

# Postpartum Depression among Women in a Rural Community, Ismailia, Egypt

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## Abstract

**Background:** Postpartum depression (PPD) is a major depressive disorder with possible long-term consequences on the mother and her infant. Despite the reported high prevalence rates, the rates of diagnosis and treatment of this serious problem are low due to lack of early recognition. **Aim:** Screening for PPD among women during well-baby visits in a rural community. The Specific objectives included: 1) Assessment of the prevalence of PPD and 2) Identification of its independent predictors among the studied women. **Patients and Methods:** A sample size of 210 women was randomly selected from postpartum women, 6-8 weeks after delivery, during their well-baby visits in a rural community, Ismailia, Egypt. The field-work was conducted from October 15, 2011 to December 10, 2011. The Arabic version of the Edinburgh Postnatal Depression Scale (EPDS) was used for PPD screening. Socio-demographic characteristics of the participants were collected by a pre-designed structured questionnaire. **Results:** Out of 200 screened women who responded to the questionnaires, depression was detected in 22%. Women who perceived interpersonal relationship with their husbands as a poor relationship were 12 times more likely to suffer from postpartum depression than those perceived this relationship as a good one (OR= 12 [95% CI =4.2-34.5]). Housewives were more liable to develop postpartum depression (OR= 3.4) than working mothers. Postpartum depression, also, was more common among women who delivered normally (OR=3.9); fed their infants by breast (OR=3.8); and those who had female infant (OR=3.9). **Conclusion:** PPD is a considerable and existing problem among the study group. Opportunistic screening of mothers at well-child visits by family physicians should be conducted for early detection of postpartum depression.

**Keywords:** Postpartum, depression, prevalence, predictors, rural, Ismailia, Egypt

## Introduction

Postpartum depression (PPD) is a type of clinical depression, which can affect women, and less frequently men after childbirth. It is evident that PPD is a common consequence among women in the post partum period. The overall reported international prevalence rates among women are variable in different studies and ranges from 0% in Singapore to nearly 57% in Brazil. However, the methodological differences among the studies make the actual prevalence rate

unclear<sup>(1)</sup>. PPD is a major depressive disorder with possible long-term consequences on the mother and her infant. The criteria for a major depressive disorder includes five or more symptoms, including depressed mood, markedly diminished interest or pleasure in an activity, appetite disturbance, sleep disturbance, physical agitation or psychomotor retardation, fatigue, feelings of worthlessness, diminished concern or inability to make decisions, and recurrent thoughts of death or suicide<sup>(2)</sup>.

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The *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV) specifies that the symptoms of PPD must begin within 4 weeks after delivery<sup>(2)</sup>, but many experts believe that women remain at increased risk for depression for up to 1 year after delivery<sup>(3)</sup>. The PPD has additional adverse effects, not only on the mother, but also on the infant, and the family such as marital distress<sup>(4)</sup>, problems with mother-infant interaction and attachment<sup>(5)</sup>, and adverse behavioural and cognitive effects in the child<sup>(6)</sup>.

The literature demonstrates low rates of help seeking in the population of postpartum women and up to 50% of individuals with PPD are not diagnosed leading to adverse outcomes for the patient and family. Many of these women revealed a perceived stigma associated with depression and are unable to differentiate between normal transitions to motherhood and PPD symptoms<sup>(7-9)</sup>. These findings confirm the importance of screening for PPD. The new mother encounters the well-baby clinic at least eight times in her infant's first 2 years of life and this represent a good medium for PPD opportunistic screening and health education. Screening can be implemented easily in this setting<sup>(10)</sup>.

The Edinburgh Postnatal Depression Scale (EPDS) is a 10-item self-administered questionnaire that is most commonly used for screening of PPD with high sensitivity and specificity<sup>(11)</sup>. The Arabic version of the EPDS<sup>(12-13)</sup> has been validated among Arabic women and its psychometric performance is comparable to the original scale. Each item is scored from zero to 3 with possible total scores of zero to 30. It is recommended that scores greater than or equal to 13 be used to identify women with a major depressive episode that requires further assessment<sup>(11)</sup>. The role of family physician is of a great importance in this regard through planning and conducting such ac-

tivity. The aim of the present study was to screen for PPD among women during well-baby visits in a rural community. The Specific objectives included: 1) Assessment of the prevalence rate of PPD and 2) Identification of the independent predictors of PPD among the study group.

## Subjects and Methods

### *Study design and setting*

This cross-sectional study was performed at two Family Practice centres that provide primary care to the catchment area in El Mahsma village (one affiliated to Family Medicine Department/Faculty of Medicine/Suez Canal University [FMD/FOM/SCU] and the second one to Ministry of Health and Population [MOHP]). El Mahsma village is a rural community that is located about 25 Km to the west of Ismailia city. It includes 40 hamlets with a total population of about 22000. The target population were postpartum women in El Mahsma village, Ismailia governorate. The study population (sampled population) included postpartum women attending the 2 centres to utilize the well-baby clinic for vaccination 6-8 weeks postpartum.

### *Subjects*

A sample size of 210 women was calculated and selected from the target population with an estimated prevalence of PPD to be 21% (from a previous study)<sup>(14)</sup>, 95% confidence level, 6% margin of error (E) and 10% non-response rate<sup>(15)</sup>.

The inclusion criteria included: 1) Postpartum women (aged  $\geq 18$  years), 2) Women attending well baby clinic 6-8 weeks after delivery and 3) Acceptance to participate in the study (informed consent). Those for whom the study procedures were not feasible due to severe dementia, history suggestive of mental retardation, or unstable medical condition were excluded. Systematic random sampling

method was used in which every third woman presenting to the PHC centres for well-baby clinic to vaccinate her baby was included in the study.

#### *Tools and operational design*

The field-work was conducted from October 2011 to December 2011. Verbal and written consents were obtained from the participants who completed the questionnaires. Socio-demographic characteristics of the participants (age, marital status, marital relationship with the husband, number of children, housing, occupational status, education level, method and place of delivery, method of baby feeding, history of antenatal health problems, and neonatal health problems) and chronic conditions e.g. hypertension, heart disease, diabetes, liver disease, renal disease or pulmonary disease was collected by a designed questionnaire. An experienced PHC physician administered the Arabic version of the EPDS to each participant, for PPD screening. Researchers through structured interview collected data. EPDS questionnaire contains 10 separate questions in which the patient circles the appropriate response. Each item is scored from zero to 3 with possible total scores of 0 to 30<sup>(12-13)</sup>. The conventional 13 cut-off score was used for detecting depression, i.e., EPDS more than 13 indicates depressive disorder need more clarification.

#### *Statistical Design*

All statistical analyses were performed using the SPSS software package-version-16. Descriptive statistics and measures of central tendency and dispersion, as well as, appropriate significance tests were applied according to the types of variables. Multiple logistic regression analysis was conducted to determine which factors were independent predictors of depression. Logistic regression coefficients and estimated odds ratios for each of the independent

variables in the model were determined. The p value of < 0.05 was considered the significance cut-off point.

## **Results**

Out of 210 women, who were screened for PPD 6-8 weeks after delivery, 200 responded to the questionnaires with a response rate of 95%. The non-response rate (5%) did not affect the validity of the results because it was taken in consideration in sample size calculation. Table (1) shows the socio-demographic characteristics of the studied population. The age of the studied women ranged from 20-42 years with a mean of  $28.3 \pm 6.0$  years. However, the majority of the studied women (59.5%) were in the age group of less than 30 years. Regarding the educational status, more than one third of the study group were qualified from the university (35.5%). Only 24 (12%) of women were illiterates and about forty-three percent (42.5%) of patients had preparatory  $\pm$  2ry education (not illustrated in table-1). The majority of the women was housewives (63.5%) and fed their babies by breast feeding (71.5%). Most of the studied women (85%) perceived interpersonal relationship with their husbands as a good one and more than half of them (54.5%) delivered their baby normally (normal vaginal delivery). Out of 200 screened women, PPD was detected in 22% (n=43) using the EPDS with cut-off point 13 (Figure 1).

The following independent dichotomous variables were subjected to multiple logistic regression analysis with PPD as dependent variable: mothers' age, educational status, working status, relationship with the husband, gender of the baby, neonatal health problems, method of baby feeding, maternal health problems during pregnancy; and delivery method and place. The effect of the overall model was highly significant ( $\chi^2=51.0$ ,  $p=0.0001$ ).



**Table 1:** Basic characteristics of the study women

Basic characteristics	No.	%
<i>Age</i>		
1. Less than 30 years	119	59.5
2. $\geq 30$ years	81	40.5
<i>Educational level</i>		
1. University certificate	71	35.5
2. Less than university degree (1ry, preparatory, secondary education, read and write or illiterate)	129	64.5
<i>Working status</i>		
1. House wife	127	63.5
2. Working	73	36.5
<i>Interpersonal relationship(IPR) with her husband</i>		
1. Perceived as a good IPR	170	85.0
2. Perceived as a poor IPR	30	15.0
<i>Gender of the baby</i>		
1. Male	106	53.0
2. Female	94	47.0
<i>Neonatal health problems</i>		
1. Present	25	12.5
2. Absent	175	87.5
<i>Maternal health problems during pregnancy</i>		
1. Present	26	13.0
2. Absent	174	87.0
<i>Type of feeding of the baby</i>		
1. Artificial	57	28.5
2. Breast feeding	143	71.5
<i>Delivery place</i>		
1. Hospital, PHC, or private	188	94.0
2. Home	12	6.0
<i>Delivery method</i>		
1. Cesarean Section	91	45.5
2. Normal	109	54.5

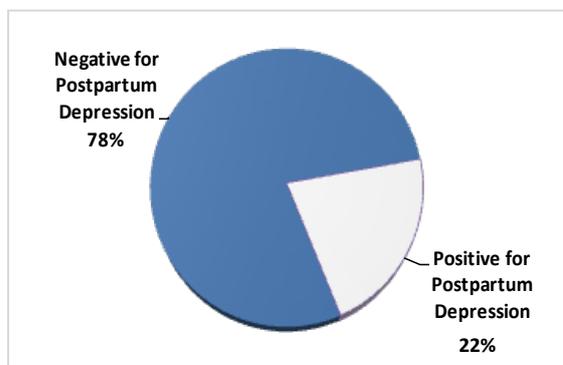
**Figure 1:** Post-partum depression among the studied women

Table (2) illustrates that the overall percentage of cases that are correctly predicted by the model is 80.5% (145 cases are observed to be non-depressed and are correctly predicted to be non-depressed and 16 cases are observed to be depressed and are correctly predicted by the regression model. Table (3) illustrates the independent predictors of the regression model. Women who perceived interpersonal relationship with their husbands as a poor one were 12 times more likely to suffer from

depression than those perceived this relationship as a good one (OR= 12 [95% CI =4.2-34.5]). Housewives were more liable to develop PPD (OR= 3.4 [95% CI=1.04-10.9]) than working mothers. Postpartum depression,

also, was more common in women who delivered normally (OR=3.9 [95% CI=1.1-6.7]); fed their infants by breast (OR=3.8 [95% CI=1.3-11.4]); and those who had female infant (OR=3.9 [95% CI=1.3-12.4]).

**Table 2:** The observed and predicted values of the depression based on the full logistic regression model

Observed	Predicted		Percentage Correct
	EPDS $\geq$ 13		
	No depression	Depression	
Not depressed	145	12	92.4
Depressed (EPDS $\geq$ 13)	27	16	37.2
Overall Percentage			80.5

**Table 3:** Multiple Logistic regression analysis: the independent predictors of PPD among the studied women

Variable (Reference Category) <sup>#</sup>	B	p	Odds Ratio	95% CI	
				Lower limit	Upper limit
Age of mothers ( $\geq$ 30 years)	- 0.078	0.848	0.925	0.415	2.06
Educational status (less than university degree)	-0.418	0.089	0.658	0.407	1.066
Relationship with husband (poor)	2.493	0.001*	12.096	4.241	34.502
Gender of the baby (Female)	1.369	0.019*	3.930	1.249	12.366
Working status (not working)	1.218	0.042*	3.381	1.044	10.943
Neonatal health problems (absent)	-0.190	0.768	0.827	0.235	2.916
Health problems during pregnancy (absent)	-0.066	0.911	0.936	0.295	2.970
Baby feeding method (Breast feeding)	1.334	0.018*	3.796	1.262	11.420
Delivery place (home)	1.173	0.104	3.233	0.785	13.312
Delivery method (normal delivery)	1.000	0.029*	2.718	1.107	6.676
Constant	-8.620	0.001*	0.000	-	-

CI=Confidence interval; \*=statistically-significant at  $p < 0.05$ ; <sup>#</sup>=The independent variable with the reference category in parentheses

## Discussion

The current study was conducted on 210 women in a rural community, Ismailia, Egypt. It aimed at identifying prevalence of post-partum depression among postpartum women and predictors of its occurrence among the studied women. Out of 210 women, who were screened for PPD 6-8

weeks after delivery, 200 responded to the questionnaires with a response rate of 95%. It was found that, more than one-fifth of the studied women (22%) have got postpartum depression as evident by opportunistic screening of women during their visit to well-baby clinic for vaccination of their babies. These results were in partial agreement with the reported results from a study

conducted by Freeman et al., 2005, on postpartum women at 8-week well-baby visit and showed that, 14.6% of postpartum women were found to have depression<sup>(16)</sup>.

These results were lower than those reported by Chaudron et al., 2004, in a study conducted to compare prevalence rates of PPD before and after initiation of universal screening for PPD using EPDS. A statistically significant difference was reported before (1.6%) and after (8.5%) initiation of screening for PPD ( $p < 0.001$ )<sup>(17)</sup>. The role of Screening was emphasized by known academic organizations. According to the US Preventive Task Force, formal screening improves detection of depressed patients in primary care settings with the benefits of screening outweighing the potential harm<sup>(18)</sup>. The family physician is in a unique position to screen for PPD because he is the health care provider for children and their mothers in the catchment area. Therefore, it is a strongly recommend for family physicians to consider implementation of a standardized depression screening tool for improving the detection of PPD among postpartum women.

The obtained results from the current study regarding PPD among the studied women (22%) were consistent with other studies that were conducted either at the level of Arab region [Sudan (19.5%)<sup>(19)</sup>, Lebanon (21%)<sup>(14)</sup>] or at the level of Egypt [Mansoura city, (17.9%)<sup>(20)</sup>]. However, the overall prevalence rate of depression observed in the present study was low compared to a study that was conducted in Upper Egypt (51.8%)<sup>(21)</sup>. The wide discrepancy in the reported prevalence rates of PPD may be attributed to the methodological differences of the published studies and the socio-demographic characteristics of the studied groups. Despite the reported high prevalence rates and the potentially serious consequences of PPD, the rates of diagnosis and treatment of this serious

problem are low due to lack of recognition<sup>(22-24)</sup>. It is unfortunate that the rate of current screening in primary care practices is below 50% by even the most optimistic estimates<sup>(25)</sup>, and for the clinicians who do screen for depression, the results are not always used for further documented assessment or treatment<sup>(22, 25)</sup>.

In the present study younger age of marriage among Egyptian women especially in rural areas was reflected on the age of the study group ( $28.3 \pm 6.0$ ), that is consistent with other studies conducted in Egypt<sup>(20)</sup>. Some studies<sup>(26)</sup> considered young age as a risk factor for PPD, on the other hand others could not find the age risk association<sup>(4,27)</sup>. In the current study women who had poor interpersonal relationship with their husbands were 12 times more likely to suffer from depression than those with good relationship (OR=12 [95% CI=4.2-34.5]), and housewives were more liable to develop depression (OR=3.4 [95% CI=1.04-10.9]) than working mothers. These findings were consistent with the literature that is linking poor relationship satisfaction due family conflict, domestic violence, and unemployment to PPD<sup>(6,20,28,29)</sup>. Based on the literature, feelings of being unloved by the husband, being separated, or any other marital problems, were found to be associated with PPD in vulnerable females<sup>(27)</sup>.

In the present study depression was more common in women who delivered normally (OR=3.9), a finding that was unexpected by the authors and contradicting another Egyptian study<sup>(20)</sup>. These findings may reflect positive attitude towards caesarian section and is in-need for further investigations. However the current evidence regarding the relationship between method of delivery and PPD is conflicting, with some studies reporting an association, between emergency caesarian section and incidence of PPD, while others not. Conversely there may be an association be-

tween elective caesarean section and a reduced risk of PPD<sup>(30)</sup>. The results of the present study showed positive linear association between breast feeding and PPD (OR=3.8). These findings were inconsistent with the reported results from literature that formula feeding is an independent risk factor for PPD<sup>(20,25)</sup>.

The results obtained from the current study might be explained as a result rather than a cause of PPD due to failure of the depressed mothers to breastfeed their babies. Also, women who had female infant in the present study were more liable (OR=3.9) to develop depression a finding that reflects positive attitude towards boys who are believed to be superior than females especially in rural communities<sup>(20,31,32)</sup>.

In conclusion, PPD is a considerable and existing problem among the studied women. Opportunistic screening of mothers at well-child visits throughout the first postpartum year by family physicians using the EPDS as standardized screening tool should be conducted for early detection of depression. In light of the results of present study, more research work is needed to assess objectively the unexpected predictors of PPD e.g. normal vaginal delivery versus caesarian section and breast feeding versus artificial feeding.

#### *Limitation of the Study*

The obtained results cannot be extrapolated or generalized on the Egyptian community because the study was conducted only in a rural community. Further studies representing urban and Bedouin communities are needed to give an overall view of PPD in Egypt.

#### *Disclosure*

There is no conflict of interest for all authors and the study was not financially supported from any institute or company.

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