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Prevalence, Differences, and Predictors of Anxiety and Depression among Pregnant and Non-Pregnant Women in Peshawar Khyber Pakhtunkhwa Pakistan

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The present study is focused to investigate the prevalence of anxiety and depression among married pregnant and non-pregnant women and to find out the risk factors that are responsible for the development of these disorders during pregnancy. Total sample was comprised of three hundred married women (N=300): half of them were pregnant (n= 150) and half of them were married non-pregnant (n= 150). Data was obtained from public and government sector hospitals in Peshawar. Urdu version of the Hospital Anxiety and Depression Scale was used to assess the symptoms of anxiety and depression. Results revealed that both moderate and sever anxiety were more prevalent among pregnant as compare to non-pregnant women. However, pregnant women exhibited slightly low level of moderate depression than non-pregnant women. To make the comparison between the two groups t-test was used. Further, to assess the risk factors for anxiety and depression during pregnancy, regression analysis was conducted by using the data of pregnant women only. Results indicated that all three variables: socioeconomic status, domestic violence, and husband's employment are significantly linked to anxiety and depression during pregnancy.

Keywords: anxiety, depression, domestic violence, Husband's employment, regression analysis

It is viewed that pregnancy is vulnerable time period for developing anxiety and depression (Biaggi, Conroy, Pawlby, & Pariante, 2016). The current study was focused to investigate the prevalence of anxiety and depression among two groups: married pregnant and non-pregnant women. Current study also examined the factors that are responsible for development of anxiety and depression during pregnancy. Co-occurrence of anxiety and depression are commonly prevailed disorders among pregnant women in Pakistan but the exact data related to concurrence of these two disorders among pregnant women is limited. One serious implication is the lack of recognition of this issue in Pakistan, specifically in KPK. It is widely considered that maternal anxiety and depression have negative influence both on mother and child (Feldman et al., 2009).

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Contribution of Authors:

1. First author conceived and designed the analysis, performed the analysis, wrote the paper, and addressed all points raised by the editor and reviewers.
2. Co-author only collected the data.

Experiencing anxiety during pregnancy is considered normal but for some women coping with emotional adjustment to approaching maternity may be distressing (Furber, Garrod, Maloney, Lovell, & McGowan, 2009). Woman during pregnancy may experience anxiety due to the physical and psychological changes and can develop fear of ill health for both herself and her offspring (Cantwell & Cox, 2003; Clark, Skouteris, Wertheim, Paxton, & Milgrom, 2009).

Previous study found anxiety and depression in 29.2% pregnant women and 16.5% in postpartal women (Andersson, Sundström-Poromaa, Bixo, Wulff, Bondestam & Astrom, 2003). Another study suggested that 13% to 17% of pregnant women suffer from depression which affects their health, personal adjustment, and mother-infant relations (Rubertsson, Hellström, Cross & Sydsjö, 2014). It is reported that 40% of Swedish pregnant women were found with moderate to extreme symptoms of anxiety and depression (Lancaster, Gold, Flynn, Yoo, Marcus & Davis, 2010). Furthermore, a study found concurrence of anxiety and depression between 6.6% and 10.4% among pregnant women (Andersson et al., 2003; Rubertsson et al., 2014).

Gorman (1996) found 85% of concurrence ratio of anxiety and depression among pregnant women, however, anxiety can exist independently as well. Another study carried out on a randomly selected sample of pregnant females (N=720) in Bangladesh used Edinburgh Postnatal Depression Scale (EPDS) to collect the data. They found 29.4% of the sample had anxiety and 18.3% experienced depression. However, concurrence of the two was found only in 3.4% of the sample (Nasreen, Kabir, Forsell, & Edhborg, 2011).

Previous study suggested the co-occurrence of anxiety and depression among pregnant women (Heron et al., 2004; Matthey, 2008; Wenzel, Haugen, Jackson, & Brendle, 2005). Makara-Studzinska et al., 2013) using Hospital Anxiety Depression Scale (HADS) to examine depressive symptoms among 314 pregnant women in central Poland. Findings suggested that anxiety during pregnancy co-occur with depressive symptoms. The estimated co-existence ratio of anxiety and depression were 12.7%, 10.8%, and 12.4% respectively among women who were non-working and whose housing and financial situations were worst.

Additionally, a study conducted by Rahman, Iqbal, and Harrington, (2003) among pregnant women (N=632) in Southern Kahuta, Pakistan, indicated that 25% of pregnant women were exhibiting depressive symptoms.

Sleath, West, Tudor, Perreira, King, and Morrissey, (2005) conducted a study by administering Beck Depression Inventory (BDI-II) on 73 pregnant women to assess depression. Results revealed that 19% of the sample showed moderate to severe symptoms of depression.

Brockington, Macdonald, and Wainscott, (2006) examined three groups: women in 24–36 weeks of pregnancy, 2–8 weeks post-delivery, and non-pregnant women. Anxiety was measured by using the STAI and Beck Anxiety Inventory (BAI). Pregnant women who were belonging to low income were scored high on anxiety as compare to those who were from higher income background.

Hamirani, Sultana, Ibrahim, Iqbal, and Sultana, (2006) conducted a study in Karachi, Pakistan by using a sample of (N=75) pregnant women. The pregnant women were assessed by using EPDS. They reported 34.6% depression in pregnant women.

Faisal and Menezes (2007) found that lower socio-economic condition, husband's unemployment, low wages, lower education, and lower family income were significantly correlated to anxiety and depression among pregnant women.

Karmaliani, Asad, Bann, Moss, Mcclure, Pasha, and Goldenberg, (2009) reported that many factors involved in developing anxiety and depression among pregnant women such as lower income, physical, verbal abuse and husbands' unemployment.

To examine the psychological health of pregnant women, Schetter and Tanner (2012) conducted a study and found that anxiety and depression during pregnancy adversely influence mother and child's health.

Shah, Bowen, Afridi, Nowshad, and Muhajarine, (2011) investigated factors responsible for the depressive disorder among pregnant women in different cultures. The study was conducted on Pakistani, Caucasian and Aboriginal women from Saskatchewan, Canada. EPDS was used to estimate the depression. Results indicated that depressive symptoms were higher (48.4%) among Pakistani women as compared to Canadian Caucasian women (8.6%) and Canadian Aboriginal women (31.2%). Low education and low income were found as significant predictors of depression in pregnant women.

Similarly, another study was conducted by Ali, Azam, Ali, Tabbusum, and Moin, (2012) to assess depression among 165 pregnant women. Results indicated that 70% of pregnant women were showing symptoms of depression.

Gourounti, Anagnostopoulos and Sandall (2014) investigated lack of husband's support as a correlate of anxiety and depression among pregnant Greek women. They found lack of support from spouse as a significant factor of anxiety during pregnancy.

Reid and Taylor, (2015) suggested that household responsibilities, unfavourable employment conditions, low economic status, and large family sizes are important factors which significantly affect the psychological health of pregnant woman.

Biaggi, Conroy, Pawlby, and Pariante (2016) conducted a meta-analysis of ninety-seven studies and found lack of husband's support, domestic violence, unwanted pregnancy, highly perceived stress, and past abortions as significant correlates of anxiety and depression during pregnancy. Another study found domestic violence and low socioeconomic status as predictors of depression among pregnant women (Lancaster et al., 2010).

Poverty is another risk factor associated with anxiety and depression among pregnant women. In developed countries, the estimated ratio of anxiety and depression among pregnant women is between 7% and 20% whereas in underdeveloped countries the ratio is 20% or more.

Previous studies found low socioeconomic status, adverse events in life, low social support, and mental illness as significant correlates of depression during prenatal stage (Green, 1998; O'Mahony & Donnelly, 2010; Reid et al., 2009).

A meta-analytic review was conducted to understand anxiety during pregnancy and its correlates. Results of the review indicated that anxiety during pregnancy was correlated to a number

of psychosocial variables such as low-income, stressful life events, inadequate family support, and past history of anxiety (Leigh & Milgrom 2008).

A research was demonstrated to assess the symptoms of depression in pregnant women (N= 2,128) in Boston. Results revealed that 9% of pregnant women were exhibiting depressed mood while 31% were suffering from depressive disorder. Presence of depressive disorder was significantly associated with low income (Rich-Edwards, Kleinman, Abrams, Harlow, McLaughlin, Joffe, & Gillman, 2006).

Fikree and Bhatti, (1999) conducted a study in Karachi, Pakistan to assess the influence of domestic violence during pregnancy and found that 15% of them were physically abused. 72% of those women were suffering from anxiety and depression. They found physical abuse as a significantly risk factor for anxiety and depression. Similarly, Bolton, Hughes, Turton, and Sedgwick, (1998) found low family income and low education as risk significant factors for depressive disorders in pregnancy.

The current study was focused on prevalence and differences between married pregnant and not-pregnant women, because pregnant women experience psychological disturbances that subsequently lead to depression and anxiety which are not usually addressed properly by gynaecologists and physicians in Pakistan. If these psychological problems remain untreated during pregnancy, they adversely affect the health of expectant and offspring. There is essential need to assess prevalence, differences, and risk factors for anxiety and depression among pregnant woman because previously no study has been conducted in Peshawar KPK. Therefore, it was hypothesized that married pregnant women would exhibit more anxiety and depression as compare to married non-pregnant women. To assess the factors that are responsible for developing anxiety and depression during pregnancy, it was hypothesized that domestic violence, low socioeconomic status, and husband's employment problems would be significant risk factors for anxiety and depression during this period.

Method

Participants

Total sample of three hundred married women (N= 300) was recruited for the present study. Their ages were ranged from 18 to 40 (M = 20.02, SD = 6.30). Half of them were pregnant (n= 150) and half of participants were non-pregnant (n= 150).

Materials

Hospital Anxiety and Depression Scale (HADS) consisting of 14 items was used to collect the data. HADS consisted of two subscales: Anxiety Scale consisted of a total of 7 items (Q1, Q3, Q5, Q7, Q9, Q11 and Q13) and Depression subscale underpinned by 7 items (Q2, Q4, Q6, Q8, Q10, Q12 and Q14). Demographic sheet was used to collect the data regarding age, socio-economic status, husband's employability, and domestic violence.

Procedure

Data for pregnant women were collected from different public and government sector hospitals in Peshawar. Data form married non-pregnant sample was collected both from institutes and house wives. Purposive sampling technique was used to collect the data. Participants were requested not to leave a single question un-responded. They were also debriefed that they can quit

at any point. Data on socio-demographic characteristics were collected using already designed demographic sheet.

Ethical approval was taken from Advanced Study Review Board (ASRB) of the institute. Pregnant women in any trimester having first pregnancy with no previous miscarriage history were included in the study. Subjects having serious co-morbid disease or any other physical illness and psychological illness were excluded from the study. To assess the difference between pregnant and non-pregnant women, t-test was used. Further, multiple regression method was applied to assess the risk factors for anxiety and depression during pregnancy by using only pregnant sample.

Results

Descriptive statistics

Table 1 shows descriptive statistics and internal consistency for anxiety and depression scale. Descriptive statistics included mean (M), standard deviation (SD), range, and Cronbach's alpha. Cronbach's alpha shows good internal consistency and reliability (*α*= 0.78) of HADS.

Table 1

Descriptive statistics and reliability coefficients for Anxiety & Depression Scale

Variables	*M*	SD	Range	Cronbach's alpha
Anxiety & Depression	20.02	6.30	0-33	0 .78

Table 2

Prevalence of Anxiety and depression among pregnant (n= 150) and non-pregnant (n= 150) women.

	Anxiety		**Depression**	
	Pregnant	**Non-Pregnant**	**Pregnant**	**Non-Pregnant**
Moderate	73.3%	24.7%	64.0%	60.0%
Severe	24.0%	2.0%	26.0%	0.7%

Table 2 revealed that 73.3 % of pregnant women showed moderate anxiety while 24% were suffering from severe anxiety. 64% pregnant women were showing symptoms of moderate depression and 26% were exhibiting severe depression. 24.7% of married non-pregnant women showed moderate anxiety and only 2% revealed severe anxiety. Married non-pregnant women have shown 60% of moderate depression and 0.7% of severe depression.

Table 3

Group differences between pregnant and non-pregnant women for Anxiety and Depression (N=300)

Variables	**Types of groups**	***N***	***M***	***SD***	***T***	***P***	η^2
Anxiety	Pregnant	150	10.64	1.99	17.59	**0.001**	**0.06**
	Non-pregnant	150	6.32	2.24			
Depression	Pregnant	150	14.50	2.30	21.08	**0.001**	**0.05**
	Non-pregnant	150	8.56	2.57			

Table 3 shows independent sample t-test results for pregnant and non- pregnant women. Results indicated that pregnant women exhibited more anxiety than non-pregnant women ($t(300)= 17.59$, $p < 0.001$, $\eta 2 = 0.06$). Results also revealed that pregnant women were more depressive than non-pregnant women ($t (300) = 21.08$, $p < 0.001$, $\eta 2 = 0.05$).

Table 4

Domestic violence, socioeconomic status and husband's employment predicting anxiety and depression among pregnant women (N=150)

	Anxiety			**Depression**		
	B	***B***	***SE***	***B***	***B***	***SE***
Domestic Violence	.27**	1.1	.3	.29***	2.4	.6
Socioeconomic Status	-.36***	-1.5	.3	-.44***	-3.7	.6
Husband's Employment	-.22**	-.97	.2	-.16*	-1.4	.6
R^2	.61***			.66***		
F	77.20***			95.01***		

*Note. Statistical significance: *p < .05; **p < .01; ***p < .001*

Multiple Linear Regressions analysis was performed for anxiety and depression separately presented in table 4. The main objective of the analyses was to investigate the ability of domestic violence, socioeconomic status, and husband's employment to predict the level of anxiety and depression among pregnant women. Since no *a priori* hypotheses have been made in order to determine the entry of the predictor variables, therefore, a direct method was used. In the first model, all three independent variables were explaining 61% of variance in the level of anxiety suggesting significance of the model ($F (3, 146) = 77.20$, $p < .001$). Results revealed that all three predictor variables were statistically significant with socioeconomic status exhibiting a higher beta value ($\beta = -.36$, $p< .001$), domestic violence ($\beta = .27$, $p< .01$) and husband's employment ($\beta = -.22$, $p< .01$).

In the second model, three independent variables explained 66% of variance in the level of depression suggesting significance of the model ($F (3, 146) =95.01$, $p < .001$). Model indicated that all three predictor variables were significantly related with socioeconomic status recording a higher beta value ($\beta = -.44$, $p< .001$), domestic violence ($\beta = .29$, $p< .01$) and husband's employment ($\beta = -.16$, $p< .05$).

Discussion

The current study was focused to evaluate anxiety and depression among pregnant women and to investigate those risk factors that are important in the development of anxiety and depression during pregnancy. Descriptive statistics was used to analyse and summarize the data in meaningful way. To examine anxiety and depression, an assessment was made to find the difference between two groups: married pregnant and non-pregnant women. For further analyses, advanced statistical methods were used to assess the risk factors of anxiety and depression during pregnancy.

The results of the study clearly showed significant differences in the level of anxiety and depression in married pregnant and non-pregnant women. Results indicated high prevalence of anxiety and depression among pregnant women in Peshawar, KPK Pakistan. Present findings are consistent with the previous study conducted by Rahman, Iqbal, and Harrington (2003) suggesting 95% of Pakistani women experience anxiety and depression during pregnancy.

Present findings are also consistent with the study of Shah, Bowen, Afridi, Nowshad, and Muhajarine, (2011) who found co-occurrence of both disorders in Pakistani women (48%) as well as in Canadian women (31%).

Hussain, Creed, and Tomenson (2000) found that most of the Pakistani women experience anxiety and depression during pregnancy. Niaz , Izhar and Bhatti (2004) conducted study in Lahore and found that anxiety prevailed in 34.5% and depression in 25% of pregnant women. The reasons for high level of anxiety during first pregnancy were attributed to the mothers' feelings of remaining unsuccessful to fulfil the expected demands being a new mother. However, there are some other correlates that are important in the development of anxiety and depression during pregnancy. These factors are ill health, domestic violence, low social support, young age, low income, stress of increasing family, poor marital relation, household responsibilities, and husband's unemployment.

Present study found low economic status as a best predictor for anxiety and depression during pregnancy consistent with previous studies (Gotlib, Whiffen, Mount, Milne, & Cordy, 1989). Current findings are also consistent with previous studies from other low income countries (Freitas and Bogeta, 2002; Lovisi, López, Coutinho, & Patel, 2005). Similarly, Gausia, Fisher, Ali, and Oosthuizen (2009) found 33% prevalence of anxiety and depression among pregnant women in Bangladesh; 16% prevalence of anxiety and depression in South Indian women (Chandran et al., 2002); and 16% in Hong Kong (Leung, 2004).

Consistent to the results of the present study, Bacchus, Mezey, Bewley, (2004) and Biaggi et al., (2016) found domestic violence as an important risk factor for the development of depressive symptom during pregnancy.

In the present study it was hypothesized that husband's employability is also another contributory factor for the development of antenatal anxiety and depression. Present findings supported our hypothesis and results are in line with the previous studies conducted by Faisal-Cury, Menezes, (2007); Fikree and Bhatti, (1999).

Current findings indicated that antenatal anxiety and depression are highly prevailed psychological disorders in Pakistani pregnant women therefore; a step should be taken to provide thorough assessment and psychotherapy over the course of pregnancy.

Suggestions and Implications

The results of the present study would help professionals to not only assess women with the symptoms of anxiety and depression but also offer them preventive interventions. Unfortunately, in Pakistan this intervention is not mandatory in hospitals; therefore many women remain unidentified as being at risk suffering from anxiety and depression during pregnancy.

Another important suggestion is provision of psychosocial assessment during pregnancy. Psychosocial assessment should include evaluation of pregnant women's psychosocial circumstances like socioeconomic status, spouse support, marital relationship, family support, husband's income, physical of sexual abuse and stressful life events.

Limitation

In present research the pregnant women were screened once for the diagnosis of anxiety and depression which is not enough during pregnancy and this is the major limitation of the study. Multiple evaluations should be conducted to find out the differences in the rate of depression and

anxiety during pregnancy. Further study is warranted to evaluate anxiety and depression during different stages of pregnancy.

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