

# Socio-demographic correlates of postpartum psychological distress among apparently healthy mothers in two tertiary hospitals in Enugu, South-East Nigeria

Paul Odinka<sup>1</sup>, Jaclyn Odinka<sup>2</sup>, Mark Ezeme<sup>3</sup>, Appolos Ndukuba<sup>1</sup>, Kennedy Amadi<sup>1</sup>, Rosemary Muomah<sup>1</sup>, Stanley Nwoha<sup>4</sup>, Ujunwa Nduanya<sup>5</sup>

1. Department of Psychological Medicine, University of Nigeria Enugu Campus.
2. Social Sciences Unit, School of General Studies, University of Nigeria Nsukka.
3. Department of Psychiatry, ESUT Teaching Hospital (Parklane) Enugu.
4. Department of Medicine, Nnamdi Azikiwe University Teaching Hospital, Nnewi.
5. Department of Psychological Medicine, University of Nigeria Teaching Hospital, Ituku-Ozalla, Enugu.

## Abstract

**Background:** Postpartum depression and anxiety could cause poor mother-infant relationship that could impair infant growth and cognitive development. Psychiatric assessment has not been part of periodic evaluations in postnatal clinics. Some apparently well, but high-risk mothers continue to live with psychological distress, without treatment to relieve their burden.

**Objectives:** The study assessed the prevalence of postpartum anxiety and depression, their co-morbidity, and socio-demographic predictors, within 6 - 14 weeks postpartum among nursing mothers in two tertiary hospitals in Enugu, South-East Nigeria.

**Methods:** A cross-sectional study that was carried out at the postnatal and children's welfare clinics of two tertiary hospitals in Enugu, South-East Nigeria. Hospital Anxiety and Depression Scale, Social Support Scale and Socio-demographic Questionnaire were used for the study. Correlations and multiple regressions were used to test for associations and risk factors.

**Results:** Occurrence rate for anxiety and depression were 30.1% and 33.3% respectively with a co-morbidity rate of 22%. Low social support and multigravida predicted risk factors for postpartum psychological distress, while a higher number of children alive predicted a decrease in the risk for postpartum psychological distress.

**Conclusion:** The study supports service planning and the development of strategies to reliably identify women at high-risk, for effective treatment.

**Keywords:** Postpartum Psychological Distress, Socio-demographic, Correlates, Apparently Healthy, Mothers, South-East Nigeria.

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## Introduction

Childbirth apart from being a major life event,<sup>1</sup> can be associated with feelings of excitement, anticipation, and joy in most cultures.<sup>2</sup> It also marks a period of change

and adaptation that can result in emotional crisis,<sup>3</sup> as the nursing mother tries to meet the needs of her baby, the family, adjusting to the changes in her sleep pattern, and to recover from the process and changes associated with delivery.<sup>4</sup> These developmental and transitional challenges are frequently more stressful in bringing about more marked changes to roles, relationships, lifestyles, and family routine than any other single life event.<sup>3</sup> The new challenges may combine with, or exacerbate existing stress that can lead to psychological distress.<sup>5</sup>

### Corresponding author:

Paul Odinka,  
Department of Psychological  
Medicine, University of Nigeria Enugu Campus  
Email: paul.odinka@unn.edu.ng

Psychological distress is mostly defined as a state of emotional suffering characterised by symptoms of depression and anxiety.<sup>6</sup> It could be viewed as an emotional disturbance that may impact on the social functioning and day-to-day living of individuals,<sup>7</sup> Postpartum psychological distress affects the health of the mother and her newborn, as well as her relationship within the household. The disturbances of mother-infant relationship, have been implicated in poor infant growth and cognitive development,<sup>8</sup> poorer adherence to recommended immunisation schedules,<sup>9</sup> and heightened the risk of insecure attachment and child behavioural problems.<sup>10,11</sup>

Postpartum depression (PPD) can develop at any point within the first year of postpartum, with a peak of incidence in the first four months following birth.<sup>12,13</sup> PPD and Postpartum anxiety (PPA) affect approximately 35.4% and 15% of mothers respectively in Western societies,<sup>14,15</sup> while a range of 2% to 13% was reported for co-morbidity.<sup>16,17</sup> A prevalence of 23% to 31% was reported for PPD in Enugu,<sup>18,19</sup> while 38% and 10% was reported for PPD and PPA respectively in South-West, Nigeria.<sup>20</sup>

In the Western societies, high parity is associated with increased risk to PPD and PPA;<sup>21</sup> however, Reck et al., (2008),<sup>16</sup> observed no differences between the number of children and the risk to PPA and PPD. In Igbo culture, where marriage is patrilineal, one would expect a different outcome, as the position of a wife in her husband's family remains shaky and unpredictable until she begets children, especially a male, who will in the future inherit the land to keep the family name.<sup>22</sup> Children are seen as the effective vindication of womanhood.<sup>22</sup>

The causes of postpartum psychological distress could be grouped into biological, social, and psychological factors, and these factors usually contribute to postpartum psychological distress in different proportions,<sup>23</sup> depending on vulnerabilities or predispositions. Some socio-demographic factors such as low socioeconomic status, low educational attainment, low social or partner support,<sup>24</sup> female gender, being single,<sup>25,26</sup> long duration of marriage,<sup>27</sup> and older age,<sup>16,25,28</sup> have been associated with postpartum psychological distress. However, some previous studies had also reported that educational attainment, employment status, and area of residence did not correlate with postpartum psychological distress.<sup>12,29</sup>

While low family income and lack of emotional support are probably risk factors,<sup>30</sup> higher education, having employment, and receiving postpartum care have been identified as protective factors.<sup>16,31</sup> Social support may have a more substantial role in the aetiology of postpartum psychological distress than poverty-related issues.<sup>26,32</sup> Nursing mothers with strong social support would have a lower probability of developing postpartum psychological distress compared to those with weak social support<sup>33</sup> since they can readily turn to family and friends for support.<sup>32</sup> And this is similar to “Omugwo” in Igbo culture. “Omugwo” is an Igbo cultural practice, in which the mother of the nursing mother, or her delegate, comes to stay with her in the early postpartum period. She takes care of the nursing mother, the baby, and help in the household chores, as well as teaching the nursing mother about baby-care.

The burden of psychological distress may be more in low and middle-income countries (LMIC) when compared with high resource countries.<sup>31</sup> Despite available evidence suggesting that women may be at higher risk for postpartum anxiety (PPA), compared to postpartum depression (PPD),<sup>34</sup> and in some cases, with symptoms of depression and anxiety often co-occurring in postpartum psychological distress, barely adequate attention has focused on PPA.<sup>10</sup>

There is a shortage of literature on the prevalence of PPD and PPA, and their socio-demographic correlates in Nigeria, with a few attempts focused on the mothers residing in South-West Nigeria; occupied predominantly by the Yoruba, one of the three major ethnic groups in Nigeria.<sup>20,35</sup> The ethnic and cultural differences may affect patterns of causation, presentations and the interpretations of psychological distress,<sup>36,37</sup> hence a need for this study. This study aimed to investigate the occurrence rate of PPD and PPA, and their socio-demographic correlates in apparently healthy mothers in two tertiary hospitals in Enugu.

## Methods

### Study setting

The study was a cross-sectional study that was carried out in two tertiary hospitals in Enugu, Enugu State, South-East Nigeria. Both hospitals provide medical services to residents of Enugu state, and also receive referrals from all the five South-Eastern states and beyond. Enugu State

has a population of 3.3 million people of whom 95% are Igbo. Enugu, apart from being the capital of Enugu State, is also a quasi-regional capital. The South-East is one of the six geopolitical zones in Nigeria. People of Igbo ethnic group, one of the three largest and most influential ethnic groups in Nigeria, primarily inhabit it. The Igbo people in Nigeria, who are predominantly Christians, constitute 18% of the total population of 170 million.<sup>38</sup>

### **Ethical approval**

Approval for the study was obtained from the Research Ethics Committee of the College of Medicine, University of Nigeria, Ituku-Ozalla Campus, Enugu. A written informed consent was sought and obtained from mothers before the study instruments were administered.

### **Inclusion/Exclusion Criteria**

All the women, between the ages of 18 and above, whose babies were delivered from the gestational age of 36 weeks to term, were included in the study. Also, all women with conditions that might decrease the reliability of the assessment of PPA and PPD, such as obstetric factors, any severe medical illness, a history of psychiatric disorders, and recent traumatic life events, were excluded from the study to reduce confounding factors.

### **Participants and sampling method**

All the nursing mothers who came for follow-ups and immunisation for children, at the postnatal clinics and Children's welfare clinics of the two hospitals, between November and December 2015 formed the sampling frame. A sample size of 303 participants was taken as adequate based on a prevalence of 23%,<sup>18</sup> using Cochran's sample size formula for proportions.<sup>39</sup> The assessment was done from 6th to 14<sup>th</sup> weeks postpartum (the period from the 2nd to the 4<sup>th</sup> round of immunisation in Nigeria), since the highest prevalence has been observed within this time.<sup>15</sup>

With the help of the outpatients' attendance list, randomisation table was used to select a total of 334 women for preliminary interviews to confirm the inclusion/exclusion criteria. Eleven women withdrew or did not give their consent for the study, or had poorly completed questionnaires, while 14 mothers were excluded based on the inclusion/exclusion criteria. The mothers were first

given a complete description of the study by one of the researchers before they completed the questionnaires.

### **Instruments**

#### **Socio-demographic questionnaire**

Socio-demographic Questionnaire was used to collect socio-demographic data such as age, educational attainment, area of residence, ethnicity, religion, marital status, number of pregnancy, number of deliveries, number of children alive, occupations and employment status, and duration of the marriage.

#### **Hospital anxiety and depression Scale (HADS)**

HADS is a screening tool, designed as a brief self-report measure.<sup>40</sup> It was designed to minimise the symptoms that might be ascribed to somatic disorders such as dizziness, insomnia, and fatigue while being able to detect individuals at higher risk for depression and anxiety.<sup>41</sup> Hence, the instrument could be used in a non-psychiatric setting.<sup>40</sup> It has some positive qualities, including brevity and easiness of use, excellent reliability, and validity as well as efficiency in screening and case-finding.<sup>42</sup> It consists of seven items each for depression and anxiety. Scores are rated on a four-point Likert Scale ranging from 0 to 3, with 21 as the highest score. A cut-off point of 11 and above in either or both of the anxiety and depressive subscales indicates depression and anxiety disorder based on the DSM-IV and ICD-10 diagnostic criteria. HADS has been validated in many countries including Nigeria.<sup>43</sup>

#### **The Oslo 3-item Social Support Scale (OSS-3)**

The Oslo 3-item Social Support Scale (OSS-3) was developed in 1996 by Dalgard.<sup>44,45</sup> It includes the following questions: How many people that you are close to can you count on if you have a big personal problem? How much interest do people show in what you do? And How easy is it to get practical help from neighbours? The total score is calculated based on responses to all three questions. The overall score is calculated by adding up the raw scores for each item. The sum of the raw scores has a range from 3-14. A score ranging between 3 and 8 is classified as poor support, a score between 9 and 11 as intermediate support, and a score between 12 and 14 as strong support.<sup>45</sup>

The scale was included in a set of recommended common instruments in the EUROHIS project.<sup>46</sup> OSS-3 has been validated in many countries, and Nigeria is one of them.<sup>47</sup>

## Data analysis

The raw data were keyed into Epidata software version 3.1 (The EpiData Association, Odense, Denmark) for storage, and was later transported to Statistical Package for the Social Sciences (SPSS) version 20.0 (IBM, USA) for analysis. Frequency distribution of the socio-demographic characteristics of the nursing mothers, PPD and PPA were ascertained. Since all the continuous variables, as assessed by Shapiro-Wilk test of normality, did not have a Gaussian distribution, Spearman's correlations were performed to test the correlations between socio-demo-

graphic data of the nursing mothers, and the PPD and PPA respectively. A multiple linear regression analysis was conducted to determine the socio-demographic predictors of PPD and PPA. All statistical tests were two-sided and were performed at a significant level of 0.05.

## Results

The age range of mothers was 20 – 46 years; mean, and S.D. was  $29.65 \pm 4.87$ . Mothers within the age range of 25 – 34 years constituted 73.8% (228) of the respondents (See Table 1).

**Table 1: Distribution of mothers according to age at contact, duration of the marriage, age mother had her first baby, number of pregnancy, number of deliveries, number of children alive, number of males alive, and number of females alive**

	Frequency	Percent	Mean	SD	Median	Mode
<b>Age Range at Contact (years)</b>						
20 - 24	42	13.6	29.65	$\pm 4.87$	30.00	30
25 - 29	112	36.2				
30 - 34	116	37.5				
35 - 39	26	8.4				
40 - 44	10	3.2				
45 - 46	3	1.0				
<b>Duration of the Marriage</b>						
3	170	55.0	4.17	$\pm 3.920$	3.00	1
$\geq 4$	139	45.0				
<b>Age Mother had her First Baby</b>						
26	170	55.0	26.00	$\pm 3.83$	26.00	27
$\geq 27$	139	45.0				
<b>Number of Pregnancy</b>						
226.20	Student	56	18.10			
<b>Religion</b>						
	Christianity	308	99.70			
	Muslim	1	.30			
<b>Ethnicity</b>						
	Igbo	306	99.00			
	Others	3	1.00			
<b>Occupation*</b>						
	Professionals with university degree	128	41.40			
	Professionals without university degree	21	6.80			
	Skilled labor/business	6	1.90			
	Semiskilled labor/business	18	5.80			
	Unskilled labor/business	3	1.00			
	Unemployed/Housewife	80	25.90			
	Student	53	17.20			
<b>Perceive Social Support</b>						
	Poor Perceived Social Support	122	39.5			
	Intermediate Perceived Social Support	100	32.4			
	Strong Perceived Social Support	87	28.2			

\*Adapted from Abiodun, (53)

As shown in Table 2, most of the respondents were graduates with either a university degree or a diploma (74.1%), and all the respondents went beyond the primary educa-

tion with 1.6% of them dropping out of secondary school (second six years in school). The number of mothers that had PPD was 103 (33.3%), while 93 (30.1%) had PPA, with a co-morbidity rate of 22%.

**Table 2: Distribution of mothers according to marital status, educational status, area of residence, employment status, religion, ethnicity and occupational status, and perceived social support.**

Variables	N	%
<b>Marital Status</b>		
Married	300	97.10
Divorced/Separated	2	0.60
Single	7	2.30
<b>Educational attainment</b>		
Secondary school completed	30	9.70
Secondary school not completed	5	1.60
Tertiary education completed	229	74.10
Tertiary education not completed	45	14.60
<b>Area of Residence</b>		
Urban Area	285	92.20
Rural Area	24	7.80
<b>Employment Status</b>		
Employed	172	55.70
Unemployed/housewife	81	26.20
Student	56	18.10
<b>Religion</b>		
Christianity	308	99.70
Muslim	1	.30
<b>Ethnicity</b>		
Igbo	306	99.00
Others	3	1.00
<b>Occupation*</b>		
Professionals with university degree	128	41.40
Professionals without university degree	21	6.80
Skilled labor/business	6	1.90
Semiskilled labor/business	18	5.80
Unskilled labor/business	3	1.00
Unemployed/Housewife	80	25.90
Student	53	17.20
<b>Perceive Social Support</b>		
Poor Perceived Social Support	122	39.5
Intermediate Perceived Social Support	100	32.4
Strong Perceived Social Support	87	28.2

\*Adapted from Abiodun, (53)

There was a moderate negative correlation between the total score on OSS-3 and the overall score on HADS, (subscales for anxiety),  $r_s = -0.400$ ,  $p < 0.05$ ; where  $r$  are the degrees of freedom, obtained from the "Sig.

(2-tailed)" row (See Table 3). There was a moderate negative correlation between the total score on OSS-3 and the overall score on HADS, (subscales for depression),  $r_s = -0.415$ ,  $p < 0.05$ ; where  $r$  are the degrees of freedom, obtained from the "Sig. (2-tailed)" row (See Table 3).

**Table 3: Correlations between postpartum anxiety, depression and socio-demographic factors**

<b>Postpartum Anxiety</b>								
	Postpartum Anxiety	Mother's Age	Duration of Marriage	Number of Pregnancies	Number of Deliveries	Children Alive	Marital Status	Social Support
<b>Postpartum Anxiety</b>								
<b>Mother's Age</b>	.080							
<b>Duration of Marriage</b>	.098	.593**						
<b>Number of Pregnancies</b>	.171**	.558**	.880**					
<b>Number Of Deliveries</b>	.126*	.509**	.889**	.927**				
<b>Number of Children Alive</b>	.114*	.503**	.885**	.917**	.988**			
<b>Marital Status</b>	.179**	-.147**	-.159**	-.103	-.087	-.089		
<b>Social Support</b>	-.400**	-.262**	-.303**	-.387**	-.352**	-.353**	-.179**	
<i>Note: * = Correlation is significant at the <math>p &lt; .05</math> level (2-tailed); ** = Correlation is significant at the <math>p &lt; .01</math> level (2-tailed).</i>								
<b>Postpartum Depression</b>								
	Postpartum Depression	Mother's Age	Duration of Marriage	Number of Pregnancies	Number of Deliveries	Children Alive	Marital Status	Social Support
<b>Postpartum Depression</b>								
<b>Mother's Age</b>	.129*							
<b>Duration of Marriage</b>	.152**	.593**						
<b>Number of Pregnancies</b>	.189**	.558**	.880**					
<b>Number of Deliveries</b>	.146*	.509**	.889**	.927**				
<b>Number of Children Alive</b>	.148**	.503**	.885**	.917**	.988**			
<b>Marital Status</b>	.064	-.147**	-.159**	-.103	-.087	-.089		
<b>Social Support</b>	-.415**	-.262**	-.303**	-.387**	-.352**	-.353**	-.179**	
<i>Note: * = Correlation is significant at the <math>p &lt; .05</math> level (2-tailed); ** = Correlation is significant at the <math>p &lt; .01</math> level (2-tailed).</i>								

A multiple regression was run to predict the total value of the scores of HADS, (for anxiety and depression subscales respectively), from the total value of the scores of marital status, number of pregnancies, number of children alive and OSS-3 (anxiety subscales) on one hand, and mother's age, duration of marriage, number of pregnancies, number of children alive and OSS-3 (depression subscales) on the other hand.

There was linearity as assessed by partial regression plots and a plot of studentized residuals against the predicted values for the two subscales. There was independence of residuals, as assessed by a Durbin-Watson statistic of 2.10. There was homoscedasticity, as assessed by visual inspection of a plot of studentized residuals versus unstandardized predicted values. There was no evidence of multicollinearity, as assessed by tolerance values greater than 0.1. There were no studentized deleted residuals greater than  $\pm 3$  standard deviations, no leverage values greater than 0.2, and values for Cook's distance above 1. The assumption of normality was met, as assessed by Q-Q Plot.

For the anxiety subscales, it was found that the total number of pregnancies and OSS-3 scores explained a significant amount of the variance in the value of total HADS (subscales for anxiety) scores. And the multiple regression models statistically significantly predicted postpartum depression, ( $F(4, 304) = 15.307, p < .05, R^2 = .17, R^2 \text{ Adjusted} = .16$ ). Two of the four independent variables, number of pregnancies and OSS-3, added statistically significantly to the prediction, ( $p < 0.05$ ). Regression coefficients and standard errors can be found in Table 4. For the depression subscales, it was found that the total number of pregnancies, number of children alive and OSS-3 scores explained a significant amount of the variance in the value of total HADS (subscales for depression) scores. And the multiple regression models significantly predicted postpartum depression, ( $F(5, 303) = 13.752, p < .05, R^2 = .19, R^2 \text{ Adjusted} = .17$ ). Three of the five independent variables, number of pregnancies, number of children alive and OSS-3, added statistically significantly to the prediction, ( $p < 0.05$ ). Regression coefficients and standard errors can be found in Table 4.

**Table 4: Multiple regression analysis for variables predicting postpartum anxiety and depression from socio-demographic factors**

<b>Postpartum Anxiety Coefficients</b>									
Model	Unstandardized Coefficients		Beta	t	P*	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error				$\beta$	Lower Bound	Upper Bound	Tolerance
Intercept (Constant)	10.948	1.605		6.822	.000	7.790	14.105		
Number of pregnancies	.636	.273	.271	2.331	.020	.099	1.174	.203	4.922
Number of children alive	-.597	.327	-.207	-1.828	.069	-1.240	.046	.214	4.679
Marital status	1.639	.974	.091	1.682	.094	-.278	3.556	.931	1.074
Social Support	-.482	.086	-.326	-5.596	.000	-.652	-.313	.806	1.241

  

<b>Postpartum depression coefficients</b>									
Model	Unstandardized Coefficients		Beta	t	P*	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error				$\beta$	Lower Bound	Upper Bound	Tolerance
Intercept (Constant)	14.584	1.778		8.204	.000	11.085	18.082		
mother's age	-.019	.055	-.024	-.349	.728	-.126	.088	.571	1.750
Duration of marriage	.103	.088	.105	1.171	.242	-.070	.277	.336	2.972
Number of pregnancies	.590	.279	.254	2.110	.036	.040	1.140	.186	5.369
Number of children alive	-.919	.340	-.322	-2.702	.007	-1.588	-.250	.189	5.285
Social Support	-.576	.082	-.394	-7.014	.000	-.737	-.414	.852	1.173

**Note.** \* $p < .05$ ; B = unstandardized regression;  $SE_B$  = standard error of the coefficient;  $\beta$  = standardized coefficient.

## Discussion

The study investigated the occurrence rate of PPD and PPA, and their socio-demographic correlates in apparently healthy mothers in two tertiary hospitals in Enugu, South-East Nigeria. The study observed that 33.3% of the mothers, ostensibly had depression (PPD); while 30.0% of them had anxiety (PPA). Previous studies had also reported high prevalence rates, 35.4% in women in postpartum period using standardised screening instrument<sup>14</sup> and 17.0% in women in the postpartum period (4-12 weeks after childbirth).<sup>48</sup> In Enugu, South-East Nigeria, Chinawa et al. (2016),<sup>18</sup> and Ukaegbe et al., (2012),<sup>19</sup> reported a prevalence of 23% - 31%, while in south-western Nigeria, Fatoye et al., (2006), reported that between 5% and 38% of women suffer from postpartum depression, and approximately 10% develop an anxiety disorder after delivery. We found that 22.0% of the nursing mothers had co-morbid anxiety and depressive symptomatology during the first 14 weeks postpartum. Previous studies had reported prevalence ranging from 2% to 13% of co-morbidity rate for PPD and PPA in the first year.<sup>16,17</sup>

The study observed that nursing mothers with low social support had a higher probability of developing anxiety and depression than those with optimal social support, and this has been reported in previous studies.<sup>33,49</sup> Nursing mothers are more likely to turn to family and friends for support in the first postpartum month,<sup>50</sup> and this is similar to "Omugwo" in Igbo culture.

We observed that the increase in the mother's age, and the duration of marriage correlated mildly with PPD. Prior studies had observed that increases in age were among other risk factors for depression.<sup>16,28</sup> However, McCoy et al., (2006),<sup>12</sup> and Chaaya et al., (2002),<sup>29</sup> reported no association between postpartum depression and age.<sup>29</sup> Also, mother's age and the duration of marriage failed to predict increased risk for PPD. The relationship between marriage duration and postpartum depression may be due to stress that is usually associated with the delays in achieving pregnancy.<sup>27</sup> Though the marital status showed a weak positive correlation with PPA, it failed to predict PPA in regression analysis. Also, marital status showed no correlation with PPD, but previous studies had observed that single mothers were at higher risk for depression.<sup>26</sup> Being multigravid predicted an increased risk of PPA and PPD. Prior studies had suggested that despite a woman's history of successful experience with pregnancy, previous adverse childbirth experiences influence her emotional state,<sup>51,52</sup> which increases the risk for PPA.<sup>53</sup>

An increase in the number of children alive predicted a decreased risk to PPA and PPD; this is in contrast to studies in the Western societies, where multiparity increased the risk to PPA and PPD.<sup>21</sup> The difference could be due to Igbo culture placing a high premium on women begetting children.<sup>22</sup> Reck et al., (2008),<sup>16</sup> observed no differences between the number of children and the risk to PPA and PPD. Also, educational attainment, employment status, and area of residence did not correlate with PPA and PPD, and this was in line with previous studies.<sup>12,29</sup>

## Limitations

The limitations of the study include the cross-sectional design that would not permit any causal relationships to be ascertained. The study included only nursing mothers, who visited the indexed clinics of the study centres; therefore, the study sample was selective rather than representative, and cannot be generalised to the entire population of South-East Nigeria.

## Conclusion

The study observed that symptoms of anxiety and depression were very high (30.1% and 33.3% respectively) within the first 14 weeks among postpartum women, with a co-morbidity of 22%. Low social support and multigravida, predicted postpartum psychological distress, while the number of children alive was able to predict the decrease in the risk for postpartum psychological distress. Most nursing mothers with psychological distress are likely to suffer because of the low detection rate, which makes it most unlikely for them to benefit from the right intervention. There is a need to develop strategies for early detection of women with high-risk of PPD and PPA for the appropriate interventions because of the attendant consequences on the general well-being of the child, the mother, and the family.

## Conflict of interest

None to declare.

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