ORIGINAL ARTICLE

MAJOR DEPRESSIVE DISORDER: AN ALARMING STIGMA OF PREGNANT WOMEN

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Background: Major depressive disorder is the most common psychiatric disease affecting women. Pregnancy significantly increases its prevalence, especially in developing countries. Antenatal major depression is an alarming condition for the mother and the growing foetus. This study aimed to find the frequency of antenatal depression and its relation with obstetric predictors. **Methods:** This cross-sectional study was conducted during Jan-March of 2014, in Benazir Bhutto women and children, Hospital, Abbottabad. By non- probability consecutive sampling techniques, total 96 pregnant women in third trimester were included during outpatient visiting hours. After inclusion and exclusion criteria, they were diagnosed for low back pain and major depressive disorder. All the data and questions were recorded in a pre-tested questionnaire. Verbal informed consents were obtained. SPSS software (version 21) was used for statistical analysis. **Results:** The sample included 96 participants with a mean age of 24.56±4.24 years, and mean duration of pregnancy 35.06±3.80 weeks. Forty-one women (42.7%) had high school education level, women from urban areas were 50 (52.1), 54 (56.3%) were from age group, 21–25 years, and 54 (56.3%) had first pregnancy. Among the total, 68 (70.8%) were depressed and 42 (43.8%) were of mild severity. Two third, i.e., 66 (68.8%) had low back pain. None of the results were statistically significant. **Conclusion:** Major depressive disorder (of mild severity) is quite high in 3rd-trimester pregnant population of Abbottabad. Frequency was more in uneducated younger age group women, resident of remote areas with first conception were more depressed.

Keywords: Major Depressive Disorder; Pregnant Women; Foetus; Developing countries

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INTRODUCTION

Pregnancy is a period accompanied by social, psychological, physiological and hormonal changes, escalating the risk of emotional suffering and depressive disorders which seriously affect the health and well-being of the mother and infant.[1] All these changes are beyond the mother's control and result in undesirable outcomes.[2] With growing foetus, mother concerns, lack of supportive environment and many other factors, increase depressive symptoms.[3] This depressive manifestation not only affects mother but also the infant and even persists after parturition, i.e., blue baby and post-partum depression, culminating in to physical and mental disturbances. Some women chase pregnancy as source of happiness, satisfaction and self-fulfilment. Others, however, may develop mental illness or worsening pre-existing psychiatric condition.[4] In any case, if remained untreated, it results in moderate to major depression, increasing pregnancy-related morbidity and mortality and adversely affecting the quality of life.[5]

Depression is among the most prevalent psychiatric disorders affecting women. By 2020, Major Depressive Disorders (MDD) are predicted to be the second prime cause of universal disability burden.[6] The risk of depression increased significantly during pregnancy and clinically significant depressive symptoms are common in mid and late trimesters.[3] It is reported that depressive symptoms are more frequent during pregnancy than during the postpartum period.[7]

Around the globe, in women, MDD is the leading cause of disease-related disability.[8] From a Nationally Representative Data (2005–2009), Ko JY *et al* found 65.9% cases of undiagnosed MDD in USA.[9] Maternal depression not only affects offspring but also lead to poor interactions with the mother, three times higher rates of emotional and behavioural issues, shoddy social competence with peers, and performance at school.[10] The exact pathophysiology of antenatal MDD is not fully known. During pregnancy, multimeric changes take place. Especially the reproductive hormone (oestrogen and progesterone) are dysregulated. Rubinow DR *et al* strongly suggested that these hormones have a potent neuro-regulatory effect on mother mood and cognition.[11] Phoenix *et al* and Bloch *et al* supported the given theory.[12,13] Similarly, during pregnancy, abnormalities in hypothalamic-pituitary-adrenal (HPA) axis activity is also linked to mental disorders.[14] Reproductive hormones are regulated by HPA axis and any striking changes in these hormones may definitely affect the brain neurotransmission and lead to mental disorders. During the third trimester of pregnancy, the levels of oestrogen and progesterone are at peak and HPA axis becomes hyperactive, therefore, at this stage, the

chances of depression are also increased.[15] Other factors like genetics and endocrine may also contribute to the development of perinatal reproductive mood disorders.[16]

Besides physiological pregnancy, fear of childbirth, low education, social support and income status, unintended pregnancy, smoking, previous caesarean section (CS), mode of delivery, diabetes, anaemia and placental abnormalities are some of the risk factors for pregnancy-related MDD.[17] Age is also a risk factor as one study concluded with 26% MDD in adolescents' pregnancies.[18] Pregnancy-related low back pain (PLBP) is very common problems in Abbottabad pregnant population.[19] It can be a risk factor for MDD yet any association of it with PLBP is not established.

Clinical diagnosis of antepartum depression is very exacting. Because of pregnancy, the symptoms of depression are similar to undergoing physiological processes. For example, loss of appetite, lack of interest, disturb sleep, decreased libido and fatiguability. Due to this, antenatal MDD is often overlooked. However, regardless of pregnancy, its diagnosis is same.[20] A reliable and valid tool, based on the criteria from the Diagnostic and Statistical Manual of Mental Disorder-IV (DSM-IV), The patient health questionnaire-9 (PHQ-9) was used tool this purpose.[21] Tricyclic antidepressants (TCA) are safe for antepartum MDD. Selective Serotonin Reuptake Inhibitor (SSRI) also gives reassuring results. Other least suggestive therapies include Electroconvulsive therapy – in case of a severe condition. Bright light therapy, rTMS etc.[20] In a nutshell, pregnancy is a plethora of numerous physiological, anatomical and psycho-social changes with peak surge of reproductive hormones. These all increase the level of physical and mental stress leading towards unpropitious outcomes. Major Depressive Disorders is associated with prematurity, low birth weight, foetal retardation and greeter the risk of cognitive and social development.[4] As a whole, it increases the social, economic and health care delivery burden on society. Addressing these issues with scientific notion will improve the overall health of community. In our setup, any data comprising of antepartum MDD, comparison of it with obstetric, sociodemographic and some other parameters is not yet studied. This is the first-ever study targeting a very important issue of pregnant mothers and emphasize upon the importance of antenatal care-which must include psychological evaluation of visiting mothers. The aim of the study is to find out the frequency and severity of major depression among pregnant women and to evaluate its risk factor like pregnancy-related low back pain, demographic and obstetric variables.

MATERIAL AND METHODS

This cross-sectional study was conducted during Jan-March of 2014, in Benazir Bhutto women and children, Hospital (DHQ), Abbottabad. The research sample consisted of 104 patients. They were selected on non-probability consecutive sampling techniques during OPD timing. Last trimester pregnant women coming for routine check-up were included in the study, while those with congenital or physical disability and patients with preeclampsia, eclampsia, psychiatric problems, and systemic disease were excluded. They were first diagnosed for low back pain by a specialist, sitting in the same OPD at the same time. Then they were screened for MDD. All the data and questions were recorded on a pre-tested questionnaire. It consists of three portions: demographic data, obstetric predictors and Patient Health Questionnaire-9 (PHQ-9). Participation of each was voluntary. The aims of the study were explained to all participating pregnant women and verbal informed consents were obtained. SPSS-21 was used for statistical analysis. Descriptive statistics were employed to estimate the frequencies of antenatal MDD and PLBP. Categorical variables were described as absolute and percentage numbers; and mean, and standard deviation was used to describe continuous variables. Nonparametric statistics; the fisher exact test and chi-squared test were used for finding the significant relation between dependent nominal (depression) and other variables. The significance level of 5% was considered in all statistical (p<0.05). Fisher exact test (exact.sig-2 sided) was considered when the minimum expected count in a cell was less than 5.

RESULTS

A total of 96 third-trimester pregnant women with mean age of 24.56±4.24 years (min18–max37), mean height 160±7.36 cm (min144–max 175) and mean duration of pregnancy 35.06±3.80 weeks (min 30.4–max 39.1) participated in the study. Most women n=41 (42.7%) with high school education level were from urban areas, n=50 (52.1). They were of young age group, 21–25 years-n=54 (56.3%), fall between height group of 155–164 cm, n=45 (46.9%), (Table-1). Patient health questionnaire-9 was used to assess the severity of depression. Those who scored 0–9 were considered as normal. The minimal depressive symptoms, which don't need pharmacological intervention were also considered as normal. Total n=68 (70.8%) of all participants were depressed of any severity. A very high prevalence of n=66 (68.8%) PLBP was observed (Table-2). Among MDD, n=42 (43.8%) of mild severity were more prevalent. However, only n=3 (3.1%) of severe depression severity women were found. n=14 (14.6%) without PLBP and n=14 (14.6%) of moderate PLBP, both were predominant in mild depressive disorder, clearly omitting the relation of depression with PLBP (Table-3). Majority of MDD n=42 (61.8%), n=32 (47.1%) and n=40 (58.8%) were found in 21–25 years' age group, 155–164 cm height group and illiterate women respectively. None of p-values were significant (Table-4). A very high percentage of primigravida women diagnosed with major depression n=41 (61.8%) and those

who never underwent NVD or previous caesarean, n=42 (61.8) and n=63 (92.6%) respectively. The data was collected in 3rd trimester and as the time of delivery approached, more women acquired depression n=41 (61.8%). Here, also, chi-square and Fisher exact test were non-significant at all (Table-5).

Table-1: Socio-demographic characteristics of pregnant women's attending antenatal care at Benazir Bhutto women and children care hospital (DHQ), Abbottabad (n=96)

Parameters	Frequency (%)
Residency	
Rural	46 (47.9)
Urban	50 (52.1)
Education	
Post Graduate (15–16)	1 (1.0)
Graduate (13–14)	7 (7.3)
College or Diploma (11–12)	15 (15.6)
High School (6–10)	41 (42.7)
Primary (1–5)	16 (16.7)
Illiterate	16 (16.7)
Groups by Age (Years)	
below 20 years	6 (6.3)
21–25 years	54 (56.3)
26–30 years	26 (27.1)
above 31 year	10 (10.4)
Groups By Height (Cm)	
144–154cm	23 (24.0)
155–164cm	45 (46.9)
165–175cm	28 (29.2)

Table-2: Major depressive disorder, PLBP and obstetric characteristics of participants (n=96)

Parameters	Frequency (%)
Major depressive depression	
Normal	28 (29.2)
Depressed	68 (70.8)
PLBP	
No PLBP	30 (31.3)
PLBP	66 (68.8)
Total no of pregnancies	
Primigravida	54 (56.3)
1st Parity	17 (17.7)
2nd Parity	11 (11.5)
3rd Parity	9 (9.4)
≥4	5 (5.2)
Normal vaginal deliveries	
0	54 (56.3)
1	21 (21.9)
2	11 (11.5)
3	10 (10.4)
Previous LGCS	
Zero	86 (89.5)
One time	7 (7.3)
Twice	3 (3.1)
Duration of pregnancy	
7 months	33 (34.4)
8 months	23 (24.0)
9 months	40 (41.7)

Table-3: Distribution of severity of PLBP and without PLBP against Patient health questionnaire-9 grading

Depression			The severity of Back Pain					Total
			No Pain	Mild Pain	Moderate pain	Severe Pain	Worst Pain	
Total	Severity	Normal	9 (9.4)	5 (5.2)	13 (13.5)	1 (1.0)	0 (0.0)	28 (29.2)
	Major Depression Severity	Mild	14 (14.6)	7 (7.3)	14 (14.6)	6 (6.3)	1 (1.0)	42 (43.8)
		Moderate	7 (7.3)	5 (5.2)	7 (7.3)	4 (4.2)	0 (0.0)	23 (24.0)
		Sever	0 (0.0)	0 (0.0)	2 (2.1)	1 (1.0)	0 (0.0)	3 (3.1)
	Total		30 (31.3)	17 (17.7)	36 (37.5)	12 (12.5)	1 (1.0)	96 100.0)

p-value=0.436

Table-4: Comparison of dependent variable (MDD) with socioeconomic data

Independent Variable	Categories	Depression		Total (%)	Chi-square (*p*-value)	Fisher Exact (alfa value)
		No (%)	Yes (%)			
Age (Years)	Below 20 years	1 (3.6)	5 (7.4)	6 (6.3)		0.215
	21–25 years	12 (42.9)	42 (61.8)	54 (56.3)		
	26–30 years	11 (39.3)	15 (22.1)	26 (27.1)		
	Above 31 year	4 (14.3)	6 (8.8)	10 (10.4)		
Height (cm)	144–154 cm	6 (21.4)	17 (25.0)	23 (24.0)	0.893	
	155–164 cm	13 (46.4)	32 (47.1)	45 (46.9)		
	165–175cm	9 (32.1)	19 (27.9)	28 (29.2)		
Education	Illiterate	12 (42.9)	40 (58.8)	52 (54.2)		0.182
	Primary (1–5)	8 (28.6)	11 (16.2)	19 (19.8)		
	High school (6–10)	2 (7.1)	9 (13.2)	11 (11.5)		
	Graduate (13–14)	5 (17.9)	4 (5.9)	9 (9.4)		
	College or diploma (11–12)	1 (3.6)	4 (5.9)	5 (5.2)		
Place	Urban	16 (57.1)	30 (44.1)	46 (47.9)	0.246	
	Rural	12 (42.9)	38 (55.9)	50 (52.1)		
Total		28 (100)	68 (100)	96 (100)		

Table-5: Comparison of dependent variable (MDD) with obstetric variables

Independent Variables	Categories	Depression		Total (%)	Chi-square (*p*-value)	Fisher Exact (alfa value)
		No (%)	Yes (%)			
PLBP	No	9 (32.1)	21 (30.9)	30 (31.3)	0.904	
	Yes	19 (67.9)	47 (69.1)	66 (68.8)		
Total No of Pregnancies	Primigravida	12 (42.9)	41 (61.8)	54 (56.3)	0.100	
	1st parity	8 (28.6)	9 (13.2)	17 (17.7)		
	2nd parity	2 (7.1)	9 (13.2)	11 (11.5)		
	3rd parity	5 (17.9)	4 (5.9)	9 (9.4)		
	4th parity	0 (0.0)	3 (4.4)	3 (3.1)		
	5th parity	1 (3.6)	1 (1.5)	2 (2.1)		
Duration of Pregnancies	7th months	8 (28.6)	25 (36.8)	33 (34.4)	0.733	
	8th month	7 (25.0)	16 (23.5)	23 (24.0)		
	9th month	13 (46.4)	27 (39.7)	40 (41.7)		
No. of previous C-Section	Never	23 (82.1)	63 (92.6)	86 (89.6)	0.232	
	Once	4 (14.3)	3 (4.4)	7 (7.3)		
	Twice	1 (3.6)	2 (2.9)	3 (3.1)		
Normal vaginal deliveries	No previous NVD	12 (42,9)	42 (61.8)	54 (56.3)		0.298
	1 time NVD	9 (32.1)	12 (17.6)	21 (21.9)		
	2 times NVD	4 (14.3)	7 (10.3)	11 (11.5)		
	2 times NVD	3 (10.7)	7(10.3)	10(10.4)		
		28 (100)	68(100)	96(100)		

DISCUSSION

In developing countries, antenatal MDD is always ignored. Ultimately, worsening the well-being of the mother, baby, i.e., maternal-foetal attachment and other family members.[22]

A plethora of changes take place during pregnancy. This gestational period is most promising and compelling and crucial for both, the mother and growing fetus. So, disease like MDD has very certain and detrimental effects. Such a devastating effect ought not to be out looked. This study is being conducted for the first time among Abbottabad pregnant women which resulted in 70.8% of MDD cases. Few studies from Pakistan, done on 3rd-trimester pregnant women, resulted with very close prevalence of depression, i.e., 75% Lahore[23], 62%rural Sindh[24], 66% rural Punjab[25]. Likewise, it is 67.3% among 3rd trimester, pregnant women of Ethiopia.[26]

Jafri SAM *et al* found mild severity (35.7%) of depression as more prevalent among 81% of depressive pregnant women of Karachi.[27] Although the percent difference is not quite the same yet it somehow, resembles the severity (43.8%) of MDD of our study. Few other studies of Pakistan concluded with low incidence rate. In a Northern area, Peshawar, it is 45%[1], in Hyderabad, anxiety/depression is 18%[28], Southern Kahuta 25% (3rd trimester)[29], urban Rawalpindi its 25%[25] and in Karachi, a non-randomized study done in late 19s resulted in 42% prevalence of antenatal depression[30]. These studies used different diagnostic tools. Some used Beck's Depression Inventory, other used Eden Burg Postnatal depression scale Hamilton rating scale and Patient Health Questionnaire. This variation in prevalence over same country is due to different study design and tools, selection bias and other confounding factors. However, it is less prevalent in developed countries pregnant women. As it is multifactorial by its risk factors, so this vivid variation may be due to different cultural practices, socio-demographic, economical and geographical changes across the globe.

A dozen articles concluded that antenatal depression is a strong predictor of postnatal mood disorders.[31,32]

Although no significant difference was found between antenatal MDD and demographic variables, yet, younger mothers (61.8%) had a high prevalence. Similarly, Humayun A *et al*, cited more prevalence of depression in mothers aged <20 years.[23] This is very close to our results. Besides Kenya's pregnant population, Deklava L *et al* gave 45.2% of state anxiety cases among 18–25 years old pregnant women.[26,33] In developing countries, like Pakistan, Bangladesh, India, and Afghanistan, the customs of early-age-marriages put most of mothers at high risk of mental and other late-onset pathological problems. Due to lack of experience, emotional instability and fear of childbirth agonize young aged mothers. Rich Edwards *et al,* emphasized that young age marriages must be avoided, otherwise, the rate of depression will steadily rise to a dangerous point.[34,35] In developed countries, young aged-antenatal depression was linked to financial rigidity, lack of partner's/boyfriend's support, unwanted pregnancies. Due to religiousness and cultural rigidity of our setup, unplanned pregnancies and lack of spouse support is of least concern. But, again, early age-marriages, joint families, financial handicap and avoidance of proper antenatal care support are key risk factors of early age antenatal MDD. Researchers need to evaluate this stigma of our society scientifically. No direct effect of pregnancy-related-low back pain (PLBP) on developing

antenatal depression is yet published in Abbottabad pregnant population. One study found that antenatal depression is 13 times more common with PLBP and cause significant functional disability in 3rd trimester. Similarly, women with PLBP have 3 times more severe post-partum depression.[36]

Health education is the backbone of diseases prevention. It is worth to spend few dine on prevention then spending hundreds on the cure. The prevalence of antenatal MDD is least in educated communities. Literate women are emotionally and physically more stable. They deal with worst situation and cope efficaciously. They exalt their self-esteem and raise self-efficacy. They feel confident and focus on undergoing pregnancy, manage proper diet and seek timely antenatal care. Kazi *et al* mentioned that low level of education and presence of in-laws in joint families results early onset of antenatal depression.[37] Other studies supported our results and quoted that low level of education, high poverty and lack of family support increases the risk of antenatal depression.[38,39] Similarly, 36.5% of state anxiety cases were reported in illiterate pregnant women.[33] Ravi P *et al* in his systemic review of Indian pregnant population, found more prevalence of postnatal depression among urban women. This contrast to our results, i.e., 59.9%.[40] Very least data is available on other obstetric parameters. In the current study, antenatal MDD was more prevalent among primigravida (61.8%) and Thompson O reported it 25.5% in Nigerian Pregnant women.[41] Jafri SAM *et al* study supported our such results. Deklava L *et al* stated it like 52.9% of state anxiety during 1st pregnancy.[33] But another study gave contradicted results, i.e., out of 366 pregnancies, 284 (77.7%) depressed pregnant women were with >2 children.[30] Our study found that almost all women (92.6%), who had a previous caesarean section (CS) suffered antenatal MDD. Lacking similar data, Garthus-Niegel *et al* stated that those women who wish for CS but delivered vaginally had greater prevalence of antenatal depression.[42] Räisänen S *et al* mentioned CS as strong risk factor of antenatal depression.[17] In crux, primary prevention and early treatment-either pharmacological or psychosocial therapy resulted very effectively.[43] And reduce the depression rate. This is the only way to improve the overall health of mother and renders newly borne baby from low birth weight, mental retardation, and malnutrition, etc.

In Pakistan, social norms, cultural practices, joint family with overcrowding livings and lack of financial and moral supports has a steadfast effect on maternal mental health. Due to strong affliction of mothers with the growing foetus and religious backgrounds, least cases of suicide or deliberate self-harm is ascertained. Integrating antenatal care services with maternal mental health or Pregnancy monitoring and preventive mental health programs is the exigency of this society. This was a public sector hospital-based study. So, most of the studied population belonged to rural area and low to middle class. Pregnant women, who seek treatment for antenatal care at other places, might have been missed. Simple size is very small and results cannot be generalized. Larger sample size can reduce Type-1 and 2 errors/ Moreover, study design and statistical analysis cannot catch the causation/association of MDD and its other factors.

CONCLUSION

Major depressive disorder (of mild severity) and PLBP are quite high in 3rd-trimester pregnant population of Abbottabad. Non-educated women, with the first conception, are more prone to major depressive disorders. Quite a significant number of women with PLBP suffered major depressive disorder. Condition like under-sourced health care delivery system, lack of proper access to so-called available resources, food insecurity, high poverty, low literacy rate, low social support, marital conflicts domestic violence and religious effect on antenatal depression is yet to be evaluated.

AUTHORS' CONTRIBUTION

MJK: Title selection, literature search, study design, data collection and analysis. MAH: Study design, data collection and analysis, result writing. IS: Literature search, references, proof reading. MAR: Final approval.

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