

# Prevalence and associated risk factors of postpartum depression: a cross sectional study

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## Abstract

**Background:** Postpartum mood disturbance affects up to 85% of women, with most symptoms of this disturbance being temporary and mild. However up to one in seven women experience a persistent type of depression which is associated with major maternal and neonatal morbidity if it is not managed. **Objective:** To estimate the prevalence of postpartum depression and to identify the associated risk factors. **Methods:** A cross sectional study was conducted in randomly selected 3 primary health care centers affiliated to Suez governorate, Egypt. An interviewed questionnaire was used containing potential risk factors for postpartum depression. An Arabic version of the Edinburgh postnatal depression scale (EPDS) was used to screen for postpartum depression symptoms. **Results:** A total of 237 postpartum mothers were included in the study. 139 (58.6%) of the mothers completed secondary level of education, 195 (82.3%) of them were housewives and 181 (76.4%) had cesarean section. The estimated postpartum depression prevalence was 26.6% and suicidal ideation accounted for 4.6%. Factors significantly associated with high EPDS scores were bad relationship with the husband, having >2 children, an unplanned pregnancy and unhealthy newborn; with P-values of 0.000, 0.004, 0.000, and 0.018, respectively. **Discussion:** the prevalence of postpartum depression among Egyptian women is considered slightly high with its negative and long term consequences on the mothers and their children, accordingly screening, proper management & referral to specialist care is highly recommended.

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**Keywords:** Postpartum, depression, risk factors.

## Introduction

Postpartum depression (PPD) is a common health problem that occurs after pregnancy and affects up to 10%-15% of women<sup>1,2</sup>.

PPD is associated with negative effects on the mother-infant relationship and those affected women are more likely to stop breastfeeding early<sup>3</sup>. Children of depressed mothers are more likely to have behavioral problems, failure to thrive, attachment disorder, cognitive delay, emotional and social problems and developmental delay<sup>4</sup>.

Although the cause of postpartum depression is unclear, hormonal, biologic, genetic predisposition, social and psychological factors are considered to be risk factors for all susceptible women<sup>5</sup>.

PPD was classified by the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) as a major depressive disorder that is found during pregnancy or within 4 weeks after delivery<sup>6</sup>. These four weeks may be extended to be within one year postpartum as mentioned by some experts<sup>7</sup>.

The U.S. Preventive Services Task Force (USPSTF) recommends screening postpartum PPD of all women in places with adequate systems to ensure correct diagnosis, effective management and suitable follow-up<sup>8</sup>. There are different screening tests for PPD, the most commonly used validated screening tool for PPD is the 10-item Edinburgh Postnatal Depression Scale (EPDS)<sup>9</sup>.

Mild to moderate PPD can be treated with psychotherapy as a first line, whereas combination therapy is recommended for moderate to severe depression<sup>10</sup>.

## Methods

This cross sectional prospective study was conducted in randomly selected 3 primary health care centers which is affiliated with Suez governorate, Egypt, between May and October 2019.

After oral consent from all the volunteered mothers, the current study recruited 237 women who attended the child vaccination clinic, family planning clinic, or for follow up at 4th to 12th week postpartum and were interviewed face to face by a trained nurse. Females with known mental illness and on treatment or on follow-up in a psychiatric clinic as well as those who gave birth to children with severe illness such as congenital diseases and malformations were excluded.

An Arabic version of EPDS was used to screen for PPD symptoms. EPDS is the most commonly used validated screening tool for postpartum depression and has a sensitivity of 75% to 100% and a specificity of 76% to 97% in English-speaking populations<sup>11</sup>. EPDS consists of 10 questions on the women's feelings over the last seven days. Although 10 is the cutoff score in English-speaking populations for probable depression, scores of more than 12 were the optimum cut-off scores for probable depression as validated in Arabic-speaking cultures<sup>12-14</sup>.

Questions were asked for assessment of possible risk factors of PPD such as age, education, occupation, duration of marriage, bond with the husband, number of children, gender of the newborn, smoking status, planning for pregnancy, obstetric complications, fear of labour, labour complications, newborn complications, type of labour, place of labour, type of anesthesia and infant feeding.

SPSS (20.0) was used for data analysis of this study. For quantitative data, t-test was used. Chi-square test (Fisher's exact test) was used to examine the relation between qualitative variables and  $P < 0.05$  was considered statistically significant.

## Results

A total of 237 postpartum women who completed the socio-demographic and obstetric variables section and the EPDS questionnaire were included in our study. The mean age was 27.9 years (SD = 5.9), ranging from 17 to 45 years. 139 (58.6%), or more



than half of the mothers completed either elementary or secondary level of education, 34 (14.3%) achieved higher education, 56 (23.6%) could read and write, and only 8 (3.4%) were illiterate. 195 (82.3%), the majority of the mothers were housewives, and 148 (62.4%) of the mothers fell under the category of passive second-hand smokers with none being an active smoker. 159 (67.1%) of the mothers had  $\leq 2$  children. Regarding the sex of children in the family 80 (33.8%) of the mothers had boys only, 55 (23.2%) had girls only, 102 (43.0%) had both gender. Few of the mothers reported that their pregnancies were unplanned pregnancies 31 (13.1%). Fifty six (23.6%) of the mothers reported health problems during pregnancy. Out of 237 women, 181 (76.4%) had cesarean section and 56 (23.6%) had normal vaginal delivery. The estimated PPD prevalence in our study was 26.6% and suicidal ideation accounted for 4.6% (Table 1).

Young mothers were less likely to have depressive symptoms. Mean  $\pm$  SD age of depressed women was  $30.5 \pm 6.5$  while non depressed mothers were  $26.9 \pm 5.5$  with a p value of 0.000. Years of marriage had no significant effect on EPDS scores; depressed mothers were married for 6.61 years ( $\pm 5.52$ ) whereas non-depressed were married 5.28 ( $\pm 4.44$ ) with a p value of 0.057 (Table 2).

Factors significantly associated with high EPDS scores were a poor relationship with the husband, having more than 2 children, unplanned pregnancies and unhealthy newborns, with P-values of 0.000, 0.004, 0.000, and 0.018, respectively. Factors not significantly influencing EPDS scores were educational level, maternal occupation, infant gender, smoking status, obstetric health problems, type of labour, whether received anesthesia, fear of labour, and infant feeding, with p-values of 0.517, 0.275, 0.573, 0.310, 0.077, 0.836, 0.067, 0.094, 0.335 and 0.602, respectively (Table 3).

## Discussion

Prevalence of PPD has a very wide range worldwide. This was clearly shown in a review by Siti *et al.* who found that the prevalence of PPD ranged from 4.0%-63.9% with Japan and America recording the lowest and highest rates of PPD respectively<sup>15</sup>. This finding is consistent with an earlier finding of a review of 143 studies across 40 countries that identified that the prevalence of PPD ranged from 0-60%<sup>16</sup>.

The findings of the current study demonstrated the estimated prevalence of PPD is 26.6% which is higher than figures reported by other studies in western countries as in Canada and United Kingdom were 10%-15% and 12.8% respectively<sup>17,18</sup>. A Meta analysis by O'Hara & Swain included 59 studies from North America, Europe, and Australasia scored an overall prevalence rate of PPD of 13%<sup>19</sup>.

On the other hand most of studies conducted in Arab countries recorded a higher prevalence of PPD than in more developed countries. The estimated PPD prevalence in Lebanon is 21%<sup>20</sup>, United Arab Emirates (UAE) 22%<sup>21</sup>, Tunisia 19.2%<sup>22</sup>, Jordan 22%<sup>23</sup>, Saudi Arabia 33.2%<sup>24</sup>, Bahrain 37.1%<sup>25</sup>, and Oman 10%<sup>14</sup>. The reasons for the wide range of prevalence may be explained by many reasons such as cross-cultural differences<sup>26</sup>, the way in which women understand and interpret items in the EPDS, postpartum time of screening and cutoff scores for screening.

In the current study older women were at a higher risk of depression than younger women, which is similar to previous studies stating advanced and very young maternal age are risk factors for PPD<sup>24,27,28</sup>. This finding varies from results reported in many previous studies<sup>29</sup>, such as by Stowe *et al.* showing mothers between the ages of 15 and 19 years had more risk for PPD<sup>30</sup>.

**Table 1.** General characteristics of the participants

		N (%)
Marital status	Married	231 (97.5)
	Widowed	4 (1.7)
	Divorced	2 (0.8)
Spousal Relationship	Good quality	226 (95.4)
	Poor quality	11 (4.6)
Educational level	Higher education	34 (14.3)
	Secondary schooling	139 (58.6)
	Can read and write	56 (23.6)
	Illiterate	8 (3.4)
Occupation	House-wife	195 (82.3)
	Working	42 (17.7)
	Neither	89 (37.6)
Number of children	$\leq 2$	159 (67.1)
	$> 2$	78 (32.9)
Sex of children	Males	80 (33.8)
	Females	55 (23.2)
	Both	102 (43.0)
Passive smoking	Yes	148 (62.4)
	No	89 (37.6)
Planned pregnancy	Yes	206 (86.9)
	No	31 (13.1)
Obstetric health problems	Yes	56 (23.6)
	No	181 (76.4)
Place of labour	Hospital	206 (86.9)
	Home	5 (2.1)
	Clinic/Medical center	26 (11.0)
Type of labour	Normal vaginal	56 (23.6%)
	Cesarean Section	181 (76.4%)
Received anesthesia	Yes	114 (48.1)
	No	123 (51.9)
Fear of labour	Yes	212 (89.5)
	No	7 (3.0)
Labour complications	Yes	23 (9.7)
	No	214 (90.3)
Newborn's sex	Male	112 (47.3)
	Female	125 (52.7)
Newborn's health problems	Yes	35 (14.8)
	No	202 (85.2)
Feeding of the Newborn	Breast feeding	179 (75.5)
	Artificial feeding	26 (11)
	Both	32 (13.5)
Postpartum depression	Depressed (EPDS scores $\geq 12$ )	63 (26.6)
	Not depressed (EPDS scores $\geq 12$ )	174 (73.4)
Suicidal ideation	Yes	11 (4.6)
	No	226 (95.4)

**Table 2.** Effect of maternal age and marriage duration on EPDS scores

		Mean $\pm$ SD	95% Confidence Interval		P value
			Lower	Upper	
Maternal Age	Depressed	30.53 $\pm$ 6.46	1.89245	5.22140	0.000
	Not depressed	26.98 $\pm$ 5.46			
Duration of Marriage	Depressed	6.61 $\pm$ 5.52	-0.04218	2.71131	0.057
	Not depressed	5.28 $\pm$ 4.44			

**Table 3.** Evaluation of various factors affecting EPDS scores

		Depression		P value
		Depressed (N = 63)	Not depressed (N = 174)	
Education	Highly educated	12 (19.0%)	22 (12.6%)	0.517
	Secondary schooling	35 (55.6%)	104 (59.8%)	
	Read & write	13 (20.6%)	43 (24.7%)	
	Illiterate	3 (4.8%)	5 (2.9%)	
Occupation	House wife	49 (77.8%)	146 (83.9%)	0.275
	working	14 (22.2%)	28 (16.1%)	
Marital status	Married	58 (92.1%)	173 (99.4%)	0.005
	Divorced	3 (4.8%)	1 (0.6%)	
	widow	2 (3.2%)	0 (0%)	
Spousal Relationship	Good	53 (84.1%)	173 (99.4%)	0.000
	Bad	10 (15.9%)	1 (0.6%)	
Number of children	≤2	33 (52.4%)	126 (72.4%)	0.004
	>2	30 (47.6%)	48 (27.6%)	
Sex of children	Males	18 (28.6%)	62 (35.6%)	0.573
	Females	15 (23.8%)	40 (23.0%)	
	Both	30 (47.6%)	72 (41.4%)	
Passive smoking	Yes	36 (57.1%)	112 (64.4%)	0.310
	No	27 (42.9%)	62 (35.6%)	
Planned pregnancy	Yes	42 (66.7%)	164 (94.3%)	0.000
	No	21 (33.3%)	10 (5.7%)	
Obstetric health problems	Yes	20 (31.7%)	36 (20.7%)	0.077
	No	43 (68.3%)	138 (79.3%)	
Place of Labour	Hospital	54 (85.7%)	152 (87.4%)	0.836
	Home	1 (1.6%)	4 (2.3%)	
	Clinic/Medical center	8 (12.7%)	18 (10.3%)	
Type of Labour	Normal vaginal	30 (47.6%)	106 (60.9%)	0.067
	C.S.	33 (52.4%)	68 (39.1%)	
Received anesthesia	Yes	36 (57.1%)	78 (44.8%)	0.094
	No	27 (42.9%)	96 (55.2%)	
Fear of labour	Yes	56 (94.9%)	156 (97.5%)	0.335
	No	3 (5.1%)	4 (2.5%)	
Labour complications	Yes	12 (19.0%)	11 (6.3%)	0.003
	No	51 (81.0%)	163 (93.7%)	
Newborn's sex	Male	28 (44.4%)	84 (48.3%)	0.602
	Female	35 (55.6%)	90 (51.7%)	
Newborn's health problems	Yes	15 (23.8%)	20 (11.5%)	0.018
	No	48 (76.2%)	154 (88.5%)	
Feeding of the Newborn	Breast	42 (66.7%)	137 (78.7%)	0.157
	Artificial	9 (14.3%)	17 (9.8%)	
	Both	12 (19%)	20 (11.5%)	

Conflict and poor spousal relationship increased the risk of depression which agrees with findings by Chan *et al.*<sup>31</sup>. Additionally previous research has illustrated a positive association between informal structural social support, essentially that given by a partner<sup>32</sup>.

This study has shown that mothers having more than two children are likely to be more depressed than being a first-time mother or having two children. This is in agreement with low-income countries such as Nepal and Pakistan<sup>33,34</sup>. Multi-parity increases family stress and the risk of PPD due to the physical and financial burden associated with childcare. In the UAE, multi-parity is a protective factor for PPD<sup>21</sup>.

The current study showed that there is a significant relation between depression and marital status as divorced or widowed women were more likely to be depressed which is in disagreement with a study by Watson JP<sup>35</sup> who found that there is no correlation between PPD and marital status

Beside previous factors increasing risk of depression, unplanned pregnancy was found to be one of the significant factors in the current study to increase EPDS scores.

In the current study it was found that there is no significant relationship between method of delivery and PPD which is consistent with the results of Johnstone *et al.* who reported a non significant trend between postpartum depression and caesarean section<sup>36</sup>. Additionally Warner *et al.*<sup>37</sup> found no significant association between elective or emergency caesarean section and subsequent postpartum depression while Fisher and colleagues reported that caesarean section was associated with increased risk of PPD<sup>38</sup>.

This study discovered the risk of PPD is nearly equal among housewives compared to those who were working away from their homes. However, in contrast to our finding, other studies have reported an excess risk of PPD among housewives<sup>39-40</sup>. Our study did not find maternal level of education as a risk factor for PPD, which is consistent with the finding of another study<sup>41</sup>, but differs

from some other reports<sup>42</sup>. No differences were observed regarding risk of PPD with regard to the sex of the child, which is in line with some other studies<sup>43</sup>. This study has shown that there is no significant association between EPDS scores and whether the patient had obstetric complications, the smoking status, or whether the infant was breast fed or formula fed.

Lastly, we can conclude relatively older females, a fragile spousal relationship, multi-parity, and unplanned pregnancies were associated with higher risk of PPD.

### Conflict of interests

There are no conflicts of interest.

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