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Prevalence of Depression and Anxiety Disorders in Peri-Natal Sudanese Women and Associated Risks Factors

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Abstract

The purpose of this study was to estimate a point prevalence of depression and anxiety disorders among Sudanese peri-natal women attending ant-natal and postnatal clinics in the capital city of Sudan. Simultaneously, to examine the associated risks factors. Participants were 945 peri-natal women in two main women antenatal and post natal clinics in the Capital City of Sudan screened consecutively. They were divided into two groups. The first group was of, Four Hundreds eighty (480) women in their third trimester, and the second group consisted of Four Hundreds Sixty Five (465) women in the first 10 week of postnatal period. All participants were screened, using Beck Depression Inventory (BDI), Hospital Anxiety and Depression scale (HADS), and Personal information Questionnaire (PIQ) for collecting socio-demographic, personal, medical, social and family history data. Routine urine and blood results were recorded. Results: 59% of prenatal and 46% of postnatal women suffered from high levels of distress in the form of mixed anxiety and depressive symptoms. However, only 20.9% of peri-natal women suffered of moderate to severe depression. Over 90% of the depressed women were not formally diagnosed or received psychiatric help. Poor marital relationship, physical co-morbidity, positive family history and past psychiatric history of depression were the main significant risk factors associated with perinatal depression and anxiety. Conclusion: Contrary to the commonly held views that perinatal women are mainly plighted with depression as the main mental illness, this study confirms initial findings that, anxiety disorder is far more prevalent and more distressing to this vulnerable group. Moreover, psychiatric morbidities in both prenatal and postnatal periods attract high prevalence rates in low income countries. Maternal health policies in low income countries must incorporate routine screening for mental health status, basic support and interventions for mental illnesses in perinatal women. Depression and emotional disorders in perinatal women should be seen as important public health priority.

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Keywords

Prenatal, Postnatal, Peri-Natal, Depression, Anxiety, Psychiatric Morbidities, Risks Factors

1. Background

Symptoms of anxiety and depressive disorders in perinatal women have received considerable attention in high income countries over the last three decades. However, little attention and limited resources, if any, were directed to this group, in low income countries. Only a few prevalence studies were conducted in low income countries to examine the prevalence of the common mental disorders in perinatal women and especially so in Africa, Sudan included [1] [2].

Peri-natal depression has long been recognized to be associated with a number of risks factors such as genetic vulnerability, hormonal changes, major life events, psychosocial stressors and past and present medical complication [3]-[5]. High stress during pregnancy can increase susceptibility to maternal infections by mechanisms that inhibit components of the immune system, also lead to premature delivery and post natal complications [5]-[7]. Post natal depression however, has been associated with low infant body weight, higher infant physical morbidity including diarrhea, vitamin deficiencies weaker mother baby bond and risk of maternal suicide [8]-[12].

Despite all the high maternal and infant morbidity as a consequence to maternal mental health problems, yet the total number of all the prevalence studies that were conducted in Africa did not exceed a total of 11,000 cases, at a recent systemic review of prevalence of depression in perinatal women in Africa [1] [13] [14]. Most studies on perinatal women and mental health disorders have focused on depression and depressive disorders in this sensitive period, rightly so. However, little attention has been given to high rate and distressing symptoms of anxiety which has by itself significant consequences to both mother and baby's health. This can only be unraveled, by using appropriate tools to pick up this condition [15]-[17].

Prevalence findings for anxiety disorders in prenatal and postnatal women attracted rates between 10% - 20% which can either be purely anxiety disorder or mixed anxiety depressive symptoms with anxiety features predominating the psychiatric presentation. Therefore, both anxiety and depression warrant appropriate attention and investigation by researchers and women's mental health strategists [18] [19].

There is conflicting evidence as to whether or not symptoms of anxiety deserve separate attention in the perinatal period, as it might be seen as part of a depressive spectrum by some researchers [20].

Many recent researchers have investigated the initial reported risk factors by Kendal *et al*. in 1976, with anxiety during pregnancy, viz, poor quality of intimate relationship, previous episodes of depression and anxiety, perinatal obstetric complications, positive family history of depression, past history of depression and general low annual income [21] [22]. However, many studies consistently found that past psychiatric history of depression, strong family history of depressive disorder and poor quality of intimate relationship or violence were the strongest risk factors for perinatal depression and mostly so for post natal depression. However, some other risk factors such as presence of high anxiety symptoms during pregnancy as, predictor and risk factor for future development of post natal depression received less attention [23]. Likewise, health factors such as low hemoglobin levels, chronic physical co-morbidity, the number of already born children, job and employment status and presence or absence of family support received less attention in perinatal psychiatric studies [24].

2. Method

2.1. Subjects

Subjects were consecutively collected from two main antenatal clinics at Khartoum Teaching Hospital, and Omdurman antenatal clinic. These two clinics serve a large catchment areas of around 2 million population and overseen by obstetricians, midwives *and senior University consultant obstetricians. Inclusion criteria were designed to include all women who presented to the antenatal clinics in their* 3*rd trimester in the period between*, 1*st of June to* 30*th of September* 2009. Written informed consents to participate in the study in Arabic were obtained. The only exclusion criteria was language barrier for only a few women that didn't speak clear Arabic or

Sudanese dialect leading to clear communication barriers.

Total of 945 consecutive candidate satisfying inclusion criteria were interviewed by trained psychiatric registrars and clinical psychologists.

480 Prenatal women in their third trimester, and 465 postnatal women in the 2nd to 10th week of the postnatal period, had been interviewed in the specified research period.

Separate postnatal clinics exists, serving the same territory, therefore all postnatal women were interviewed at these clinics, as they arrived to see their midwives and health visitors for routine checkup. Most of postnatal women presented between the second and the 10th week of their post natal period (90% were between the 4th to 8th week post delivery).

2.2. Assessments

Six research psychologists and two psychiatrists received three days training on applying interview questionnaires. Most of inter-rater differences were ironed out during training. Then, a pilot phase was carried out in the first two weeks prior to commencement of the study phase which revealed 96.5% of inter-rater reliability for all instruments used for the study. Three instruments were used to collect relevant information.

The first questionnaire was Personal information Questionnaire (PIQ) used to obtain detailed social demographic information about candidates with special reference to, important personal, family, past and present psychiatric history and physical morbidities beside social stressors and circumstances. There was special section for recording hemoglobin and urine results obtained on the same day.

The second questionnaire was a standardized Hospital anxiety and Depression scale (HADS) to report on symptoms of anxiety and depression with this instrument, indicating distress level.

HADS is a self report scale, contains 14 items rated on 4-point Likert-type scale. HADS, has, subscales assess depression and anxiety. The seven-items for either depression or anxiety, yields a score of 0 - 21 that is interrupted with the following cut points: 0 - 7, normal; 8 - 10, mild mood disturbance; 11 - 14, moderate mood disturbance; and 12 - 21, severe mood disturbance [25].

However, a third questionnaire, Beck Depression Inventory (BDI), was used to validate the reported depressive symptoms and obtained by (HADS). The other reason for using BDI was to report on the degree and intensity of the depressive illness. BDI, it's also Likert-type scale, of 21 items, reports symptoms from 0 - 3 (0 meaning symptom not existing, 3, the symptom is sever). BDI, yields score from 0 - 63. The score for moderate depression is 18 - 23, whilst 23 and over indicate severe depression [26].

HADS scale has been validated to be a sensitive instrument to detect symptoms of anxiety and depression, compared with the widely used, Edinburgh Depression Inventory (EDI), which is only sensitive for depressive disorders in perinatal period. Both HADS and BDI instruments have been validated in the Sudanese culture.

The study protocol was approved by the Ethics and research Committee of the University. Written authorizations were obtained from relevant health authorities, beside individual patient's written informed consents.

2.3. Statistical Analysis

All information obtained was entered on the statistical package for social science (SPSS) version 15. Chi square and T-test were calculated for all subjects as per results.

3. Results

3.1. Social Demographic Characteristics

Table 1 gives important socio-demographic characteristics of our participants. 566 (59.9%) of the participants were under the age of 35, 492 (52.1%) finished school before university level while 59 (6.4%) were illiterate. 730 (77.3%) were housewives, that, had previously worked or never worked. 583 (61.7%) of the subjects reported low socio economic background as defined by comparative criteria for an average income in Sudanese community *i.e*. the total family income per year is less than 2500 dollars per year (as defined by Sudanese Social Security and Welfare office). 489 (51.1%) had, had no supporting hand from relatives or other sources to help with the running of the household apart from husbands. While 476 (49%) of the participants had a close relative such as a mother, or a sister, regularly giving them a hand for the household chores and with kids support. It is part of Sudanese culture to have a close relative or senior female relative moving in to live with the pregnant

woman prior to giving birth and shortly afterwards to support the family. It is customary that such relative will offer sympathy, and support to the young mother. Most women were of multi-parity (had more than one previously born child), with an average of 2.3 children at the household.

3.2. Clinical Characteristics

Table 2 and **Table 3** show 496 (52.5%) of our perinatal women *i.e.* antenatal and post natal showed high levels of distress (either depression/anxiety, or mixed condition) as reflected by, HADS questionnaire with a threshold above 12 as a cutoff point which denoting clinical threshold from mild to moderate for both anxiety and depression whilst, 449 (47.5%) did not manifest with clinically significant symptoms of anxiety or depression. Prenatal women in particular showed high levels of distress and anxiety (59%) **Table 4**, but only 24% of them presented with clinically significant symptoms of depression as per Becks results, **Table 5** and **Table 6**.

Table 1. Demographics characteristics.

	Number	percentage %
25 - 35 years of age	566	59.9%
Undergraduates	492	52.1%
Illiterates	59	6.4%
Housewives	730	77.3%
Low socioeconomic background	583	61.7%
No helping hand at home apart from the husband	489	51.1%
Average no. of children	2.33	

Table 2. Risks factors leading to high symptoms of mixed anxiety and depression.

	Number of Children		Marital relationship			Past psychiatric		Family history of depression		Physical co-morbidity with pregnancy	
	0 - 4	5 - 10	Good	Average	Poor	Yes	No	Yes	No	Yes	No
Normal	162	34	208	14	1	13	205	13	203	23	174
Mild	185	17	219	4	0	23	202	12	217	21	161
Moderate	205	21	251	18	0	38	233	24	239	38	192
Severe	176	28	184	40	4	42	189	31	188	48	148
Total	728	100	862	76	5	116	829	80	847	130	675

$X^2 = 50.99$ DF = 30 P = 0.010 $X^2 = 51.1$ DF = 6. P = 0000 $X^2 = 15.9$, DF = 3, P = 0.001 $X^2 = 13.8$ DF = 3, P = 0.003

Table 3. Shows distribution of Psychiatric disorder in perinatal period.

	Number	Percentage
HADS	497	52.6%
Beck	198	20.9%

Table 4. Shows prevalence of mixed anxiety and depressive symptoms in prenatal and postnatal period using HADS.

	Prenatal		Postnatal	
	Number	Percentage	Number	Percentage
Normal	87	18.10%	139	30%
Mild	110	22.90%	112	24%
Moderate	149	31%	121	26%
severe	134	28%	93	20%
Total	480	100%	465	100%

Table 5. Positive risk factors for depression with BDI.

	Marital relationship			Past history of depression		Family history of psychiatric illness		Organic illness	
	Good	Average	Poor	Yes	No	Yes	No	Yes	No
Normal	394	18	0	29	384	28	383	42	329
Mild	306	26	0	48	334	27	303	46	226
Moderate	118	18	4	22	140	15	115	30	82
Severe	44	14	0	16	57	10	45	11	38
Total	862	76	4	115	829	89	846	129	675

$X^2 = 55.6$ DF = 6 P = 0.000 $X^2 = 26.9$, DF = 3, P = 0.000 $X^2 = 9.6$ DF = 3 P = 0.023 $X^2 = 17.4$ DF = 3 P = 0.001

Table 6. Shows prevalence of depressive symptoms in prenatal and postnatal period using BECK.

	Prenatal		Postnatal	
	Number	Percentage	Number	Percentage
Normal	182	37.9%	237	51%
Mild-borderline	183	38.10%	149	32%
moderate	81	17%	56	12%
severe	34	7%	23	5%
Total	480	100%	465	100%

3.3. Comparing Prenatal versus Postnatal Morbidities

When, both anxiety and depression were dichotomized to case and non case, taking 12 score as cut off points on the HADS for anxiety and depression, (which were previously validated in Sudanese culture), (**Table 4**), this, revealed that, 383 (59%) of prenatal women showed clinically significant results for both anxiety and depression. On the other hands, 214 (46%), as reflected in HADS, results for postnatal women (**Table 4**).

However, only 115 (24%) of prenatal women presented with clinically significant score for depression of a moderate and severe degree, and 79 (17%) of postnatal women attracted high score results for moderate to severe depression as manifested on the Beck Depression Inventory (BDI), **Table 6**.

3.4. Risk Factors and Associations (Table 7)

Poor marital relationship emerged as a major risk factor for developing both antenatal depression and anxiety as well as post natal, with p-value below 0.0001. Physical co-morbidity with pregnancy came as a second factor especially for a combination of anxiety and depression when it is taken as a spectrum with a p-value of 0.001 as reflected in the HADS test, **Table 7**. Other significant associations were past psychiatric history of depression and anxiety and positive family history for psychiatric illness with a p-value of 0.001, and 0.003 consecutively. Women who had more than 3 children showed higher symptoms for anxiety and depression with a p-value of 0.01, whilst, whether the mother was working or holding a job at the time of her pregnancy or shortly afterwards did not manifest as a major risk factor for depression or anxiety. Educational level whether illiterate or post graduate did not bear any correlation to probability of developing anxiety or depression, nor seen as a protective factor. On the other hand the three most significant factors for developing severe depression for, both pre-natal and postnatal women, were poor marital relationship, past psychiatric illness (both P values below 0.001), and family history of psychiatric illness **Table 7**.

4. Discussion

This study found high prevalence of both anxiety and depression for antenatal (59%) and post natal (46%) women more than previously thought. These disorders were assessed by the HADS test as it was previously noted by O'Hara *et al*. (1990). A diagnosis of depression is only one index of psychological distress which could be rather insensitive and may be more useful to identify psychological distress in the perinatal period with the

Table 7. Collated P values for all risks factors.

Risk Factors	P value against HADS	P value as Per BDI
Poor marital relationship	0.000	0.000
Urine general	0.000	0.009
Co-morbidity with pregnancy	0.001	0.001
Past history of psychiatric illness	0.001	0.000
Family history of psychiatric illness	0.003	0.023
Number of Children	0.010	0.010
Type of co-morbidity	0.020	0.001
Occupation	0.026	
Educational level	0.036	

use of an instrument capable of tapping a common core or psychological impairment. We believe that the HADS test is both sensitive and valid for tapping high levels of distress in perinatal period which reflects the higher result found in this study [27].

Most studies on perinatal psychiatric prevalence didn't take into account the strong co-morbidity between depressive mood and anxiety disorders. Therefore, one of the aims of the present study is to report on the prevalence of these two conditions together and, separate in perinatal periods. Moreover, this study examined a wide range of risk factors that had been noted by different researchers elsewhere.

Principal Findings

This study identified two categories of associated risk factors for perinatal emotional disorders (depression and anxiety), confirmed the widely known risks factors for depression that may occur at any period in a woman's life, such as associated perceived lack of social support or hostility from intimate husband, past psychiatric history of depression or anxiety and family history of depression or anxiety.

However, this study, revealed, a second category of risks factors that are relatively specific to peri-natal emotional disorders such as, physical co-morbidity in the prenatal period, anemia and presence of high psychological distress at the first and second trimester of pregnancy.

Most importantly, we reported, higher rates of psychiatric morbidity, than previously thought, in the form of general distress (stress, anxiety, and depression) at the prenatal period up (59%), and 46% for postnatal period, leading to detrimental health consequence for both the mother and her baby.

Moreover, we were able to discover that, most of this high rates of distress did not receive any formal recognition or treatment via the psychiatric system, (90% of cases) that were found to have moderate to severe mood disorders had not received any formal mental health treatment. Therefore, the distress was endured by the sufferer unrecognized or diagnosed and not treated or supported by mental health team in the developing countries, as was the case in Sudan. Many factors can be cited to this failure, of provisions and recognition for mental ill-health of peri-natal women, not least, due to, stigma associated with mental illness, but, also one can cite other factors, such, as, ignorance, and limitations of resources.

It's worth noting that, contrary to the widely believed vulnerability factor for depression, this study could not detect association of mental morbidity with type of employment or the lack of it, level of education a woman might have attained, or presence or absence of a family support extra to that of the partner. Although, the findings of this paper suggest that dimensional or categorical anxiety is a major risk factor for post natal depression. However, interpretation of the two conditions were hampered by methodological limitations such as, being, relatively small sample size, a cross sectional study, and, lacked adjustment for confounding factors.

Strengths and Weaknesses

This study examined a large number of cases, more that most studies conducted in developing countries, that is to say 945 candidate, and was able to tap on categorical findings of perinatal depression and anxiety.

Among the weaknesses of this study, the inherent problem of being a cross sectional study, one would want to see a longitudinal cohort findings after the initial assessment. Moreover a more structured and standardized assessment tool such as, SCID (Structured Clinical Interview Schedule) would have revealed more elaborate and specific psychiatric diagnosis than HADS and BDI would have allowed.

Declaration of Interest

None.

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