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Prevalence and risk factors associated with prenatal depression among pregnant women in Faisalabad, Pakistan

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Abstract: To determine the prevalence of prenatal depression and explore its association with socio-demographic risk factors, stressful life events and women autonomy/decision-making. The recognition of these problems would play a substantial role in the strategic development of interventions for those Pakistani women who have been suffering from prenatal depression. Analytical cross-sectional study conducted in Allied hospital Faisalabad during a period of 18 months (1st Jan 2019 to 30 June 2020). Data was collected by using simple random sampling technique. EPDS was used to measure prenatal depression. A modified kuppuswamy scale, Life Events and Difficulties Schedule (LEDS) and women autonomy/decision making scale was used to assess the risk factors. A total of 380 women were included in the study. The mean age (in years) ± SD was 29.37±5.27. According to cut-off score ≥10 on Edinburg postnatal depression scale the prevalence of depression was found as 51.6%. The findings revealed that women education, socio-economic class, BMI, pregnancy duration, history of miscarriage, contraception, stressful life events and women autonomy had significant association with prenatal depression ($P<0.05$). Socio-demographic factors, stressful life events in previous life and women autonomy are significant predictors of prenatal depression that need to be addressed in order to sustain safe motherhood.

Keywords: Prevalence, risk factors, prenatal depression, stressful life events, women autonomy.

INTRODUCTION

Pregnancy involves various physiological, hormonal and psychological fluctuations which could escalate the possibility of depression, anxiety or psychological distress in women during pregnancy (DiPietro, 2010). Depression is a most frequently found psychological disorder which has adverse effects on pregnant women throughout the world (Sheeba *et al*., 2019). Nearly 15% of women are identified as depressed at any stage of their life and most some point during their lifetime, mainly during pregnancy and postpartum (Rochat, 2011). With the progression of pregnancy the risk of prenatal depression significantly elevates and most significant clinical symptoms are observed in second and third trimester of pregnancy (Manikkam and Burns, 2012).

The prevalence of depression during the second and third trimesters has been documented to be twice that as in the general female population (Accortt *et al*., 2015). According to an estimate of world health organization, the depressive disorders in women will be the main contributor of global burden of diseases by year 2020 (Organization, 2013). A systematic review conducted in low and middle income countries, revealed that the prevalence of prenatal depression was 10.7%. Most of the researches are conducted in developed countries (Maselko, 2017), however, with the available literature it has been found that the low and middle income countries have higher rates of prenatal depression (Premji, 2014).A study carried out in rural Bangladesh showed the prevalence of prenatal depression as 18% and prevalence of prenatal anxiety as 29% (Nasreen *et al*., 2018). Similarly, another study carried out in Karachi, Pakistan revealed a prevalence of prenatal depression as 34% (Hamirani *et al*., 2006). In all of these studies the Edinburgh Postnatal Depression Scale (EPDS) was used to measure the prenatal depression. EPDS is one of the most widely used screening instruments for assessing symptoms of the Perinatal Common Mental Disorders (PCMDs) of depression and anxiety (Shrestha *et al*., 2016).

The screening out of depression during pregnancy is significant because, if it is not timely diagnosed and well treated, may lead towards postnatal depression after delivery and may also have adverse effects on fetal development and childbirth (Tachibana *et al*., 2015, Verreault *et al*., 2014). The current study aimed to determine the prevalence of prenatal depression and to explore its association with socio-demographic risk factors, stressful life events and women autonomy/ decision-making.

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MATERIALS AND METHODS

This analytical cross sectional study was conducted in Allied hospital Faisalabad during a period of 18 months (1st Jan 2019 to 30 June 2020). A total number of 380 pregnant females were included in the study by using simple random sampling technique. The sample size was calculated using 95% confidence level, 5% margin of error and frequency of depression during antenatal period as 56%(Rahman and Creed, 2007).

Pregnant women, aged 18-45 years, in their 2nd and 3rd trimester were enrolled in the study. Pregnant women who had any kind of condition that required immediate inpatient care, women who were victims of domestic violence, and intimate partner violence and women who cannot speak Urdu or Punjabi language were excluded from the study.

The rules and regulations set by the ethical committee of university of Lahore were followed while conducting the research and the rights of the research participants were respected. A written informed consent was taken from all the participants.

The instrument used to screen out prenatal depression in this study was the EPDS. The Edinburg postnatal depression scale was developed by Cox *et al* in 1987. This questionnaire consists of 10 questions based on a four-point Likert Scale. The score of 10 and above indicates prenatal depression (Cox *et al*., 1987). Data collecting tools assessing risk factors were three questionnaires, as described below:

1) A modified kuppuswamy scale was used for socio-economic and demographic variables. 2) Tool to measure stressful events in the previous year. This scale is based on Life Events and Difficulties Schedule (LEDS).3) Tool to measure women autonomy/decision making.

STATISTICAL ANALYSIS

All the data was analyzed by using SPSS version 24. Socio-demographic, economic, maternal and family characteristics were elaborated as frequencies (percentages) and mean (S.D). Similarly, individual items of EPDS, stressful life events and autonomy were measured as frequencies (percentages). The women screened out with prenatal depression (EPDS score $\geq$10) were compared with women having no depression across various socio-demographic, economic, maternal and family characteristics, stressful life events and autonomy variables using the chi square test. A p-value <0.05 was considered as showing statistically significant results.

RESULTS

A total of 380 women were included in the study. The mean age (in years) ± SD was 29.37 ± 5.27. The minimum age was 18 years and maximum age was 45 years. 182 (47.9%) of women were in their 2nd trimester while 190 (50%) of women were in their 3rd trimester. The average number of pregnancies was 3 and the average number of living children was 2.

According to cut-off score $\geq$10 on Edinburg postnatal depression scale 196 (51.6%) women were found depressed while 184 (48.4%) women were found non-depressed. The mean EPDS score ± SD was 8.60 ± 4.97 (min score 0; max score 23). Among non-depressed women the mean EPDS score ± SD was 4.43 ± 2.68 (min score 0; max score 9). Among depressed women the mean EPDS score ± SD was 12.72 ± 2.83 (min score 10; max score 23).

The chi-square test of independence was conducted to determine the association of demographic and socio-economic variables with prenatal depression. The findings revealed that women education, socio-economic class, BMI, pregnancy duration, history of miscarriage and contraception was significantly associated with prenatal depression ($P<0.05$), whereas education of head of family had no significant association with prenatal depression ($P>0.05$) (table 1).

The association of stressful life events with prenatal depression is shown in table 2. The association of women autonomy/decision making with prenatal depression is shown in table 3.

DISCUSSION

There are various social, cultural, hereditary, economic and environmental constituents that are significant risk factors for prenatal depression (Sheeba *et al*., 2019, Pearson *et al*., 2018). The significance of this study is to assess the problems encountered by depressed pregnant women. The recognition of these problems would play a substantial role in the strategic development of interventions for those Pakistani women who have been suffering from prenatal depression in pregnancy.

According to cut-off score $\geq$10 on Edinburg postnatal depression scale 51.6% women were found depressed while 48.4% women were found non-depressed. A similar study conducted in India found the prevalence of prenatal depression as 35.7%(Sheeba *et al*., 2019).In a longitudinal cohort study, with EPDS (cut-off $\geq$13) the prevalence of prenatal depression was 17% in first generation and 25% in second generation (Pearson *et al*., 2018). Another study conducted in Spain revealed a prevalence of prenatal depression as 14.8% on Patient Health Questionnaire (de la Fe Rodriguez-Munoz *et al*., 2017). In a study conducted in rural South Africa the prevalence of prenatal depression was found among 48.7% of women on EPDS (cut-off $\geq$13) (Peltzer *et al*., 2016).

Table 1: Chi-square test of independence to show association of socio-demographic variables with prenatal depression

Socio-Demographic Variables	Responses	EPDS Categories		p-value
		Non Depressed	Depressed	
Women Education	Professional Degree	43	48	0.002
	Graduate or post graduate	40	56	
	Intermediate	62	28	
	Matric	31	35	
	Middle	6	13	
	Primary	0	2	
	Illiterate	7	9	
Education of head of family	Professional Degree	25	37	0.17
	Graduate or post graduate	77	71	
	Intermediate	39	44	
	Matric	36	25	
	Middle	10	12	
	Primary	0	2	
	Illiterate	2	0	
Socio-economic Class	Upper	32	4	<0.001
	Upper Middle	86	91	
	Lower Middle	56	73	
	Upper Lower	11	14	
	Lower	4	9	
BMI	Under weight	2	0	0.01
	Normal Weight	152	140	
	Over Weight	35	43	
	Obese	0	8	
Pregnancy Duration	2nd Trimester	119	71	<0.001
	3rd Trimester	70	120	
History of Miscarriage	No	159	138	0.005
	Yes	30	53	
Contraception	No	150	128	0.007
	Yes	39	63	

Table 2: Chi-square test of independence to show association of Stressful life events with prenatal depression

	Stressful Life Events		EPDS Categories		p-value
			Non Depressed	Depressed	
1	"You yourself or a closed relative of yours had been ill or had an accident which led to hospitalization"	No	107	50	<0.001
		Yes	82	141	
2	"Any your close relative died or committed suicide or had gotten seriously ill"	No	137	95	<0.001
		Yes	52	96	
3	"Has anyone in your family had problems of livelihood"	No	148	137	0.14
		Yes	41	54	
4	"You or someone in your family had any financial problems"	No	123	95	0.002
		Yes	66	96	
5	"You or someone in your family had changed in social status"	No	138	141	0.86
		Yes	51	50	
6	"You yourself have had any problem with your residence"	No	161	147	0.04
		Yes	28	44	
7	"Your relations with any of your close relative or friend have been troubled"	No	133	127	0.42
		Yes	56	64	
8	"Your marital relation with your spouse have had problem"	No	166	145	0.003
		Yes	23	46	
9	"You have been worried about your children's problems"	No	164	121	<0.001
		Yes	25	70	
10	"You or other family member have had rows/quarrels amongst themselves"	No	122	110	0.16
		Yes	67	81	

Table 3: Chi-square test of independence to show association of women autonomy/decision making with prenatal depression

WAS Indicators	Autonomy	EPDS Categories		p-value
		Non Depressed	Depressed	
1. "Aside from housework (for example, cooking, cleaning, washing clothes, feeding and bathing children, collecting water, firewood, etc.) have you done any work in the last 12 months?"	No Yes	27 162	85 106	<0.001
1a. "In the last 12 months, have you received any cash for the work that you have done?"	No Yes	157 32	151 40	0.32
1b. "In the last 12 months, have you received any compensation other than money for the work that you have done?"	No Yes	162 27	153 38	0.15
2. "Who decides how the money you earn or the goods that you receive will be spent or used?"	No Autonomy Partial Autonomy Full Autonomy	33 87 69	107 57 27	<0.001
3. "Who decides how your husband's earnings will be spent?"	No Autonomy Partial Autonomy Full Autonomy	36 113 40	115 60 16	<0.001
4. "Most of the time, who makes decisions about health care for you?"	No Autonomy Partial Autonomy Full Autonomy	48 104 37	75 107 9	<0.001
5. "Most of the time, who makes decisions about making major household purchases (e.g. fan, TV, bicycle, water pump, etc.)?"	No Autonomy Partial Autonomy Full Autonomy	69 100 20	132 49 10	<0.001
6. "Most of the time, who makes decisions about making purchases for daily household needs (grocery items such as eggs, bread, washing powder, soap)?"	No Autonomy Partial Autonomy Full Autonomy	51 75 63	120 44 27	<0.001
7. "Most of the time, who makes decisions about visits to your family and relatives (e.g. parents, brothers, sisters, chacha-chachi, mama-mami, etc)?"	No Autonomy Partial Autonomy Full Autonomy	52 103 34	109 63 19	<0.001
8. "Most of the time, are you allowed to go to the market?"	No Yes	80 109	139 52	<0.001
8a. "Are you allowed to go alone?"	No Yes	69 120	82 109	0.20
9. "Most of the time, are you allowed to go places outside this village?"	No Yes	98 91	162 29	<0.001
9a. "Are you allowed to go alone?"	No Yes	77 112	80 111	0.82

In the current study women education was found significantly associated with prenatal depression. Various studies established a relationship of prenatal depression with low education of women (Abuidhail and Abujilban, 2014, Martini *et al*., 2015, Lydsdottir *et al*., 2014). However, a study conducted in Pakistan (Karmaliani *et al*., 2009) and Malawi (Stewart *et al*., 2014) found that women with higher education level were more prone to have depressive symptoms during pregnancy. Few studies could not establish a relationship between women education and prenatal depression (Agostini *et al*., 2015, Srinivasan *et al*., 2015).

The current study also found a significant association of low socio-economic class with prenatal depression. The findings are consistent with recent studies which found the similar association between socio-economic class and prenatal depression (Verbeek *et al*., 2018, Adhikari *et al*., 2020).

A history of miscarriage and contraception failure/ unplanned pregnancy was significantly associated with prenatal depression in the present study. Some studies found an association of pregnancy loss, termination of pregnancy or stillbirth in past with prenatal depression (Waqas *et al*., 2015, Zeng *et al*., 2015), whereas few

studies could not establish a relationship between history of miscarriage and antenatal depression (Kinsey *et al*., 2015, Jeong *et al*., 2013). Similarly various studies found an association of prenatal depression with unplanned pregnancy (Biaggi *et al*., 2016, Bayrampour *et al*., 2015, Brittain *et al*., 2015).

The present study established that various stressful life events in past year are found significant predictors of prenatal depression. Many studies confirmed the fact that stressful life events have a profound negative impact on women during pregnancy (Verbeek *et al*., 2018, Sheeba *et al*., 2019, Bayrampour *et al*., 2015, Abuidhail and Abujilban, 2014).

Woman autonomy/decision making was found significantly associated with prenatal depression in this study. The women who had full autonomy on their household decisions were found less depressed compared to those women who had partial or no autonomy at all. A randomized control trial conducted in America and in rural Pakistan confirmed that women with more empowerment were less likely to have depressive symptoms during pregnancy and they declared the women empowerment as a biggest psychotherapy for women all over the world (Baranov *et al*., 2020, Baranov *et al*., 2017).

CONCLUSION

Socio-economic variables, stressful life events in previous life and women autonomy are significant predictors of prenatal depression that need to be addressed in order to sustain safe motherhood.

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