countries (32,33). Differences existed in several socioeconomic characteristics between the groups.

Status of Psychological Distress in Women
Various studies have been conducted on the assessment of psychosocial status during pregnancy in Pakistan and have reported a prevalence in the range of 25%–70% (19,23,34,35,36,37); estimates of prevalence vary according to the methods, testing tools, and criteria used. Most previous studies were conducted in rural areas of Pakistan. When compared with findings of other studies conducted in Pakistan on depression in pregnant women, the prevalence of depression in our study was much lower; 62% and 48% of pregnant women in Rural Sindh province (34) and the northern areas of Pakistan (19), respectively were found depressed at the time of assessment. Anxiety symptoms were more prevalent in our study compared with previously reported findings on anxiety in pregnant women from Karachi, Pakistan, i.e., 22% (37); however, our results were slightly closer to those reported in another local study that was conducted in Karachi, Pakistan, i.e., 70% (both anxious and depressed) (23).

Results on the prevalence of symptoms of psychosocial disorders were compared with some selected studies conducted in Asian countries other than Pakistan. Variability exists in these studies in the prevalence of various psychosocial problems during pregnancy; for example, in China, 37% (4); Turkey, 27% (38) and 33% (39); and Malaysia, 25% (40).

Factors Associated with DAS
Overall maternal age, monthly income, family size, and lack of confidence were found to be associated with a 1.08-, 2.70-, 1.30-, and 1.29-fold increased risk for maternal DAS, respectively (p<0.01). Demographic–socioeconomic variables have consistently been reported as influencing factors in explaining the variability in the prevalence and intensity of psychosocial

Table 3. Factors associated with antenatal psychological distress

Risk factors		Univariate analysis		Multivariate analysis	
		Crude OR (95% CI)	p	Adjusted OR (95% CI)	p
Maternal age		2.53 (1.42;3.96)	0.000	1.08 (0.62;2.19)	0.000
Husband support		0.98 (0.96;0.99)	0.004	0.98 (0.96;1.00)	0.047
Monthly income		3.09(1.86;4.55)	0.000	2.70(1.67;3.46)	0.000
Family size		1.80 (1.08;2.63)	0.001	1.30 (0.81;2.59)	0.001
Problems with the in-law	No	Reference	0.021	Reference	0.051
	Yes	1.96 (1.08;3.57)		2.23 (0.99;5.02)	
History of depression	No	Reference	0.046	Reference	0.126
	Yes	3.88 (1.02;14.72)		3.70 (0.69;19.79)	
Life events*	No	Reference	0.002	Reference	0.037
	Yes	5.06 (1.81;14.17)		4.35 (1.09'17.40)	
Home ownership	Yes	Reference	0.013	Reference	0.241
	No	2.22 (1.19;4.16)		1.67 (0.71;3.92)	
Family type	Nuclear	Reference	0.012	Reference	0.054
	Joint	2.08 (1.17;3.69)		2.14 (1.00;4,57)	
Lack of confidence∞	No	Reference	0.001	Reference	0.002
	Yes	4.19 (1.78;9.83)		1.29 (0.75;1.62)	
Gravidity	Multi	Reference	0.013	Reference	0.244
	Primary	1.99 (1.16;3.41)		0.41 (0.16;1.06)	
Young children in family	No	Reference	0.171	Reference	0.055
	Yes	0.62 (0.32;1.22)		2.65 (1.03;6.84)	
Pregnancy-related concern	No	Reference	0.003	Reference	0.043
	Yes	2.95 (1.46;5.96)		2.67 (1.03;6.84)	
Domestic violence	No	Reference	0.001	Reference	0.047
	Yes	3.52 (1.73;7.19)		2.67 (1.01;7.06)	

*events that usually give grieves such as death or illness of a close relative, and migration during pregnancy. ∞such as 'cannot share problems with others' and 'difficulty in making friends' etc.
CI: confidence interval

disorders in both men and women. Age and income account for much of the variance in the prevalence and intensity of DAS in women. This is consistent with research from other countries where an association of depression with young age and monthly household income is also well documented (4,38,41,42,43,44). Depression was also found highly prevalent in women from large family sizes and with low confidence levels (16,38,45,46), other psychosocial factors that have been found to be associated with antenatal DAS include the low quality of a couple's relationship (39), conflictual relationship with *in-laws* or gaining low support from family (47,48), experiencing stressful life events (16,49), traditional or extended family settings (39, 49), presence of young children at home (39,46), pregnancy-related concerns (16), and domestic violence either physical or verbal (16,19,50,51).

Studies in high-income countries have also shown an association between disadvantaged socioeconomic background, domestic violence, and antepartum depressive and anxiety symptoms (52,53). Similar findings were also evident in studies conducted in low-income countries (8,54). Age at current pregnancy and at first delivery, obstetric complications, having no friends in the community, large family size, low occupational status, and history of previous psychiatric disorders were found to be associated with common antepartum mental disorders in Brazil (55).

Strengths and Limitations
The current study has several strengths and limitations. This is the first study to identify factors related to antenatal psychological distress in women from North West Pakistan. The research team was diverse and comprised of a specialist nutritionist, a gynecologist, a clinical psychologist, specialist palliative care nurses, and social scientists. This mix of disciplines and backgrounds helped to evaluate the interdisciplinary research tools and brought a range of perspectives to the conduct of the study and the analyses. The subjects' psychological health was assessed using an Urdu-translated version of the well-respected DASS-42 questionnaire. All data were collected by trained interviewers via face to face interviews.

One major limitation of our study is that our cohort of women was recruited in one geographical area of Pakistan; and therefore, cannot be generalized to all pregnant women in Pakistan. However, it is likely to be reasonably representative of women in the North West region of Pakistan. Generally, people living in the North West region, have different customs, food and health attitudes, dietary behaviors, and social life characteristics (24,56) in comparison to other regions of Pakistan.

In conclusion, findings of the current study contributed well to the existing literature and explored factors related to the antenatal psycholog-

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ical health of women from a different cultural background in Pakistan. A major proportion of *Pashtun* women showed symptoms of antenatal DAS in this study and various factors were found related to their psychological distress. In this study, a young maternal age, low husband/family support, low monthly income, large family size, adverse life events, lack of confidence, pregnancy-related concerns, and domestic violence were stronger determinants of poor psychological health. Factors identified in the current cohort are of great concern. Therefore, it is strongly recommended that intervention programs targeting women with antenatal psychological distress be launched to reduce adverse birth outcomes. At each maternity clinic, there should be proper screening to identify women with symptoms of antenatal psychological distress with the aim to provide appropriate counseling and treatment.

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