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ORIGINAL ARTICLE

Frequency and Risk Factors of Anxiety and Depression among Pregnant Women in Abbottabad, Pakistan: A Facility-Based Cross-Sectional Study

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ABSTRACT

Objective: We determined the frequency and risk factors of anxiety and depression in pregnant patients at an Abbottabad tertiary care hospital district of Khyber Pakhtunkhwa, Pakistan.

Methods: Using the validated Urdu version of the Hospital Anxiety and Depression Scale, we conducted a cross-sectional study among 200 pregnant women from April to August 2019 at Ayub Teaching Hospital, a tertiary care hospital (HADS). Unadjusted and adjusted odds ratios for independent factors related with anxiety and depression were calculated using univariate and multivariable logistic regression.

Results: Around 70% of the pregnant women were classified as anxious, while 57.5% were depressed. About half of the pregnant women had both depression and anxiety. Multivariate regression analysis showed that combined pregnant women were more likely to experience anxiety and despair belonging to Urdu ethnicity, having low level of education, household income of greater than 30 thousand PKR, husband's higher level of managerial and professional position, and in 3rd trimester of pregnancy.

Conclusion: Depression and anxiety are prevalent throughout pregnancy, according to our research. We suggest that interventions should be designed and implemented through mental health integration at all level of health care by taking into account the associated risk factors can lessen prenatal depression and anxiety among expecting mothers.

Keywords: Anxiety, depression, risk factors, pregnant women, Pakistan.

INTRODUCTION

Psychiatric disorders are common problem globally and most common form of these disorders is anxiety and depression. Depressive and anxiety disorders are first and sixth leading contributor of global disabilities respectively.[1] Females are at higher anxiety and depression risk as the prevalence has been found to be higher across all the World Health Organization (WHO) regions.[1]

Pregnancy is a major life event in the life cycle of women and is associated with psychological and physiological issues which may increase the risk of emotional imbalances and resulting mental disorders.[2] The focus of maternal and child health programs has remained on nutritional interventions, particularly in developing countries while the component of mental health has remained an ignored area.[3]

Psychiatric disorders i.e., anxiety and depression during pregnancy are significant public health issues due to high burden of these disorders and effects on overall maternal and child health. There are studies that have consistently shown high prevalence of these disorder among pregnant women both from developed[4] and developing countries.[5-7] Others studies have shown association of melancholy and anxiety have negative effects on the mother and fetus such as poor infant growth, a little birth weight, birth too soon and with little weight.[8,9] Anxiety and depression during pregnancy are also important predictors of postpartum depression.[10] In Pakistan, numerous investigations have been carried out to determine the burden of antenatal anxiety and depression among pregnant women. Studies from Sindh, Punjab, and Balochistan provinces reported varying results. Prevalence of anxiety and depression ranged from 18% - 81% in Sindh [11-13], 35% - 71% and 25% - 56% for anxiety & depression in Punjab, respectively [14,15], and 17% for anxiety and depression in Balochistan.[16] Only one study from Khyber Pakhtunkhwa (KPK) province of Pakistan found anxiety and depression to be 73% and 64%, respectively.[17]

We have reported here different factors from local and international studies may raise the chance of melancholy and anxiety during pregnancy. These include; increasing maternal age[12,13,16], higher education level [5,11], poverty [5,11,13], unemployment [5], husbands unemployment[5,11] , tense living circumstances [4,6], inadequate social support [13,15], domestic abuse [5,6,11,12] , unwanted and first pregnancy [5], adverse pregnancy outcomes and fear[4, 12-14] and separation from husband or single mother.[4,14]

KPK is different from other provinces in Pakistan with respect to social, cultural and environmental factors which may affect the psychological health of the population. The people living in KPK are generally considered as conservative and their connection with religion plays very important role in their lives. Females in this society are usually not involved in decision making process and as a result, they consider themselves disadvantaged and less empowered for their social responsibilities.[18] Studies are required to generate data specific to local context in terms of associated risk factors in order to inform policy makers and implement preventive programs, if needed, for pregnant women. Our research sought to ascertain how frequently among pregnant patients at the Ayub Teaching Hospital, anxiety and sadness and its contributing variables in Abbottabad district of KPK province.

METHODS

From April 2019 to August 2019, pregnant patients at the Gynecology Out-Patient Department (OPD) at the Ayub Teaching Hospital Abbottabad in the Pakistani province of Khyber Pakhtunkhwa participated in our study. The largest healthcare facility in Northern Pakistan, Ayub Medical and Teaching Institution Abbottabad is a 1000-bed tertiary care teaching hospital that offers important healthcare services to the general public. The department of obstetrics and gynaecology is well-equipped with cutting-edge diagnostic and treatment tools and qualified personnel.[19]

We enrolled 200 pregnant women conveniently from the antenatal clinics of Ayub Teaching Hospital Abbottabad. The required sample size was calculated to be 227 participants (using statulator software for sample size calculation based on prevalence of anxious and/or depressed as 18% from previous study[11], keeping bound on the error 5% and confidence level of 95%. But due to limited time and financial constraints, we were able to recruit 200 pregnant women in our study pregnancy in any trimester, desire to take part, and lack of psychological illnesses, such as anxiety and depression, before the study began were used as inclusion criteria. Pregnant women who were attending their antenatal clinics were asked to be a part of this research project. For the purpose of data collection, we hired a research associate and gave her full day training about the project and the questionnaire administration to ensure quality standards. The research associate interviewed our study participants after taking their consent. To ensure privacy and confidentiality, our research associate conducted the interviews in seperate room in out-patient area of antenatal clinics in the hospital.

Hospital Anxiety Depression Scale (HADS)

The HADS was created by Zingmond and Snaith and is frequently used in healthcare settings. 20 It is a self-administered screening instrument with proven validity and reliability that is used to assess anxiety and depression levels. 20,21 The HADS questionnaire has 14 items and is quick and simple to administer. It has two equal subscales: one for anxiety symptoms (HADS-A) and one for depression symptoms (HADS-D) (HADS-A). On a three-point Likert scale, ranging from 0 for never to 3, depressive and anxious symptoms are reported. The usual scoring formula was applied: sadness = total of items 2, 4, 6, 8*, 10*, 12, 14, where starred items are reverse coded; anxiety = sum of items 1, 3, 5, 7, 9, 11, and 13*. Overall results. Prior to the start of this investigation, the psychometric validity and reliability of the HADS in Urdu were examined. While the overall scale had a Cronbach Alpha coefficient of 0.84, the HADS-A and HADS-D had values of 0.82 and 0.64, respectively. The intraclass correlation was 0.93 and test retest reliability was also quite high. The delay between the initial test and the follow-up test was two weeks. The anxiety and depression scale content validity indices were 0.947 and 0.948, respectively. The Content validity index for the entire HADS was 0.947.23. Additionally, we created a structured demographic questionnaire that included questions about sociodemographic, obstetric history, family dynamics, and home environment characteristics. This questionnaire asked about factors like age, ethnicity, residence type (urban or rural), respondent education (no education, primary-up to grade 5, secondary-up to grade 12, and tertiary-up to grade 16 or above), and husband education (no education, primary-up to grade 5, secondary-up to grade 12). (5-10 thousand, 11-20 thousand, 21-30 thousand, greater than 30 thousand) Joint and nuclear family, first, second, and third trimesters, primi, multiple, and grand multiple gravida, and household decision-maker (self/husband, in laws & combine).

The Ayub Teaching Hospital's Ethics Review Committee gave their approval to our investigation. Before distributing the questionnaire, written informed consent was also sought from each pregnant participant. Both voluntary involvement and anonymity were guaranteed. Data was kept private and was maintained in a locked closet.

Data analysis: SPSS 20.0 was used to analyse the data. Categorical variables were displayed as frequencies and percentages, whereas continuous variables were shown as means and standard deviations. Frequency and percentage of cases of depression and anxiety are determined by the HADS-D and HADS-A scores (symptom scores 8) were calculated. The HADS scores were dichotomized by transforming continuous variable into presence and absence of anxiety and depression. Moreover, we also computed the composite variable of both depression and anxiety present in our study. Unadjusted and adjusted odds ratios with 95 percent CI were calculated using univariate and multivariable logistic regression. To assess the multi collinearity between categorical variables, Cramer's V and phi were used and a cutoff of p-values of 0.05 or less were considered significant for removal of variables for multivariable model. Variables in the univariate analyses with a p value 0.25 and those having biological significance plausible associations with the outcome anxiety and depression the multivariate analysis's prospective variables were chosen. P values of 0.05 or below were regarded as statistically significant.

RESULTS

According to socio-demographic, obstetric, family, and environmental factors, anxiety and depression are more common and more prevalent in pregnant women in Table 1 than they are in other groups. It was 26.7 5.0 years on average, and 55.5% (111/200) were above 25 years old. Around half (104/200) belonged to Hazara ethnicity (52.0%), followed by Pushto (27%). Half of them (51%) resided in Urban areas, while about (81%) were living in joint family system. Half of women completed secondary education (103/200) compared to 24% (48/200) had no formal education. Only (3%) of the pregnant ladies had jobs while the rest were housewives. Majority had no history of diabetes mellitus and hypertensive disorders (94.5% and 86%, respectively).

Table 1: Descriptive analysis of anxiety and depression among pregnant women by socio-demographic, obstetric, and home environment characteristics in Abbottabad, Pakistan (n = 200)

Variable	Total Frequency n (%)	Anxious n (%)	Depressed n (%)	Both anxious and depressed n (%)
		141 (70.5)	115 (57.5)	98 (49.0)
Respondent age (years) mean ± SD	26.7 ± 5.0	26.5 ± 5.5	26.6 ± 5.2	26.9 ± 5.3
≤ 25 years	89 (44.5)	62 (69.7)	55 (61.8)	49 (55.1)
26-30 years	62 (31.0)	48 (77.4)	37 (59.7)	33 (53.2)
>30 years	49 (24.5)	31 (63.3)	23 (46.9)	16 (32.7)
Ethnicity				
Hazara	104 (52.0)	69 (66.3)	54 (51.9)	45 (43.3)
Pushto	54 (27.0)	38 (70.4)	31 (57.4)	25 (46.3)
Urdu & Others	42 (21.0)	34 (81.0)	30 (71.4)	28 (66.7)
Type of Residence				
Urban	102 (51.0)	66 (64.7)	60 (58.8)	51 (50.0)
Rural	98 (49.0)	75 (76.5)	55 (56.1)	47 (48.0)
Respondent's Education				
No formal education	55 (27.5)	41 (74.5)	35 (63.6)	29 (52.7)
Primary (up to grade 5)	38 (19.0)	30 (78.9)	22 (57.9)	20 (52.6)
Secondary (up to grade 12)	73 (36.5)	54 (74.0)	46 (63.0)	42 (57.5)
Tertiary (up to grade 16 or above)	34 (17.0)	16 (47.1)	12 (35.3)	7 (20.6)
Husband's Education				
No formal education	48 (24.0)	31 (64.6)	29 (60.4)	22 (45.8)
Primary (up to grade 5)	21 (10.5)	17 (81.0)	14 (66.7)	12 (57.1)
Secondary (up to grade 12)	103 (51.5)	78 (75.7)	59 (57.3)	55 (53.4)
Tertiary (up to grade 16 or above)	28 (14.0)	15 (53.6)	13 (46.4)	9 (32.1)
Respondent's Occupation				
Housewife	194 (97.0)	137 (70.6)	114 (58.8)	97 (50.0)
Employed	6 (3.0)	4 (66.7)	1 (16.7)	1 (16.7)
Husband's Occupation				
Unskilled manual	54 (27.0)	37 (68.5)	28 (51.9)	22 (40.7)
Skilled manual	62 (31.0)	45 (72.6)	33 (53.2)	32 (51.6)
Sales, services & Clerical	44 (22.0)	33 (75.0)	26 (59.1)	25 (58.6)
Professional / Technical / Managerial	30 (15.0)	19 (63.3)	23 (76.7)	14 (46.7)
Unemployed	10 (5.0)	7 (70.0)	5 (50.0)	5 (50.0)
Household income in PKR				
5-10 thousand	32 (16.0)	23 (71.9)	16 (50.0)	16 (50.0)
11-20 thousand	87 (43.5)	61 (70.1)	50 (57.5)	40 (46.0)
21-30 thousand	47 (23.5)	32 (68.1)	26 (55.3)	22 (46.8)
Greater than 30 thousand	34 (17.0)	25 (73.5)	23 (67.6)	20 (58.8)
Family system				
Joint	162 (81.0)	113 (69.8)	95 (58.6)	79 (48.8)
Nuclear	38 (19.0)	28 (73.7)	20 (52.6)	19 (50.0)
Trimester				
1st & 2nd	50 (25.0)	32 (64.0)	27 (54.0)	19 (38.0)
3rd	150 (75.0)	109 (72.7)	88 (58.7)	79 (52.7)
Gravida				
Primi gravida (1st pregnancy)	49 (24.5)	36 (73.5)	29 (59.2)	27 (55.1)
Multi gravida (1-4 pregnancy)	119 (59.5)	83 (69.7)	66 (55.5)	56 (47.1)
Grand- multigravida (5th or more pregnancy)	32 (16.0)	22 (68.8)	20 (62.5)	15 (46.9)
Parity				
Nulliparous	54 (27.0)	38 (70.4)	36 (66.7)	32 (59.3)
1-2	95 (47.5)	67 (70.5)	48 (50.5)	42 (44.2)
≥ 3	51 (25.5)	36 (70.6)	31 (60.8)	24 (47.1)
Number of children alive				
0	82 (41.0)	54 (65.9)	44 (53.7)	40 (48.8)
1-3	100 (50.0)	72 (72.0)	62 (62.0)	49 (49.0)
Greater than 3	18 (9.0)	15 (83.3)	9 (50.0)	9 (50.0)
Number of children died				
Zero	185 (92.5)	132 (71.4)	106 (57.3)	93 (50.3)
One	15 (7.5)	9 (60.0)	9 (60.0)	5 (33.3)
History of Still birth				
Yes	23 (11.5)	18 (78.3)	15 (65.2)	12 (52.2)
No	177 (88.5)	123 (69.5)	100 (56.5)	86 (48.6)
History of Abortion				
Yes	31 (15.5)	20 (64.5)	21 (67.7)	15 (48.4)
No	169 (84.5)	121 (71.6)	94 (55.6)	83 (49.1)
Household decision maker				
Self / Husband	74 (37.0)	56 (75.7)	48 (64.9)	41 (55.4)
In laws	80 (40.0)	54 (67.5)	38 (47.5)	34 (42.5)
Combine	46 (23.0)	31 (67.4)	29 (63.0)	23 (50.0)
Diabetes Mellitus				
Yes	11 (5.5)	5 (45.5)	9 (54.5)	5 (45.5)
No	189 (94.5)	136 (72.0)	109 (57.7)	93 (49.2)
Hypertension				
Yes	28 (14.0)	19 (67.9)	15 (53.6)	12 (42.9)
No	172 (86.0)	122 (70.9)	100 (58.1)	86 (50.0)

Table 2: Univariate Logistic Regression analysis showing association between socio demographic and other factors with Anxiety & Depression among pregnant women in Abbottabad, Pakistan (n = 200)

	Anxiety		Depression		Both Anxiety & Depression	
Variables	OR (95% CI)	p value	OR (95% CI)	p value	OR (95% CI)	p value
Respondent age (years)						
≤ 25	1.33 (0.64-2.78)	0.444	1.83 (0.90-3.70)	0.094	2.53 (1.22-5.24)	0.013
26-30	1.99 (0.87-4.57)	0.105	1.67 (0.78-3.56)	0.182	2.35 (1.08-5.11)	0.032
> 30 (Ref.)						
Ethnicity						
Urdu and Others	2.16 (0.90-5.15)	0.084	2.31 (1.07-5.01)	0.033	2.62 (1.24-5.55)	0.012
Pushto	1.20 (0.59-2.45)	0.608	1.25 (0.64-2.42)	0.512	1.13 (0.58-2.19)	0.716
Hazara (Ref.)						
Type of Residence						
Urban (Ref.)						
Rural	1.78 (0.96-3.30)	0.068	0.89 (0.51-1.57)	0.699	0.92 (0.53-1.60)	0.773
Respondent's Education						
No formal education	3.29 (1.33-8.16)	0.010	3.21 (1.31-7.83)	0.010	4.30 (1.61-11.53)	0.004
Primary (up to grade 5)	4.22 (1.51-11.82)	0.006	2.52 (0.97-6.54)	0.057	4.29 (1.50-12.21)	0.006
Secondary (up to grade 12)	3.20 (1.36-7.50)	0.008	3.12 (1.34-7.30)	0.009	5.23 (2.02-13.54)	0.001
Tertiary (up to grade 16 or above) (Ref.)						
Husband's Education						
No formal education	1.58 (0.61-4.08)	0.345	1.76 (0.69-4.51)	0.239	1.79 (0.67-4.74)	0.244
Primary (up to grade 5)	3.68 (0.99-13.76)	0.053	2.31 (0.71-7.45)	0.162	2.81 (0.87-9.10)	0.084
Secondary (up to grade 12)	2.70 (1.13-6.44)	0.025	1.55 (0.67-3.58)	0.308	2.42 (1.00-5.85)	0.050
Tertiary (up to grade 16 or above) (Ref.)						
Respondent's Occupation						
Housewife	0.83 (0.15-4.67)	0.835	7.12 (0.82-62.15)	0.076	5.00 (0.57-43.59)	0.145
Employed (Ref.)						
Household income in PKR						
5-10 thousand (Ref.)						
11-20 thousand	0.92 (0.37-2.25)	0.852	1.35 (0.60-3.05)	0.468	0.85 (0.38-1.91)	0.697
21-30 thousand	0.83 (0.31-2.23)	0.719	1.24 (0.50-3.05)	0.642	0.88 (0.36-2.16)	0.781
Greater than 30 thousand	1.09 (0.37-3.21)	0.880	2.09 (0.77-5.67)	0.148	1.43 (0.54-3.78)	0.472
Husband's Occupation						
Unemployed (Ref.)						
Unskilled manual	0.93 (0.21-4.05)	0.926	1.08 (0.28-4.15)	0.914	0.69 (0.18-2.66)	0.587
Skilled manual	1.13 (0.26-4.90)	0.866	1.14 (0.30-4.33)	0.850	1.07 (0.28-4.06)	0.925
Sales, services & Clerical	1.29 (0.28-5.85)	0.745	1.44 (0.36-5.73)	0.601	1.32 (0.33-5.21)	0.696
Professional / Technical / Managerial	0.74 (0.16-3.46)	0.702	3.29 (0.73 14.74)	0.120	0.87 (0.21-3.66)	0.855
Family system						
Joint	0.82 (0.37-1.83)	0.633	1.28 (0.63-2.59)	0.501	0.95 (0.47-1.93)	0.891
Nuclear (Ref.)						
Trimester						
1st & 2nd (Ref.)						
3rd	1.49 (0.76-2.95)	0.246	1.21 (0.63-2.30)	0.563	1.81 (0.94-3.49)	0.074
Gravida						
Primi gravida (1st pregnancy)	1.26 (0.47-3.35)	0.645	0.87 (0.35-2.17)	0.765	1.39 (0.57-3.40)	0.469
Multi gravida (1-4 pregnancy)	1.05 (0.45-2.44)	0.913	0.75 (0.33-1.67)	0.476	1.01 (0.46-2.20)	0.985
Grand-multigravida (5th or more pregnancy) (Ref.)						
Parity						
Nulliparous	0.99 (0.43-2.29)	0.980	1.29 (0.58-2.86)	0.531	1.64 (0.76-3.54)	0.212
1-2	1.00 (0.47-2.10)	0.994	0.66 (0.33-1.31)	0.237	0.89 (0.45-1.76)	0.742
≥ 3 (Ref.)						
Number of children alive						
0 (Ref.)						
1-3	1.33 (0.71-2.51)	0.372	1.41 (0.78-2.55)	0.257	1.01 (0.56-1.81)	0.976
Greater than 3	2.59 (0.69-9.71)	0.158	0.86 (0.31-2.40)	0.778	1.05 (0.38-2.91)	0.925
Number of children died						
Zero (Ref.)						
One	0.60 (0.20-1.77)	0.358	1.12 (0.38-3.27)	0.839	0.49 (0.16-1.50)	0.214
History of still birth						
No (Ref.)						
Yes	1.58 (0.56-4.48)	0.389	1.44 (0.58-3.58)	0.428	1.15 (0.48-2.75)	0.746
History of abortion						
No (Ref.)						
Yes	0.72 (0.32-1.62)	0.428	1.68 (0.74-3.77)	0.213	0.97 (0.45-2.09)	0.941
Household decision maker						
Self / Husband	1.50 (0.67-3.40)	0.324	1.08 (0.50-2.33)	0.840	1.24 (0.59-2.60)	0.564
In laws	1.00 (0.46-2.18)	0.990	0.53 (0.25-1.11)	0.094	0.74 (0.36-1.53)	0.416
Combine (Ref.)						
Diabetes Mellitus						
No (Ref.)						
Yes	0.32 (0.09-1.11)	0.073	0.88 (0.26-2.99)	0.839	0.86 (0.25-2.91)	0.809
Hypertension						
No (Ref.)						
Yes	0.86 (0.37-2.04)	0.741	0.83 (0.37-1.85)	0.651	0.75 (0.33-1.68)	0.484

Table 3: Multivariate Logistic Regression analysis showing association between socio demographic and other factors with Anxiety & Depression among pregnant women in Abbottabad, Pakistan (n = 200)

	Anxiety		Depression		Both Anxiety & Depression	
Variables	OR (95% CI)	p value	OR (95% CI)	p value	OR (95% CI)	p value
Respondent age (years)						
≤ 25	0.96 (0.37-2.44)	0.925	2.10 (0.82-5.40)	0.124	2.50 (0.96-6.50)	0.060
26-30	2.00 (0.74-5.41)	0.174	2.28 (0.89-5.79)	0.084	2.52 (0.98-6.46)	0.054
> 30 (Ref.)						
Ethnicity						
Urdu and Others	3.21 (1.05-9.75)	0.040	2.34 (0.84-6.56)	0.105	3.16 (1.13-8.84)	0.028

Pushto	1.01 (0.35-2.88)	0.991	1.10 (0.38-3.17)	0.853	1.17 (0.42-3.26)	0.700
Hazara (Ref.)						
Type of Residence						
Urban (Ref.)						
Rural	2.06 (0.92-4.61)	0.079				
Respondent's Education						
No formal education	17.93 (3.48-92.43)	0.001	88.07 (12.58-621.21)	<0.001	57.35 (9.71-338.76)	<0.001
Primary (up to grade 5)	15.59 (3.58-67.86)	<0.001	44.74 (7.24-276.34)	<0.001	39.29 (7.47-206.75)	<0.001
Secondary (up to grade 12)	9.84 (2.83-34.22)	<0.001	38.37 (7.30-201.73)	<0.001	26.54 (6.13-114.88)	<0.001
Tertiary (up to grade 16 or above) (Ref.)						
Household income in PKR						
5-10 thousand (Ref.)						
11-20 thousand	1.32 (0.42-4.14)	0.628	2.03 (0.71-5.84)	0.187	1.43 (0.48-4.25)	0.518
21-30 thousand	1.20 (0.33-4.34)	0.775	2.20 (0.65-7.43)	0.203	1.71 (0.49-5.94)	0.402
Greater than 30 thousand	5.18 (1.06-25.28)	0.042	8.79 (1.60-48.39)	0.013	9.34 (1.74-50.16)	0.009
Husband's Occupation						
Unemployed (Ref.)						
Unskilled manual	4.11 (0.62-27.22)	0.143	3.03 (0.50-18.28)	0.226	3.29 (0.56-19.33)	0.187
Skilled manual	4.57 (0.59-35.59)	0.147	5.13 (0.75-35.07)	0.096	6.89 (1.03-46.00)	0.046
Sales, services & Clerical	5.43 (0.65-45.65)	0.119	8.04 (1.13-56.92)	0.037	9.61 (1.38-67.14)	0.022
Professional / Technical / Managerial	5.91(0.59-59.03)	0.131	85.80 (6.70-1099.17)	0.001	9.69 (1.08-87.09)	0.043
Family system						
Joint	0.69 (0.25-1.93)	0.480	2.94 (1.08-7.99)	0.034	1.31 (0.48-3.53)	0.599
Nuclear (Ref.)						
Trimester						
1st & 2nd (Ref.)						
3rd	1.80 (0.77-4.22)	0.176	2.08 (0.89-4.84)	0.090	2.68 (1.13-6.36)	0.026
Gravida						
Primi gravida (1st pregnancy)	4.61 (1.06-20.01)	0.041	1.52 (0.38-6.09)	0.553	3.05 (0.74-12.52)	0.122
Multi gravida (1-4 pregnancy)	1.54 (0.47-5.03)	0.479	0.61 (0.19-1.91)	0.397	0.90 (0.29-2.75)	0.849
Grand-multigravida (5th or more pregnancy) (Ref.)						
Number of children died						
Zero (Ref.)						
One	0.15 (0.02-1.06)	0.057			0.22 (0.04-1.31)	0.097
History of still birth						
No (Ref.)						
Yes	4.34 (0.70-26.98)	0.115			0.38 (0.09-1.63)	0.192
Household decision maker						
Self / Husband			1.46 (0.56-3.481)	0.441	1.29 (0.50-3.22)	0.600
In laws			0.39 (0.15-0.98)	0.045	0.58 (0.23-1.46)	0.245
Combine (Ref.)						

Around 75% (150/200) of the pregnant women were in 3rd trimester, while 59.5% (119/200) belonged to multi-gravida (1-4 pregnancy) Half of the pregnant women had 1-3 children alive, while only (7.5%) had one child died. Only (11.5%) of the participant had history of still birth, while in majority (40%) of the families in laws were the household decision maker, followed by (37%) self/husband decision making. Around 70% of the pregnant women were classified as anxious, while 57.5% were depressed. Around half of the pregnant women were having both depression and anxiety.

Table 2 is about univariate logistic regression analysis of independent variables and showing showed association between socio-demographic and other factors with anxiety & depression among pregnant women. Anxiety was more likely to occur in pregnant women having not attended school (OR 3.29, 95% CI: 1.33 to 8.16), primary school (OR 4.22, 95% CI: 1.51 to 11.82) as well as secondary education (OR 3.20, 95% CI: 1.36 to 7.50) and husband's secondary training (OR 2.70, 95% CI: 1.13 to 6.44) as compared to those participants having tertiary education. Other variables were found to be non-significant for anxiety. Similarly, depression was significantly associated with Urdu and others ethnicity (OR 2.31, 95% CI: 1.07 to 5.01), having no formal education (OR 3.21, 95% CI: 1.31 to 7.83) as well as secondary education (OR 3.12, 95% CI: 1.34 to 7.30). While, combined anxiety and depression together was positively associated with younger age group ≤ 25 (OR 2.53, 95% CI: 1.22 to 5.24), age group 26-30 (OR 2.35, 95% CI: 1.08 to 5.11), belonging to Urdu ethnicity and others (OR 2.62, 95% CI: 1.24 to 5.55), having not attended school (OR 4.30, 95% CI: 1.61 to 11.53), primary education (OR 4.29, 95% CI: 1.50 to 12.21), secondary education (OR 5.23, 95% CI: 2.02 to 13.54) and husband's secondary education (OR 2.42, 95% CI: 1.00 to 5.85).

Table 3 demonstrates multivariate logistic regression study that demonstrates the relationship between socio-demographic and other factors with anxiety & depression among pregnant women. Anxiety was more likely to occur in pregnant women belonging to Urdu ethnicity and others (AOR 3.21, 95% CI: 1.05 to 9.75), having not attended school (AOR 17.93, 95% CI: 3.48 to 92.43), primary school (AOR 15.59, 95% CI: 3.58 to 67.86), secondary training (AOR 9.84, 95% CI: 2.83 to 34.22), household income of greater than 30 thousand PKR (AOR 5.18, 95% CI: 1.06 to 25.28) and primi gravida (AOR 4.61, 95% CI: 1.06 to 20.01). Similarly, depression was significantly associated with having no formal education (AOR 88.07, 95% CI: 12.58 to 621.21) primary school (AOR 44.74, 95% CI: 7.24 to 276.34), secondary training (AOR 38.37, 95% CI: 7.30 to 201.73), household income of greater than 30 thousand PKR (AOR 8.79, 95% CI: 1.60 to 48.39), husband's occupation of professional, technical or managerial (AOR 85.80, 95% CI: 6.70 to 1099.17) and maintaining a joint family structure (AOR 2.94, 95% CI: 1.08 to 7.99). However, household decision making with the in laws (AOR 0.39, 95% CI: 0.15 to 0.98) was discovered to be an inhibitor of depression. Combined anxiety and depression together was positively associated with Urdu ethnicity and others (AOR 3.16, 95% CI: 1.13 to 8.84), having no formal education (AOR 57.35, 95% CI: 9.71 to 338.76) primary school (AOR 39.29, 95% CI: 7.47 to 206.75), secondary education (AOR 26.54, 95% CI: 6.13 to 114.88) household income of greater than 30 thousand PKR (AOR 9.34, 95% CI: 1.74 to 50.16), husband's occupation of professional, technical or managerial (AOR 9.69, 95% CI: 1.08 to 87.09) and of 3rd trimester (AOR 2.68, 95% CI: 1.13 to 6.36).

DISCUSSION

The current study's objective was to assess pregnant women's levels of anxiety and depression and their links to sociodemographic, obstetric, family, and home environment variables in District Abbottabad of Khyber Pakhtunkhwa province, Pakistan. Our study used the Hospital Anxiety and Depression Scale (HADS), which has been culturally validated and standardised for use in Pakistani populations, to measure anxiety and depression with a (= 0.84) Cronbach's alpha value for the entire scale.

Our ongoing study demonstrated high percentage of expectant mothers who had both tension and despair. Around 70% of the pregnant women were found to be anxious, while 57% were positive for depression and half of the pregnant women were having both anxiety and depression. The higher burden of anxiety and depression among pregnant women making it a serious public health problem in District Abbottabad. As a middle and low income country, the burden was predicted to be higher.[24] Studies from wealthy nations have typically found a lower incidence. For instance, a recent study from the USA found that women who were currently pregnant or had recently given birth had a 12-month prevalence of severe depressive disorder of 8.4%. 25 The research has, nevertheless, noted a high prevalence of anxiety and depression among pregnant women in Pakistan. 26 According to a research employing the Hospital Anxiety and Depression Scale (HADS) at four teaching hospitals in Lahore, Pakistan, 49 percent of pregnant women had anxiety and 32 percent experienced depression. A recent investigation in tertiary hospitals of Quetta using the HADS reported moderate prevalence of anxiety and depression among women during pregnancy.[16] A hospital based study using the HADS by clinical psychologists conducted in Karachi concluded that about in the study, 70% of the women had both depression and anxiety during pregnancy. 12 The reasons for these discrepancies may be related to regional differences in socioeconomic level, culture diversity, and psychosocial aspects including social support. Other studies have reported prevalence rates based on results from self-reported symptom questionnaires and other non-valid methodologies, but estimates of the prevalence of anxiety and depression should be based on validated diagnostic interviews, while we have used translated and validated Urdu version of the HADS questionnaire that gave us the reliable estimates.

Characteristics of the home environment, family interactions, obstetrics, and socio-demographics were explored for association with anxiety and depression among pregnant women in our study. Belonging to Urdu ethnicity, low educational attainment, high socioeconomic status, spouse working in management, and joint family structure, be in 3rd trimester and primi-gravida (1st pregnancy) were associated with either anxiety, depression or both. Interestingly, in laws decision making of family matters was found to be protective for depression.

The current investigation found that lower levels of education was found out to be a potential risk factor among pregnant women which is also consistent with previous studies.[27, 28] Lower level of education has a connection to poor self-esteem, feeling of worthlessness, and shame.[29] Higher education enhances human personality, one of the elements that encourage coping mechanisms, and help an individual to handle difficult circumstances well. It also helps to improve their self-confidence, self-efficacy, social skills building and as a result developed a feeling of control over their surroundings.[29]

Additionally, our research revealed that pregnant women's ethnicity is associated with anxiety and depression. Participants who belonged to Urdu ethnicity were more likely to have depression and anxiety symptoms. Some of the literature has reported similar findings that ethnicity was a significant risk factor for depression.[30, 31] Further studies are required to be carried out in the future to explore the association of ethnicity with anxiety and depression.

Interestingly, husband's occupation was linked to maternal anxiety and depression. Pregnant women were shown to be more likely to experience anxiety and depression depending on their husbands' employment position. Similarly, higher income group was also at higher risk of having anxiety and depression in our study. In contrast, population with better employment and high income were strong protective factor against anxiety and depression in pregnancy.[32] There may be various factors explaining this contrasting findings. Presently, inflation has increased and Pakistan's socioeconomic situation has been worse over the past few years, and these changes have increased the stress on the working people to make ends meet. Greater responsibility at work with high income bracket may result in anxiety and depression in employed husband resulting in reduce moral and partner support for pregnant women at home. Nevertheless, more research a greater sample size is needed to study the relationship between husband's employment and high income with the depression and anxiety before birth, especially in the cultural environment of Pakistan.

Primi-gravida (1st pregnancy) appeared in our study to be a risk factor for anxiety, although some studies reported contrasting significant relationship of multigravidity with anxiety and depression.[33,34] Also, pregnant women in 3rd trimester were at higher risk of having anxiety and depression. On the other hand, previous studies reported contradicting findings.[35,36] As a source of speculation, the possible explanation of these dissimilarities might be attributed to first experience of going through different phases of pregnancy, and as

a result the pregnant women could be anxious and nervous for her 1st pregnancy. Also, in third trimester, the worry regarding delivery and giving birth might have contributed to more anxiousness and in our study participants. However, future studies are recommended to further explore this interesting association.

Interestingly, in laws decision making of family matters was found to be protective for depression. While on the other hand, studies have reported that involvement of family members in household decision was a significant factor of anxiety and depression.[9] living in joint family system has also found might be a risk element for depression and anxiety in our study. This discovery is also consistent with the hospital based study carried out in Karachi, Pakistan.[37]

Strengths of our study was reporting the frequency of merely depressed, only anxious, and both depressed and anxious with their corresponding socio-demographic and other factors. We used culturally validated Urdu version of the HADS questionnaire to assess anxiety and depression among study participants. However, there are some limitations which needs to be considered while interpreting the results of our study. Our hospital-based study could not determine the prevalence of anxiety and depression, however we think that Ayub teaching hospital is the only public sector tertiary care hospital in Abbottabad and it is catering most of the pregnant women living in Abbottabad and its nearby areas, who seek public sector for child birth and gynecological issues. Another limitation which has been reported to be associated with HADS-D dimension that it is a better measure of an hedonic depression rather than general depression.[38] designing a cross-sectional research halts the causal relationship between dependent and independent variables. We were able to enroll small sample limited to a single healthcare center, which would lead to poor statistical power for association assessed in this study. Future cohort study with larger sample size is required for establishing the causality of predictors for anxiety and depression. We were not able to take the information on possible risk elements include a history of major depressive disorders and unhappy marriage, and social support from the family, domestic violence and current life stress.

CONCLUSION

According to our research, anxiety and depression are prevalent throughout pregnancy. As a result, it is essential to include anxiety and depression screening in antenatal programmes and offer pregnant women useful support. Belonging to the Urdu ethnic group, having a low level of education, making a high salary, having a managerial position for the spouse, being a part of a joint family, being in your third trimester, and being primi-gravida were all significant factors related with anxiety and sadness (1st pregnancy). Interventions should be designed and implemented addressing the important potential risk factors for depression and anxiety in pregnant women in local contexts. There is a need to integrate mental health services with existing maternal and child health program which would pave the way for the betterment of maternal and child health. Early identification and developing a proper referral system for early management is advised to avoid negative effects on mother and child health.

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