Psycho-social factors of antenatal anxiety and depression in Pakistan: Is social support a mediator?

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Funding support: None

Type of article: Original Article

Conflict of interest: None

Sponsorship: None

Disclosure: None

MeSH terms: Sex discrimination; Social psychology; Mental illness; Sexism

Original Article Word Count: 3517 words

Abstract Word Count: 376 words

Abstract

Introduction:

Pregnancy is generally viewed as a time of fulfillment and joy, however, for many women; it can be a stressful event. In South Asia, it is associated with cultural stigmas revolving around gender discrimination, abnormal births and genetic abnormalities. It is also associated with several psychiatric problems in women; most notably, depression and anxiety.

Methodology:

This cross sectional study was undertaken in four teaching hospitals in Lahore from February, 2014 to June, 2014. 500 Pregnant women presenting at the outdoors of obstetrics and gynecology department were interviewed. The questionnaire consisted of three sections: Demographics, Hospital anxiety and depression scale and social provision scale. Data was analyzed in SPSS v.20. Descriptive statistics were analyzed for demographics. Pearson Chi Square, Bivariate Correlations and linear regression were run to analyze associations of independent variables with scores on HAD scale and SPS.

Results:

There were a total of 500 respondents. Mean age of respondents was 27.41 years (5.65). Anxiety levels of participants were categorized as Normal 145 (29%), borderline 110 (22%) and anxious 245 (49%). And depression levels were categorized as 218 (43.6%) normal, 123 (24.6%) borderline, 159(31.8%) depressed. Inferential analysis

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revealed that higher scores on HAD scale were significantly associated with lower scores on SPS, rural background, history of harassment, abortion, C-sections and unplanned pregnancies ($P < .05$). Social support also mediated the relationship between total numbers of children, gender of previous offspring and scores on HAD. Women reporting higher numbers of female children were significantly associated with higher scores on HAD scale and lower on SPS scale. Whereas increasing number of male progeny were associated with low scores on these depression subscale ($P < .05$).

Conclusion:

Keeping in context the predominantly patriarchal socio-cultural setting, the predictors of antenatal anxiety and depression in Pakistan may differ from those of the developed countries. Rural women and working women showed higher levels of antenatal anxiety and depression, which contradicts studies from western countries. Our study revealed higher number of female progeny was associated with higher levels of depression and anxiety while male progeny had a protective influence. We, therefore, suggest that interventions designed to reduce antenatal anxiety and depression should take these unique factors, operating in developing countries and patriarchal societies, into account in their design and implementation.

Introduction

In recent years, a lot of work has been published on psychological science of pregnancy. While pregnancy is generally viewed as a time of fulfillment and joy, however, for many women, it can be a stressful event. In our part of the world, the South

Asia, it is associated with cultural stigmas revolving around gender discrimination, abnormal births and genetic abnormalities. It is also associated with several psychiatric problems in women; most notably, depression and anxiety.

Around the globe, studies have shown a high prevalence of psychiatric illnesses in pregnant women. Estimates of prevalence of antenatal depression and anxiety vary. Gaynes et al., in a systematic review of 109 English articles published from 1980-2004, found that up to 13% pregnant women suffer from major or minor depression [1]. Faisal-Cury et al. reported a higher prevalence of depression (20% of pregnant women) and anxiety (60% of pregnant women) among pregnant women of Sao Paulo, Brazil in 2007 [2]. Owing to gender-sensitive cultural setting of South Asia, especially high prevalence of psychiatric illnesses in pregnant females has been reported. For instance, study in rural Bangladesh in 2011, estimated antenatal depression at 18%and antenatal anxiety at 29% [3] and a 2006 study in Karachi, Pakistan reported a prevalence of antenatal depression as 34%.[4].

Several studies have drawn attention to the adverse outcomes of antenatal anxiety and depression in the developing child. These outcomes include preterm birth [5][6], low birth weight [5][7], reduced cognitive ability and increased fearfulness [8], increased incidence of respiratory and skin illnesses in early life [9] and elevated awakening cortisol levels [10]. Moreover, in a literature review, Kinsella et al. concluded that fetal heart rate, activity, sleep patterns and movements, all indicators of its neurobehavioral development, are significantly affected by maternal stress, depression and anxiety [11]. Antenatal depression is also the strongest predictor for postnatal depression [12] which is itself associated with several adverse effects in the infant.

In the past decade, research has actively focused on elucidating the underlying causes of antenatal anxiety and depression. Antenatal depression has been found to be associated with domestic violence [13][14], low social support [12][15][16], social conflict [15], low income [16], antenatal anxiety [16][17], unwanted pregnancy [17][18], history of depression [12][17][18] and previous prenatal loss [19][20] while antenatal anxiety has been associated with low mastery, less positive attitude towards pregnancy, low income level, low education level, low marital satisfaction, low social support, infertility duration and history of treatment failure in Assisted Reproductive Technologies (ARTs) [21–23]. Similar risk factors have been reported by various studies in our country [24–26].

However, because of the cultural and socioeconomic environment of various developing regions of the world, several unique factors contribute to antenatal anxiety and depression in these regions. South Asia is among the most densely populated and poorest regions of the world. It faces huge social, economic and health challenges. Most societies are patriarchal and marked by discrimination against women. It is generally considered more desirable to have a male offspring than a female offspring [27][28]. Owing to cultural stigmas and gender discrimination, males enjoy better access to health facilities, education and employment. Qadir et al. have pointed out that this gender disadvantage is strongly associated with psychological morbidity among the women of Pakistan [29]. Indeed, women in Pakistan have been found to have far greater prevalence of depression and stress than men [30]. Whether gender discrimination and son preference contributes to depression and anxiety among pregnant women is not known and to our knowledge, no study has been conducted to clarify this relationship. Thus, the purpose of our study is to bridge this gap in scientific knowledge and study the factors associated with antenatal

depression and anxiety with particular emphasis on the association that gender discrimination and son preference have with the mental health of a pregnant woman.

Methodology:

This cross sectional study was undertaken in four teaching hospitals in Lahore from February, 2014 to June, 2014 namely: CMH Lahore, Jinnah Hospital, Lahore, Services Hospital, Lahore and Lady Willingdon Hospital, Lahore. This study was approved by Ethics review committee of CMH Lahore Medical College and Institute of Dentistry, Lahore (CMH LMC).

Pregnant women presenting at the outdoors of obstetrics and gynecology department were included in this study. Only those women were included who had a low income or lower middle income social background.

Data was collected through convenience sampling as we could not ensure random sampling of data due to lack of resources. Participants were interviewed by four, 4th year medical students of CMH LMC. These students underwent a 2-days interviewing skills workshop at department of psychology, CMH Lahore. It was headed by experienced psychologists working in said department. It was considered necessary due to sensitive nature of questions asked in the questionnaire. 500 pregnant women were interviewed. Only those women were included in the surveys that were willing to participate in it. Written informed consent was provided by each participant. They were informed about the objectives of the survey and ensured anonymity.

The questionnaire consisted of three sections: Demographics, Hospital anxiety and depression scale and social provision scale. In demographics section, participants were

asked about their age, ethnicity, education, background, occupation, any history of miscarriage, abortion, harassment, number of C-sections underwent and whether their present pregnancy was planned or unplanned. Total number of offspring, their gender and ages were also recorded.

The second part of the questionnaire consisted of Urdu translation of Hospital anxiety and depression (DB Mumford). It is a widely used, reliable and validated psychological instrument used for the screening of anxiety and depression in participants. It has two subscales screening for anxiety and depression separately. Each subscale yields a score ranging from 0-21, with increasing score associated with higher levels of anxiety and depression. These scores can further be divided into three categories: 0-7 = Normal, 8-10 = Borderline abnormal (borderline case) and 11-21 = Abnormal (case).

The third section consisted of Urdu translation of Perceived social provision scale. It assesses perceived social support in participants. It consists of 24 questions with a Likert type response on a 4-point scale. Each statement describes her current social network. Responses range from 1 (strongly disagree) to 4 (strongly agree). This scale assesses six provisions of social relationships including, guidance (advice or information), reliable alliance (assurance that others can be counted on in times of stress), reassurance of worth (recognition of one's competence), attachment (emotional closeness), social integration (a sense of belonging to a group of friends), and opportunity for nurturance (providing assistance to others) [31]. For the purpose of analysis, total score on SPS scale can also be used.

Data was analyzed in SPSS v. 20. Frequency and descriptive statistics were analyzed for demographics and categories of HAD subscales. Data was visualized on Histogram to assess normality. Bivariate correlations were used to analyze associations between demographics, scores on HAD subscales and scores of social provision scale. Linear regression was employed to analyze associations between numbers of male children, female children and scores on HAD scale. Number of male children and female children were dichotomized. Dichotomous variable for male children was coded as "pregnant women with no male children (0) and those with one or more than one male children. Similarly, dichotomous variable for female children was coded as "pregnant women with zero or one female child (0) and pregnant women with more than one female children (1). Then in the next step, score on social provision scale was entered into the previous regression model to analyze its controlling effects.

Results:

There were a total of 500 respondents. Mean age of respondents was 27.41 years (5.65). Ethnic distribution of respondents was Punjabi 369 (73.8%), Urdu speaking 110 (22%) and other 21 (4.2%). Education level of participants was reported as 85 (17%) Illiterate, High School 315 (63%), intermediate 60 (12%) and 40 (8%) graduates. Most of the respondents were housewives 441 (88.2%) and 59 (11.8%) were employed. Most of the respondents had an urban background 208 (41.6%) followed with rural 182 (36.4%) and semi urban 110 (22%). Most of the respondents were from lower middle class 284 (56.8%), lower class 148 (29.6%), middle class 68 (13.6%). Planned pregnancy was

183 conceived by 135 (27%) of respondents and 365 (73%) had an unplanned pregnancy.
184 History of miscarriage and abortion was reported by 44 (8.8%) and 110 (22%)
185 respectively. 33 (6.6%) of the respondents had experienced harassment. Mean number of
186 children of respondents was 1.5 (1.42). 81/500 (16.2%) and 136/500 (27.2%) of pregnant
187 women had a history of at least one episiotomy and caesarian section respectively.

188 On Hospital Anxiety and Depression Scale (HAD Scale), mean anxiety and depression
189 scores were 9.71 (4.24) and 7.85 (4.03) respectively. Mean score of Social provision
190 scale was 72.3 (12.2). Anxiety levels of participants were categorized as Normal 145
191 (29%), borderline 110 (22%) and anxious 245 (49%). And depression levels were
192 categorized as 218 (43.6%) normal, 123 (24.6%) borderline, 159(31.8%) depressed. Chi
193 Square revealed significant association between background of participants, anxiety (χ^2 =
194 43.69, df= 4) and depression (χ^2 = 83.19, df = 4), (all ps < .001). This represents the fact
195 that 123 (67.6%) of rural women were anxious and 83 (39.9%) of urban and only 39
196 (35.5%) of semi urban women were anxious. While, 91 (50%) of rural women, 40
197 (19.2%) Urban and 28 (25.5%) semi urban were depressed.

198 Bivariate correlation revealed a very significant and strong negative correlation between
199 social support and anxiety (r= -.433, p < .001) and social support and depression (r= -
200 .453, p < .001). Point biserial correlation revealed that occupation of pregnant women
201 significantly correlated with anxiety r_{pb}=.17 and depression r_{pb}= .16 (all ps< .001).
202 Employed women reported higher levels of anxiety and depression. Anxiety and
203 depression also had significant positive association with a history of harassment,
204 miscarriage, abortion, number of c-sections, number of episiotomies and unplanned
205 pregnancies (Table 1).

Significant associations were found between modes of birth, scores on anxiety, depression subscale and social provision scale (Table 2). Increasing number of C-sections were associated with higher scores on Perceived Social Provision Scale (rho= .13, P <.01) and increasing number of episiotomies were associated with lower scores on Social Provision Scale (rho= -.10, P < .05).

Number of female children and number of male children showed significant associations with depression. In all of these cases, social support acted as a controlling variable. Results are shown in table 3. More male children were associated significantly with low scores on depression subscale and more female progeny were associated with higher scores on it. This association was rendered non-significant when controlled for the effects of social support (Model 2).

Total number of children (r = .096, p < .05) and number of female children (r = .128, P < .01) were associated with high scores on anxiety scale. Number of female children were also associated negatively with scores on social provision scale (r= -.103, P < .05).

Point biserial correlation was significant between total number of female children and whether pregnant women had experienced harassment (r_s= .11, p < .05).

Discussion:

Our study showed a high prevalence of both antenatal depression (31.8%) and anxiety (49%) which is in consonance with many studies conducted in our country [4][25], In comparison, studies from developed western countries generally show lesser

prevalence [32]. These results underscore the importance of prenatal depression and anxiety as a major public health problem in Pakistan. To address this grave situation, effective screening and intervention methods should be planned.

Studies in western countries generally report a higher incidence of psychiatric disorders in urban population than rural population[33] In contrast, our study showed almost twice the prevalence of antenatal depression and anxiety among rural women than urban and semi-urban women. This apparent contradiction could be explained by the unique environmental factors that pregnant women are exposed to, in developing South-East Asian countries. In context of cultural setting of Pakistan, several social factors are worth mentioning. First, there is a very large gap of standards of living and available facilities between rural and urban communities, in developing countries. This situation is not as grave in developed countries. Indeed, in Pakistan, rural areas are deprived of several basic necessities of life including health services, water sanitation, gas, electricity and higher educational facilities [34]. Furthermore, gender discrimination, while common throughout the country, is especially evident in rural communities. Rural women are less independent and have a lesser role in decision making than urban women. This also adversely affects the mental health of rural pregnant women [35]. These factors, in our opinion, are important contributors to the greater depression and anxiety among rural pregnant women in our country. Our findings match the results from two studies among pregnant women of Sindh, Pakistan, one in a rural community and the other in an urban community of Sindh, which show significantly higher prevalence of depression among rural pregnant women (60%) [26] than in urban pregnant women (39.4%) [36].

Developmental programs in the rural communities could help reduce the psychological morbidity of rural pregnant women.

An important risk factor for antenatal depression and anxiety in our study was low social support. Pregnant women who perceived low social support showed higher rates of both depression and anxiety and vice versa. This finding has been consistently reported in studies of predictors of antenatal depression and anxiety throughout the world [15][22]. This is hardly surprising since social support has been found to be connected to depression and anxiety not just among pregnant women but the general population as well [37]. The exact mechanism by which social support affects depression and anxiety remain obscure. However, it is known that low social support can give rise to a sense of isolation and loneliness which are both strongly associated with poor mental health [38]. In developing countries like Pakistan, low social support is a particular problem, as demonstrated by the fact that it was the strongest predictor of antenatal depression and anxiety in our study (r value of 0.453 for depression and 0.433 for anxiety). Causes of low social support differ in urban and rural communities of Pakistan. Among urban women, these include verbal and physical abuse by husband or in-laws, putting restrictions on women and living in joint family systems [36] while among rural women, low social support has been found to be due to lack of care by husband, large age difference between husband and wife and greater number of children [26]. Many of these factors are seldom found in developed countries. They highlight the need for society-specific interventions in our country to improve social support and as a result, the mental health of pregnant women.

An interesting finding in our study was the correlation between the occupation of the pregnant women and antenatal depression and anxiety. In contrast to studies in western population, which mention employment as a strong protective factor against major depression in pregnancy [39], our study found employed pregnant women to be actually more depressed and anxious than housewives. A study in Karachi, Pakistan also apparently contradicts our findings by concluding that housewives, in general, are more depressed than working women [40]. Several factors could explain this contradiction. Most of these studies mention education as an important protective factor of antenatal anxiety and depression. Therefore, low education levels of housewives as compared to working women were associated with higher levels of anxiety and depression. However, our study included respondents from low and lower middle socioeconomic class with 54% of the women educated less than the 10^{th} grade. So, even most of the working women may not have been educated highly enough for their working status to have a positive effect on their mental health. Secondly, in recent years, there has been an increase in inflation and a deterioration of socioeconomic conditions in Pakistan, increasing the work stress on working women to meet the economic needs of their household. It is also well-documented that greater work stress can precipitate anxiety and depression in employed men and women [41]. This increased stress, combined with demands of pregnancy, might be responsible for greater depression and anxiety in them as compared to housewives, who are relatively protected from work stress. Finally, another factor might also be operative in the social environment of our country. In many orthodox Pakistani families, most of which belong to lower and lower-middle social class, working women are highly stigmatized. They consider the rightful role of woman

to stay within the confines of her home and be an obedient wife and a loving mother. This negative attitude of their relatives towards their work might be responsible for depression and anxiety among the working pregnant women of lower and lower-middle social class that were included in our study; housewives, in contrast, were protected from such discrimination. Nevertheless, more research is required to clarify the relationship of employment with antenatal depression and anxiety, especially in the context of the cultural environment of our country.

In our study, history of one or more episiotomies and C-sections was associated with a high incidence of antenatal anxiety and depression. This is in accordance with Kuo S-Y et al.'s study which shows that more than a third of the women undergoing elective cesarean section suffer from anxiety while only a fourth of the women show depression, several months after the procedure [42]. The increasing prevalence of birth by cesarean section (CS) is a major public health concern among many countries. Despite these concerns, it is one of the most common obstetric procedures performed in this region. Antenatal anxiety and depression in pregnant women because of a previous C-section or episiotomy may be due to concerns about her own health, fear regarding the well-being of her developing child and fear of another invasive procedure making her re-experience the horrors of it such as being anesthetized and cut. However, there was a significant difference between the incidences of anxiety and depression in women who had undergone at least one caesarian section, episiotomy and normal vaginal delivery. In Pakistan, women from low socio-economic backgrounds generally tend to avoid hospital deliveries due to socio-cultural norms like "vaginal delivery creates an affectionate bond with the baby", high expenses, fear of procedure, post operative infections and poor

knowledge [43]. Women prefer vaginal deliveries at home in care of untrained health care professionals called “Dai”. And often report to hospital emergency departments with life threatening complications. In our society, caesarian section is usually termed as “Bara operation” (Big operation) due to fear and associated socio-cultural norms and bear negative attitudes towards it. Therefore, these women enjoy significantly higher social support as compared to those who have undergone episiotomies and normal vaginal deliveries.

Other factors such as harassment, history of abortion and whether the pregnancy was planned or unplanned were also significantly associated with antenatal anxiety and depression and have appeared repeatedly in literature [15][17][20].

A novel and important finding in our study is the relation of the gender of previous children with the amount of antenatal depression and anxiety. Having female children is significantly associated with antenatal depression and anxiety and having male children was a protective factor. Social support mediated this relationship. These results make sense when we take into account the issue of gender discrimination and son preference in South Asia. Family system in Pakistan is predominantly patriarchal. Women are treated as second class citizens and denied their social rights. These include honor killings, bride price, and dowry, disputed status of female testimony, forced marriages and denying the right to have a career. Parents view their sons as bread earners and continuation of the family name and their daughters as an economic burden. This is partly due to the tradition of giving large amounts of dowry when marrying daughters, especially in India and Pakistan. The dowry may be in the form of land, money, jewelry or household items. In many wedding ceremonies, dowry is displayed and announced by

the bride's family. A bridal dress, in Pakistan, for instance, can be as expensive as half a million rupees ($8380) and the whole event can sometimes cost 20 million rupees ($335,000) [44], most of the expenses being paid by the bride's family. It is probably for these reasons that the rates of female feticide are alarmingly high in the region [45]. Even after birth, sons are given preference over daughters with respect to access to health and education facilities [46]. In this background, the relationship of high depression and anxiety in pregnant women with more female children makes perfect sense. Considering the societal pressure, pregnant women with female children are not only concerned about their offspring's gender themselves but are also subject to harassment, taunting and stigmatization by their family and relatives. This highlight how the unique social conditions in Pakistan arising from gender discrimination against females, give rise to a significant and previously unacknowledged predictor of antenatal depression and anxiety i.e. the gender of previous offspring. We encourage more research to prove or disprove this novel association. Widespread social and educational reforms to improve gender discrimination may help to decrease this factor.

Conclusion:

Keeping in context the predominantly patriarchal socio-cultural setting, the predictors of antenatal anxiety and depression in Pakistan may differ from those of the developed countries. Rural women and working women showed higher levels of antenatal anxiety and depression, which contradicts studies from western countries. Our study revealed higher number of female progeny was associated with higher levels of depression and anxiety while male progeny had a protective influence. We, therefore, suggest that interventions designed to reduce antenatal anxiety and depression should

363 take these unique factors, operating in developing countries and patriarchal societies, into
364 account in their design and implementation.

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522 Table 1: Correlations

Variable	Anxiety	Depression
Social Support	-.43[3]	-.45[3]
Occupation	.17[3]	.16[3]
Harassment	.13[2]	.10[1]
Abortion	.10[1]	.10[1]
Pregnancy	.23[3]	.28[3]
C-section	-.09[4]	-.13[2]
Episiotomy	.15[3]	.10[1]
Vaginal Delivery	.10[1]	-.10[1]

523 [1] = p < .05, [2] = p < .01, [3]= p< .001, [4] = marginally significant p-value

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526 Table 2: Associations between modes of birth and scores on HAD scale

Mode	Anxiety				Depression			
	Normal	Borderline	Anxious	χ^2	Normal	Borderline	Depressed	χ^2
Episiotomy	18 (22%)	8 (9.9%)	55 (67.9%)	15.3[3]	27 (33.3%)	20 (24.7%)	34 (42%)	5.48[4]
C-section	51 (37.5%)	29 (21.3%)	56 (41.2%)	7.02[1]	73 (53.7%)	32 (23.5%)	31 (22.8%)	9.20[2]

527 [1]P < .05, [2]P < .01, [3]P < .001, [4]Marginally significant

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541 Table 3: Linear regression for depression scores (N = 500)

Model	Predictor	B	Std. Error (B)	Beta
Model 1 R^2= .022	Male children	-.982	.366	-.121[3]
	Female Children	1.015	.424	-.108[1]
Model 2 R^2= .213	Male Children	-.661	.329	-.081[1]
	Female Children	.524	.383	.056
	Social Support	-.146	.013	-.442[3]

542 [1] = p < .05, [2] = p < .01, [3]= p< .001, [4] = marginally significant p-value