

## Research

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# Anxiety and Depression among Pregnant Women in the Gaza Strip

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## ABSTRACT

**Aim:** This study aimed to examine the levels of anxiety and depression among pregnant women attending primary healthcare clinics in Gaza Strip.

**Method:** The sample consisted of 400 pregnant women attending primary healthcare clinics in the Gaza Strip. They were interviewed using the sociodemographic scale, Hamilton Anxiety Rating Scale (HAM-A), and Beck Depression Inventory (BDI).

**Results:** The study showed that 33.3% of the pregnant women showed moderate and 18.5% showed severe depression. Women living in refugee camps more often reported clinical cases of depression. 14.3% of these women showed moderate and 8.8% showed severe symptoms of anxiety. Depression and anxiety symptoms were closely associated with each other. The results showed that 6.3% of women experienced co-morbid depression and anxiety.

## CLINICAL IMPLICATIONS

There is a need for early diagnosis of mental health problems in pregnant women attending primary health clinics through psychological screening. More programs are necessary to be included within the primary healthcare services to support psychosocially women with mental health problems. Also, the training of staff working in the clinics for early detection of mental health problems in such target group is necessary. Women with severe mental health problems should be subjected to a clear and effective transfer to more specialized psychiatric clinics for treatment.

**KEY WORDS:** Anxiety; Depression; Pregnant women; Gaza Strip.

**ABBREVIATIONS:** HAM-A: Hamilton Anxiety Rating Scale; BDI: Beck Depression Inventory; MOH: Ministry of Health; PHC: Primary Health Care; NGOs: non-governmental organizations; PHC: Primary Health Care; UNRWA: United Nations Relief and Work Agency for Palestine Refugees.

## INTRODUCTION

Depressive disorders account for almost half of the burden of clinical conditions associated with mental disorders, followed by anxiety disorders, and drug and alcohol use disorders (WHO Department of Health Statistics and Informatics, 2008). Globally, the lifetime prevalence of major depressive disorders was estimated to be between 10% and 15%.<sup>1</sup>

Pregnancy has been defined as a period of well-being that has allowed women to feel biologically complete, supported their emotional well-being, caused enjoyment and fulfillment, and at the same time led to a moment of stress and related changes.

It was estimated that the rate of occurrence of depressive disorders in women of the reproductive age was at least twice as that observed in men.<sup>2</sup> In addition, depression and anxiety

may also have had a negative impact on the developing fetus and may have been associated with premature births and lower birth weights.<sup>3,4</sup> Moreover, in a study of a sample of 3,472 pregnant women aged 18 years and older in Michigan, USA, the results showed that 20% (n=689) of the women who were screened, scored above the cutoff score of depression, and only 13.8% of those women reported to have received any formal treatment for depression.<sup>5</sup>

Depression during the perinatal period can have devastating consequences, not only for the women experiencing it, but also for the women's children and family.<sup>6</sup> Stressful situations are considered to be mental disorder triggers, and such disorders are the most common health problems associated with pregnancy and postpartum period anxiety and depression.<sup>7</sup>

The prevalence rates for anxiety disorders varies widely, and it is estimated that women generally showed higher prevalence rates across all anxiety disorder categories, compared with men,<sup>8</sup> and lifetime and 12-month prevalence rates of anxiety disorders among women was roughly twice the rate observed among men.<sup>9</sup> Research evidences have shown that there is now a growing realization that many women suffer from either the onset or the exacerbation of existing anxiety disorders during the prenatal period.<sup>10</sup> Moreover, in a study of anxiety in pregnant women it was observed that a significant number of women were affected.<sup>11</sup> In a large sample of pregnant women, it was observed that 21% of the women showed clinical symptoms of anxiety and, of these, 64% continued to experience postpartum anxiety.<sup>12</sup>

In a different study, it was observed that the prevalence of prenatal anxiety and associated factors among pregnant women at the Changchun Gynecology and Obstetrics Hospital, Jilin Province, China, from January 2015 to March 2015, was 20.6% (96 of 467).<sup>13</sup> Other studies examined both depression and anxiety among pregnant women in developing countries, despite the estimates of WHO that depressive disorders would be the second leading cause of the global disease burden by 2020.<sup>14</sup> Furthermore, in a study of pregnant women in an urban community in Pakistan showed that 18% of the women were anxious and/or depressed.<sup>15</sup> Also, in a study in rural Bangladesh, results showed that the rate of anxiety disorder was recorded as 18%.<sup>16</sup> While, in a study conducted in Malaysia, the prevalence of anxiety and depression disorders among prenatal mothers using diagnostic clinical interview were 9.1% and 8.6%, respectively.<sup>17</sup> Similarly, in a study aimed towards evaluating the occurrence of depression and anxiety during the perinatal period in a sample of 660 English-speaking pregnant women in the City of Vancouver, Canada showed that 28.8% of the pregnant women experienced anxiety disorders at some point of time in their lives, and 16.2% underwent mood disorders.<sup>18</sup>

### Significance of the study

This study attempted to bridge the gap in studies concerning women in the Gaza Strip as it was the first study centered about

pregnant women. This study may pave the path for further research in the same field and highlight the urgent need to establish psychological programs in clinics for the affected women. Also, the present study may contribute towards the knowledge of mental health in Palestine, and help provided guidelines for other researchers to conduct further studies in field.

The aims of this study were 1) to examine the level of anxiety and depression among pregnant women, 2) to investigate the relationship between depression and anxiety among pregnant women, 3) to determine the relationship between anxiety, depression and the sociodemographic variables governing the lives of pregnant women in Gaza strip.

## METHODS

### Participants

The sample consisted of 400 randomly selected Palestinian pregnant women attending primary health care clinics in the Gaza Strip. The demographic information collected has been reported in the Results section.

### Measures

**Sociodemographic sheet:** Included parameters as age, level of education among the women and their husbands, place of residence, type of housing, family type, number of family members, and monthly income.

### Beck Depression Inventory Short form 13 item<sup>19</sup>

The 13-item beck depression inventory (BDI) was used to estimate the probable prevalence of depression. The BDI was scored on a four-point scale 0-3, giving a possible range of 0-39. The severity of depression was classified on the basis of the total score; in a normal community sample, a BDI score <4 suggested no or minimal depression, 5 to 7 represented mild to moderate depression, 8 to 15 indicated moderate to severe, and <=16 indicated severe depression. BDI being a universal scale; its validity and reliability has already been tested. This Arabic version of the scale was validated in the Palestinian Society.<sup>20</sup> The BDI demonstrated a high internal consistency, with alpha coefficients of 0.86 and 0.80 for psychiatric and non-psychiatric populations respectively.<sup>21</sup> In this study, the Cronbach's Alpha was 0.89 and split half was 0.77.

### Hamilton Anxiety Rating Scale<sup>22</sup>

The HAM-A was one of the first rating scales developed to measure the severity of anxiety symptoms, and is still widely used today in both clinical and research settings.<sup>23</sup> The scale consisted of 14 items, each defined by a series of symptoms, and measured both psychic anxiety (mental agitation and psychological distress) and somatic anxiety (physical complaints related to anxiety). Although the HAM-A remains widely used as an outcome

measure in clinical trials, it has been criticized for its poor ability to discriminate between anxiolytic and antidepressant effects under certain situations, and somatic anxiety versus somatic side effects. The instrument has been used but not validated in an Arabic speaking population.<sup>24</sup> The items were rated on a five-point scale and summed to provide a score ranging from 0 to 56. A score of 17 or less represented mild anxiety, a score between 18 to 24 represented mild to moderate anxiety, and a score of 25 and above, represented moderate to severe anxiety. The Arabic version of the scaling tool was used in this area and indicated high reliability.<sup>20</sup> For this study, Cronbach's Alpha was 0.86 and split half was 0.74.

### Study Setting and Procedure

**Palestinian health care system in the Gaza Strip:** Ministry of Health (MOH) is the main healthcare provider in the governorates; providing Primary Health Care (PHC), secondary and tertiary services for the entire population. It invests in advanced medical services by referring patients to the neighboring countries, and other private and non-governmental organizations (NGOs) healthcare facilities. United Nations Relief and Work Agency for Palestine Refugees (UNRWA) in the Near East provides PHC services to the refugee population, and invests secondary and tertiary care services when needed. The NGOs sector ranges across missionary hospitals, to facilities supported by international organizations, to community health centers. The private for-profit health sector also provides the three levels of care through a wide range of practices.<sup>25</sup>

**Primary health care services in the Gaza Strip for pregnant women:** The five main healthcare providers in Palestine includes the Ministry of Health, UNRWA in the Near East, NGOs, Palestinian Military Medical Services (PMMS) and the Private sector. However, it is the primary responsibility of MOH to provide these healthcare services. In the Gaza Strip, there are 163 primary healthcare centers run by four main providers: 54 Government primary healthcare centers, 21 primary health care centers maintained by the UNRWA, 81 primary healthcare centers run by NGOs and 7 primary healthcare centers under the supervision of PMMS.<sup>26</sup> MOH is the main healthcare provider in the Gaza Strip; providing PHC, secondary and tertiary healthcare services for the entire population. It maintains advanced medical services by referring patients to the neighboring countries, and other private and NGO-based healthcare facilities. United Nations Relief and Work Agency for Palestine Refugees in the Near East (UNRWA) provides PHC services to the refugee population, and purchases secondary and tertiary care services when needed. The NGO sector ranges across missionary hospitals, to facilities supported by international organizations, to community healthcare centers. The private for-profit health sector also provides the three levels of care through a wide range of practices.<sup>26</sup>

Pregnant women were randomly selected from both governmental and UNRWA primary healthcare centers in the

Gaza Strip during their visit to the prenatal clinics for a medical follow-up on all the weekdays except Friday. Participants were selected using systematic sampling method and every third woman was included in the study, taking into consideration, that the first one was selected randomly. To ensure equal participation in the study for pregnant women, the researcher collected data towards the beginning of the month (day 1, 2, 3), middle of the month (day 14, 15, 16), and at the end of the month (day 27, 28, 29). An official approval to conduct the study was taken from the Helsinki Committee, UNRWA Health Department, and the Ministry of Health. In addition, an informed written consent from each woman was obtained, which included the statements of women who agreed to participate in the study including the purpose of the study, confidentiality information and some instructions, such as the right to withdraw or refuse to participate in the study. The data was collected while the women were waiting for their medical examination in different clinics in the period from December 2015 to October 2016.

### Statistical Analysis

Statistical analysis was carried out using the SPSS program version 20. Continuous variables were presented as means and standard deviations, and categorical variables were expressed as frequencies and percentage. In addition, the independent *t*-test was performed to compare the mean of anxiety and depression and the type of clinics. One-way ANOVA and Turkey significant differences tests were used for data analysis. Pearson correlation test was performed to establish the correlation between anxiety and depression. A *p*-value  $\leq 0.05$  was considered statistically significant.

## RESULTS

### Socio Demographic Characteristic for Study Samples

The sample consisted of 400 women attending primary healthcare centers for prenatal care. With respect to age groups, 37.3% of the women were less than 25 years old, 48.5% were between 25 and 35 years old, and 14.3% were aged between 36 years and more. On the basis of educational qualification, 37.3% of those affected finished secondary school and 30.8% finished their university education and more. With regards to clinic type for medical examination, 60% of the participants attended Government clinics (MOH) and 40% attended UNRWA in the Near East clinic. On the basis of monthly income, 77.3% of the sample population had a monthly income less than \$450, 12.0% had an income between \$451-\$600, for 7.0% it was between \$601-\$800, for 3.3% between \$801-\$1050, and only for 0.5% it was more than \$1051.

### Depression Symptoms in Pregnant Women

The most common symptoms of depression observed were: making decisions (10.5%), being satisfied out of things as used to (7%), stating that "my appetite is no worse than usual" (7%), while the least commonly observed symptoms were thoughts of

**Table 1: Sociodemographic Characteristics of the Study Sample (N=400).**

Item	N	%
<b>Age</b>		
Less than 25 years	149	37.3
26 to less than 35 years	194	48.5
more than 36 years	57	14.3
<b>Education of women</b>		
Less than secondary	75	18.9
Secondary	149	37.3
Diploma	52	13
University and above	1124	30.8
<b>Educational qualification for the husband</b>		
Less than secondary	93	23.3
Secondary	141	35.3
Diploma	42	10.5
University and above	104	26
<b>Place of residence</b>		
City	237	59.3
Camp	121	30.3
Village	29	7.3
Other	13	3.3
<b>Clinic type</b>		
Government	240	60
United Nations Relief and Work Agency for Palestine Refugees in the Near East	160	40
<b>Number of children</b>		
Less than 4	146	36.5
5-7	138	34.5
8 and above	116	29
<b>Monthly income</b>		
Less than \$ 450	309	77.3
\$451- \$600	48	12
\$601-\$800	28	7
\$ 801-\$1050	13	3.3
More than \$1051	2	0.5

killing self (2%), working as usual (2%), and failure (1.3%).

**Prevalence of Depression**

As shown in Table 2, 25% of the women did not report depression, 23.3% showed mild symptoms, 33.3% showed moderate symptoms, and 18.5% had a more severe form of depression. Using the Beck depression scale, mean depression scores ranged between 0 to 34, and the mean depression was 9.29 (*SD*=6.6).

**Depression and Sociodemographic Variables**

In order to examine the differences in depression among pregnant women on the basis of sociodemographic variables such as place of care, age, place of residence, number of children, education, and monthly income, independent *t* and One-way ANOVA tests were performed. The study showed that women who at-

tended UNRWA clinics reported higher incidence of depression (Mean=10.60, *SD*=6.45) than those who attended governmental clinics (mean = 8.43, *SD*=6.78) (*t* (400)=3.21, *p*<0.001).

Uneducated women reported a greater incidence of depression relative to the other groups (*F* (7,399)=5.40, *p*=0.001). Women living in refugee camps were comparatively more depressed than those living in a city or a village (*F* (3, 399)=8.14, *p*=0.001), women with more than 8 children were more depressed (mean=11.19, *SD*=6.6) than those with 5-7 children (mean=9.22, *SD*=6.34), and 4 and less number of children (mean=7.86, *SD*=6.63) (*F*(2, 399)=8.37, *p*=0.001). (Provide means and standard deviations).

**Prevalence of Anxiety**

The Table 3 showed that 77% of the participants showed mild

**Table 2:** Prevalence of Depression in the Study Sample (N=400).

Depression	N	%
No depression	100	25
Mild depression	93	23.3
Moderate depression	133	33.3

symptoms of the condition, 14.3% had moderate, and 8.8% had a severe form of anxiety. Using the Hamilton anxiety scale, the mean anxiety ranged from 0 to 56, while the mean was recorded as 12.94 (*SD*=8.71).

**Anxiety and Sociodemographic Variables**

Post-hoc analysis using the Tukey test showed that women with more than 8 children showed more anxiety symptoms (mean=13.84, *SD*=8.19) than those with 5-7 children (mean=12.98, *SD*=9.04) and 4 and less number of children (mean=11.03, *SD*=8.19) (*F*(2, 399)=3.87, *p*=0.02).

The study showed that women who attended UNRWA clinics reported greater anxiety (Mean=13.54, *SD*=8.15) than those who attended governmental clinics (Mean=11.54, *SD*=8.94) (*t*(400)=3.21, *p*<0.001). However, there were no significant differences in total anxiety with respect to the age of women, place of residence, education, and family monthly income.

**Co-morbidity of Depression Anxiety among Pregnant Women**

In order to examine both depression and anxiety, total scores of anxiety were recorded as 25 and above for anxiety), 24 and less for no anxiety, total scores of depression were recorded as <16 in depression and 15 and less for no depression. The results

showed that 6.3% of women had comorbid depression and anxiety (Table 4).

**Correlation between Depression and Anxiety**

Pearson correlation test was performed to establish the relationship between depression and anxiety. Correlations were reported with the degrees of freedom (which is N-2), total depression and anxiety were strongly correlated (*r* (400)=0.49, *p*<0.01) (Table 5).

**DISCUSSION**

Our study aimed to investigate the prevalence rate of depression and anxiety among Palestinian pregnant women attending primary healthcare centers in the Gaza Strip.

The findings of our study showed that one third of the women reported moderate depression and 8.8% reported severe anxiety. This study showed that 6.3% of the affected women experiences comorbid depression and anxiety. The reported findings were less relative to the observations in another study conducted on pregnant women in an urban community in Pakistan which reported that 18% of the women were anxious and/or depressed. Psychological distress was associated with the unemployment of the husband, lower household wealth, having 10 or more years of formal education.<sup>15</sup> Other studies indicated higher

**Table 3:** Prevalence of Anxiety in the Study Sample (N=400).

Anxiety	N	%
Mild anxiety	308	77
Moderate anxiety	57	14.3
Severe Anxiety	35	8.8

**Table 4:** Comorbidity of Depression Anxiety among Pregnant Women.

	No	%
No depression of anxiety	316	79.0
Either depression or anxiety	59	14.8
Comorbid depression and anxiety	25	6.3

**Table 5:** Correlation between Depression and Anxiety.

	Anxiety
Depression	0.49**

\**p*<0.05, \*\**p*<0.01, \*\*\**p*<0.001

rates of depression and anxiety in pregnant women in southeastern Michigan (USA).<sup>5</sup> The rate of anxiety in pregnant women in the present study was less than that found in a cross-sectional study carried out at the Changchun Gynecology and Obstetrics Hospital, Changchun, Jilin Province, China which showed that the prevalence of antenatal anxiety was 20.6% (96 of 467), antenatal anxiety showed a significant relationship with level of education when lower than middle school, expected natural delivery, anemia during pregnancy, pregnancy-induced hypertension syndrome, disharmony in family relationship and satisfaction with life. Our results were inconsistent with the study of Chinese pregnant women recruited in Zhoushan Pregnant Women Cohort, China at the Zhoushan Maternal and Child Care Hospital from 2011 to 2015. The prevalence rates were 35.64, 24.23, and 26.24% for depression and 22.57, 17.41, and 21.04% for anxiety at 1<sup>st</sup> (T1), 2<sup>nd</sup> (T2), and 3<sup>rd</sup> trimester (T3), respectively.<sup>27</sup> The results of our study were consistent with the findings of the study of the lifetime diagnosis of anxiety, depression, and current depression in 402 pregnant women in USA. The results showed that the prevalence of lifetime diagnosed anxiety and depression was 13.6% and 11.3%, respectively, whereas 10.6% reported current depression.<sup>28</sup> The findings of our study showed that pregnant women reported a high rate of depression which was supported by the findings of other studies that women who live in conditions of social and economic adversity, may be at an increased risk of depression during the perinatal period.<sup>28,29</sup> Similarly, another study described the prevalence of depression, anxiety, pharmaceutical treatment, and help-seeking behaviors among a multiethnic population of women with recent live births in Hawaii. Seven point three percentage of the pregnant women reported visiting a healthcare worker for a check-up or for treatment of depression or anxiety in the year before their most recent pregnancy, 4.9 % reported having experienced depression 3 months before pregnancy, 5.9% reported to have experienced anxiety in the same period, 9.1% screened positive for postpartum depression, and 6.9% consulted a doctor, nurse, and a healthcare worker seeking medical help for postpartum anxiety.<sup>30</sup>

Moreover, our results reported a lower rate of depression relative to a cross-sectional study at the Hanover Park Midwife Obstetric Unit (MOU), in Cape Town, South Africa.<sup>31</sup> Furthermore, the results of our study were consistent with the findings of the study reporting the prevalence of anxiety and depression during pregnancy among in Tuanku Bainun Hospital, Ipoh, Malaysia.<sup>17</sup> Our findings indicated lesser anxiety levels in a study of 660 English-speaking pregnant women in the City of Vancouver, Canada.<sup>18</sup> Other studies indicated higher rates of incidence of depressive episodes.<sup>32</sup>

The study observed that there were no reported differences in depression and anxiety due to age; this could be due to the emotional state being impacted by different age groups, but to varying degrees, and all pregnant women were being exposed to physical, hormonal and emotional changes during pregnancy and mostly when the participant's age was less than 35 years The

study showed that there were no differences in the symptoms of anxiety due to age.<sup>13</sup> Our study showed that there was a correlation between depression and anxiety which was inconsistent with the findings of a similar study conducted which showed no significant relationship between depression and anxiety, and the age of pregnant women.<sup>13</sup>

The study showed that the women who attended UNRWA clinics (mainly refugee women) reported more depression and anxiety than those pregnant women attending governmental clinics (Citizen Women-Ministry of Health). Such findings could be explained understanding that refugee women attending UNRWA were living in refugee camps experiencing a higher rate of unemployment and poverty.<sup>14</sup> Women living in refugee camps reportedly experienced more symptoms of depression than those living in a city or a village while, women with more than 8 children in the family were more affected by depression than those having less number of children. Such findings were inconsistent with the observations made in other related studies which showed that psychological problems were significantly higher in women living in villages than in cities.<sup>33</sup>

## CONCLUSION

This study presented a strong evidence that pregnant Palestinian women, like other women in different regions, experienced depression and anxiety which must draw the attention of service providers to related problems to help find solutions. This study found that women living in refugee camps, and having more than 8 children were at an increasing risk of developing depression and anxiety.

## CLINICAL IMPLICATIONS

The findings of our study highlighted on a higher level of depression in pregnant women to introduce a new screening program for the early diagnosis of mental health problems in women attending primary healthcare centers in the Gaza Strip. We recommend establishing counseling programs for such target groups within the centers providing psychosocial support to women with mental health problems. Also, there is a need for introducing training courses addressing mental health issues for staff working in the centers or for the early detection of mental health problems in such target groups. Women with severe mental health problems should be provided a clear and effective referral system for more specialized psychiatric clinics, for their treatment. Empowering women in the Palestinian society may be a factor contributing towards the prevention of psychological problems.

According to the results and limitations of the present study, the researcher recommends the study of other risk and protective factors among pregnant women. A research evaluating the benefit of counseling in clinics for pregnant women with depression and anxiety would help focus on the outcome of the intervention.

**STRENGTHS AND LIMITATIONS OF THE STUDY**

A major strength of this study is that it adds to the knowledge of prenatal depression and anxiety in primary healthcare centers in the Gaza Strip. This paper also presents data on multiple psychosocial and sociodemographic factors associated with depression and anxiety in a large sample of pregnant women in the Gaza Strip. These findings may contribute to the emerging literature on the risk factors for pregnant women in Gaza Strip. There are a number of limitations to this study. The study was designed as a primary healthcare-based study; however women affected by more severe psychopathological conditions may have been missed if they were unwilling or unable to attend the clinic. Given that this was a cross-sectional study, we were not able to measure a change in depression and anxiety over the trimesters. The use of self-report measures to collect data such as ownership of assets and income may have yielded data that could not be verified or that was subject to recall bias.

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**CONFLICTS OF INTEREST**

The authors declare no conflicts of interest.

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