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# Depression during Perinatal Period and Its Relation to Maternal Bonding: A Prospective Cohort Study, Egypt

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Submit Date27-04-2025 Accept Date05-05-2025 **Background**: Perinatal depression is a serious mental health issue that many women experience. The formation of a healthy mother bonding can be hindered by the hopelessness, impatience, and lack of interest that women suffer from depression. This study aimed to assess the frequency, and the potential risk factors of depression during perinatal period, and to evaluate its relationship with mother bonding among women receiving perinatal care.

ABSTRACT

**Methods**: This prospective cohort study was conducted on 102 pregnant women attending antenatal care at Abokabeer Medical Center. They were followed from the third trimester till two months post-natal. Data was collected by using three questionnaires. Pregnant women were assessed for socioeconomic status by the Arabic version of Fahmy socioeconomic level questionnaire, depression during late pregnancy and postpartum depression (PPD)by the Arabic version of Edinburgh Postnatal Depression Scale and maternal bonding by the Arabic version of postpartum bonding questionnaire.

**Results**: Women suffered from depression in late pregnancy were 16 (15.7%) of the studied group. Women suffered from postpartum depression were 26 (25.5%) women. Postpartum depression was prevalent among women with higher socioeconomic status, working mothers, mothers with history of depression, mothers with preterm babies, mothers with baby complications and maternal complications. Poor maternal bonding was reported in (21.6%) of the studied group. postpartum depression strongly affect maternal bonding (p value <0.001) with (95.5%) women with poor bonding had postpartum depression.

**Conclusion**: Depression is a greater risk during perinatal period. About one quarter of the studied group complained of depression. This study identifies a range of maternal, socioeconomic, and clinical factors that independently contribute to depression. Late pregnancy depression has a strong correlation with postpartum depression scores. In addition, postpartum depression strongly affects the postpartum bonding so we recommend early screening of depression during late pregnancy is a very important step in diagnosis and early management of PPD and improves the outcome.

Key words: Pregnancy, Postpartum Depression, Maternal Bonding.

# INTRODUCTION

uring pregnancy, childbirth, and the puerperium, women experience adaptive physical and psychological changes that make them more susceptible to psychological problems [1]. Following delivery, women experience psychological changes as they reestablish relationships, adapt to parenthood, and tend to the physical and emotional demands of a newborn and other family members, in addition to changes in the reproductive system and a return to pre-pregnancy physiology [2].

If untreated, postpartum stressors can lead to fatigue, anxiety, and a lack of self-care. Postpartum depression (PPD) and other medical and mental disorders may become more likely as a result of these changes [3].

According to the American Psychiatric Association, PPD is a significant health concern in contemporary countries, unlike other types of depression. PPD prevalence varies by population and screening method; prevalence rates have been reported to range from 7.6% to 39% globally. [4].

The prevalence of postpartum depression (PPD) in Egypt varies across studies and regions. For instance, a study conducted in Qalyoubia Governorate found that 37.78% of postpartum women experienced symptoms of PPD, with higher rates in the first six months after delivery [5].

Another study revealed a prevalence of 56.2%, highlighting the need for better awareness and early detection [6]. Another study in a rural community reported a prevalence of 22%, with factors like poor relationships with spouses and being a housewife increasing the risk [7].

Because PPD is linked to long-term impacts on the family, it is significant. Women with PPD are more likely to stop nursing, and marital relationships are often impacted **[8]**.

If PPD is not treated, it seems to negatively impact both mothers and infants. Children of untreated depressed mothers are more likely than children of mothers without PPD to face problems such as poor cognitive functioning, behavioral inhibition, emotional maladjustment, violent behavior, externalizing disorders, and adolescent psychiatric and medical disorders. [9]

A woman's chance of developing PPD can be increased by a number of circumstances, and there has been some evidence linking PPD to the way she gave birth. According to certain research, a difficult labor that ends in an emergency delivery may be a risk factor for postpartum depression (PPD), which can be measured using the Edinburgh Postnatal Depression Scale. Given that the rates of cesarean deliveries are steadily increasing in many high- and middle-income nations, this finding is noteworthy **[10]**.

Depressed mothers experience less-thanideal attachment to their children because they struggle to adapt to parenting and are less perceptive of their baby's cues [11]. Early-life unfavorable mother-infant relationships have long-term detrimental effects on an infant's emotional, social, and cognitive development [12, 13].

This study was conducted to assess the frequency, and the potential risk factors of depression during perinatal period, and to evaluate its relationship with mother bonding among women receiving perinatal care. Up to my knowledge, there is lack of researches assessing occurrence of depression during late pregnancy and postpartum period, and assessing the effect of postpartum depression on the maternal bonding in Abokabeer medical Center at antenatal care department

# METHODS

Ethical consideration: The study's protocol was authorized by Zagazig University's Faculty of Medicine's Institutional Review Board (IRB: 10430/26-02-2023) for medical (ZU-IRB). research ethics Prior to participation, all pregnant women in the final trimester gave their informed consent, studv conducted according was to declaration of Helsinki.

**Study design:** A prospective cohort study was conducted From February 2023 to July 2024.

**Study setting:** This study was conducted at the antenatal care department of Abokbeer Medical Center, which serves over 500000 people in a catchment area of roughly 224 km2.

**Study subjects**: Pregnant women in their last trimester followed till 2 months postpartum (studied perinatal period).

Sample size: Assuming that, the number of pregnant females in the third trimester attending Abokbeer Medical Center is 192 in 6 months and the prevalence of depressive symptoms during late pregnancy according to Josefsson et al. [14] study was 17%, so the sample size was 102, calculated using OpenEpi at power 80% and Confidence level 95%. The included mothers attended for antenatal care in the third trimester with their age range of the 16-37 years. While we excluded a mother who lost her child and Pregnant women who known to have current psychiatric diseases or under psychiatric medications. We met 300 pregnant women in the last trimester, 250 women accepted to participate in the study, 150 women of them met the inclusion criteria and completed the study with 102 women and the drop out cases were 48 women who did not attend the follow up visit and we could not communicate them.

**Sampling technique**: A representative sample of pregnant women in the last trimester who were seeking prenatal care at Abokbeer Medical Center was chosen using a systematic random selection technique.

# Study Tools:

# Three questionnaires were used in the study as following:

Tool 1: The updated Fahmy (socioeconomic level questionnaire) in Arabic:There are four domains in this questionnaire: [15]: family, housing sanitation, economic. education, and computer use and scored as follow: low level is less than 40%, medium level is 40% to less than 70%, and high level is at least 70%. The Cronbach's alpha coefficient for this questionnaire equals 0.79 [15].

**Tool 2:** Edinburgh Postnatal Depression Scale (EPDS) in Arabic: It is a useful and effective screening tool that is simple to use and identifies patients who may be at risk for prenatal depression. The mother's feelings over the past week are shown on the scale. After two weeks, it could be helpful to repeat the technique in questionable situations [16] and scored as follow: Ten questions make up this survey, a score of 30 is the maximum. Depression potential: 10 or higher, item 10 (suicidal ideas) should always be examined [16]. The Arabic version of EPD questionnaire had an alpha Cronbach 0.84 with 91% sensitivity and 84% specificity [17].

Tool 3 :The postpartum bonding questionnaire (PBQ) is the third tool: The original creators of this questionnaire were Brockington et al. [18]. It has four components and twenty-five elements. General emotional element was the first factor, followed by infant-focus anxiety, anger toward and rejection of the baby, and likelihood of abuse. [18]. And scored as follow :Each of the 25 statements in the PBQ includes six possible answers, ranging from "always" to "never." Positive answers, like "I like playing with my baby," are rated on a scale of 0 (always) to 5 (never). Responses that are negative, like "I am afraid of my baby," are rated on a scale of 5 (always) to 0 (never). Each factor's scores are added up, with a high score denoting pathology with cutoff point 13 or high better identifies mothers with threatened [**18**].The rejection Cronbach's alpha coefficient of the Arabic version of PBQ equals 0.720[19].

### **Operational design:**

**Pilot study:** To test the questionnaires for clarity, comprehension, translation, consistency, and time required to complete, 10% of the sample of third-trimester pregnant women who received prenatal treatment at Abokbeer Medical Center participated. Our investigation includes this sample. **Field work:** The researcher attended Abokbeer Medical Center's prenatal care department three days per week. The participants who fulfilled the inclusion criteria and provided their informed consent were chosen during the period of six months. They were conducted the following visits.

Initial visit: Pregnant women at the third trimester were interviewed by face-to-face session to take their personal, family, obstetric and prior history of depression. Thev filled the questionnaires bv researcher's support. Also, they received assistance from the researcher, who read and clarified the questions. The accurate Arabic version of the socioeconomic level questionnaire created by Fahmy et al. [15] was the first tool used to measure socioeconomic status (SES), and the Edinburgh postnatal depression questionnaire was the second tool used to measure depression. It took roughly thirty minutes to complete these questionnaires.

Follow up visit: In order to determine the relationship between these characteristics and postpartum depression, the second appointment, which took place within two months of the first one, asked the participants about the style of delivery, the establishment of breastfeeding, any issues with their child, and the gender of the child. To determine the relationship between postpartum depression and mother bonding. the same EPDS was used to assess depression following delivery within two months postpartum, and a postpartum bonding questionnaire was used to assess postpartum bonding in the participants. These two visits made after obtaining the approval of Institutional Review Board (IRB) for medical research ethics Zagazig Faculty of Medicine (ZU-University, IRB).and the director of health administration before collecting the data. An informed consent was also obtained from every pregnant woman in the last trimester before participation.

*Statistical Analysis:* IBM SPSS 23.0 for Windows, a database software tool, was used to code, input, and analyze the gathered data (SPSS Inc., Chicago, IL, USA). Mann-Whitney U, Fisher's exact test (f), chisquared (X2) tests, Multivariate logistic regression and Spearman's rank correlation were all employed.

# RESULTS

This study included 102 women in the last trimester followed till 2 months postpartum. Their ages ranged from 16 to 37 years, with a mean  $\pm$  SD of 25.3  $\pm$  5.24, socio-economic score ranged from 31 to 96 with a mean  $\pm$ SD of  $57.43 \pm 18.33$ . Furthermore, (21.6%) of the patients had a low socio-economic level, (47.1%) had a medium socioeconomic level and (31.4%) had a high level. regards socio-economic As educational level, 50 patients (49%) were with higher education (university / postgraduates) and 52 patients (51%) with lower education levels. The gestational age ranged from 8 to 9 months, with a mean  $\pm$  SD of  $8.67 \pm 0.47$ . The number of pregnancies median (IQR) was 2 (1 - 3). Parities median (IQR) was 1 (0 - 2). Among studied patients, (9.8%) had a positive history of depression, (21.6%) had a positive history of postpartum depression and (9.8%) had a positive family history of depression. (4.9%) had maternal complications, while (95.1%) had no complications. As regards term, (90.2%) were full term, while (9.8%) were preterm. Also, (9.8%) of the babies had while (90.2%) had complications, no complications. Furthermore, (51%) of delivered babies were males and (49%) were females. Also, time to start feeding ranged from 1 to 24 hours with a median (IQR) of 3.5 (5). Time to first contact ranged from 1 to 4 hours with a median (IQR) of 2 (1). (Table 1) Table (2) shows that (15.7%) of the patients had possible depression during late pregnancy while (25.5%) of the patients had possible depression when they were assessed at postpartum period. Poor ponding was detected in (21.6%) of the studied group.

Table (3) shows that patients with late pregnancy depression had significantly higher socio-economic scores (P = 0.023). Also, (27.8%) of patients who were employed develop late pregnancy depression in comparison to (9.1%) of patients who were unemployed (P = 0.013, OR = 3.85, 95% CI = 1.27 - 11.7). Furthermore, (40%) of patients who had positive history of depression and positive family history of depression develop late pregnancy depression (P=0.048, OR = 4.44, 95% CI = 1.09 - 18.1).

. Table (4) shows that patients with postpartum depression had significantly higher socio-economic scores (P = 0.038). Also, (38.9%) of patients who were employed develop postpartum depression in comparison to (18.2%) of patients who were unemployed (P =0.022, OR=2.89, 95% CI= 1.15 - 7.16). Moreover, (60%) of patients had positive history of depression and positive family history of depression develop postpartum depression (P=0.008,OR= 5.40, 95% CI= 1.39 - 21). Also, (45.5%) of patients with positive history of post-partum depression develop PPD (P =0.015, OR = 3.33, 95% CI = 1.22 - 9.08).Table (5) shows that (60%) of patients who had preterm babies develop PPD (P = 0.008,

OR=5.4, 95% CI=1.39-21, (80%) of patients who had maternal complications develop PPD (P=0.004, OR= 13.6, 95%) CI = 1.45 - 128), and (60%) of patients who had baby complications develop PPD (P=0.008, OR = 5.4, 95% CI = 1.39 - 21). Also, patients who develop PPD had longer time to start feeding (P = 0.024) and late EPD scale (P<0.001). pregnancy Furthermore, all patients who had late depression develop pregnancy PPD (P=<0.001, OR= 240, 95% CI= 13.4 -4311) this indicates *that* the late pregnancy depression is highly correlated with postpartum depression.

Table (6) shows that after applying logistic regression analysis for predictors of depression in late pregnancy, high socioeconomic score and positive history of depression can be used as independent factors for predicting depression in late pregnancy.

Table (7) shows that (95.5%) women with poor bonding had postpartum depression so there is a statistically significant positive association between PPD and postpartum bonding.

Table (8) shows that after applying logistic regression analysis for predictors of postpartum depression, positive history of depression and presence of maternal complications can be used as independent factors for predicting postpartum depression

Variables	All patients (n=102)	
Age (years)	$Mean \pm SD$	$25.3 \pm 5.24$
	Range	(16-37)
Socio-economic score (%)	$Mean \pm SD$	57.43 ± 18.33
	Range	(31 – 96)
Socio-economic Level (n. %)	Low	22 (21.6%)
	Medium	48 (47.1%)
	High	32 (31.4%)
Education Level (n. %)	Lower education	52 (51%)
	Higher education	50 (49%)
Occupational (n. %)	Un-employed	66 (64.7%)

Table 1: Socio-demographic and clinical data among the studied mothers

Variables		All patients
		(n=102)
	Employed	36 (35.3%)
Gestational age (months)	$Mean \pm SD$	$8.67\pm0.47$
	Range	(8-9)
Number of pregnancies	Median	2
	(IQR)	(1 - 3)
Number of parity	Median	1
	(IQR)	(0 - 2)
History of depression (n. %)	Negative	92 (90.2%)
	Positive	10 (9.8%)
History of postpartum depression (n. %)	Negative	80 (78.4%)
	Positive	22 (21.6%)
<b>Family history of depression</b> ( <i>n. %</i> )	Negative	92 (90.2%)
	Positive	10 (9.8%)
Maternal complications (n. %)	Absent	97 (95.1%)
	Present	5 (4.9%)
<b>Term</b> ( <i>n</i> . %)	Full term	92 (90.2%)
	Preterm	10 (9.8%)
<b>Baby Complications (n. %)</b>	Absent	92 (90.2%)
	Present	10 (9.8%)
Gender of baby (n. %)	Male	52 (51%)
	Female	50 (49%)
Time to start feeding (hour)	Median (IQR)	3.5 (5)
	Range	(1 – 24)
Time to first contact (hour)	Median (IQR)	2(1)
	Range	(1-4)

 Table 2: Postpartum EDP scale at late pregnancy and post-partum period and PBQ among the studied mothers

Variables		All patients (n=102)
Late pregnancy EDP scale	Median	3
	(IQR)	(2-6.75)
EDP interpretation	Normal <10	86 (84.3%)
	Possible depression≥10	16 (15.7%)
Post-partum EDP scale	Median	7
	(IQR)	(5 – 13.5)
EDP interpretation	Normal <10	76 (74.5%)
	Possible depression≥10	26 (25.5%)
PBQ	Median	9
	(IQR)	(7-11)
PBQ interpretation	Normal <13	80 (78.4%)
	Poor bonding≥13	22 (21.6%)

EPD: Edinburgh Postnatal Depression Scale

PBQ: Postpartum Ponding Questionnaire

	Normal	Depression (n=16)	
	( <b>n=86</b> )		P-value
Age (years) Median (IQR)	25 (20 – 30)	24 (19.4 – 28)	$0.178^{1}$
Socio-economic:			
Score Median (IQR)	50 (42 - 75)	64 (51.7 – 85.1)	0.023 <sup>1</sup>
Level N %			
– Low (n=22)	20 (90.9%)	2 (9.1%)	
– Medium (n=48)	40 (83.3%)	8 (16.7%)	0.6832
– High (n=32)	26 (81.25%)	6 (18.75%)	
Education level N %			
– Lower (n=52)	44 (84.6%)	8 (15.4%)	2
- Higher $(n=50)$	42 (84%)	8 (16%)	0.9322
Occupational level N %			
– Un-employed (n=66)	60 (90.9%)	6 (9.1%)	2
– Employed (n=36)	26 (72.2%)	10 (27.8%)	0.0132
<b>Gestational age</b> (months)			1
Median (IQR)	9 (8 – 9)	9 (8.75 – 9)	0.4471
No. of programation			
No. of pregnancies	$2(1 \ 3)$	15(1 25)	$0.526^{1}$
	2(1-3)	1.5 (1 - 2.5)	0.320
<b>No. of parity</b> <i>Median</i> ( <i>IQR</i> )	1(0-2)	0.5 (0 – 1.25)	0.3851
<b>D</b> ositivo history of: N %			
-Depression $(n=10)$	6 (60%)	4(40%)	$0.048^2$
- Postpartum depression	16 (72.7%)	6 (27.3%)	$0.092^2$
(n=22)			
Positive Family history of			
depression N. % (n=10)	6 (60%)	4 (40%)	$0.048^2$

 Table 3: Relation between late pregnancy depression with different patients' demographic and clinical data

<sup>1</sup>: Mann-Whitney test, <sup>2</sup>: Chi-square test,  $P \leq 0.05$ : Significant (**Bold**), P > 0.05: Non-significant.

	Normal	Depression (n=26)	P_voluo
	(II=70)		
Age (years) Median(IQR)	24.5 (20 – 30)	27 (23 – 28)	0.635
Socio-economic:			
Score Median(IQR)	50 (42 – 73)	65 (50 - 81)	0.038 <sup>1</sup>
Level N %			
– Low (n=22)	16 (72.7%)	6 (27.3%)	
– Medium (n=48)	40 (83.3%)	8 (16.7%)	$0.109^2$
- High $(n=32)$	20 (62.5%)	12 (37.5%)	
Education level N %			
- Lower $(n=52)$	40 (76.9%)	12 (23.1%)	
– Higher (n=50)	36 (72%)	14 (28%)	$0.568^2$
Occupational level N %			
– Un-employed (n=66)	54 (81.8%)	12 (18.2%)	
– Employed (n=36)	22 (61.1%)	14 (38.9%)	$0.022^2$
<b>Gestational age</b> (months)			
Median (IQR)	9 (8 - 9)	9 (8 - 9)	0.753 <sup>1</sup>
No. of pregnancies			
Median (IQR)	2 (1 – 3)	2(1-4)	0.334 <sup>1</sup>
No. of parity Median (IQR)	1 (0 – 2)	1 (0 – 2)	0.3021
<b>Positive history of:</b> <i>N</i> . %			
-Depression (n=10)	4 (40%)	6 (60%)	$0.008^{2}$
- Postpartum depression	12 (54.5%)	10 (45.5%)	$0.015^2$
(n=22)			
Positive Family history of			
depression N. % (n=10)	4 (40%)	6 (60%)	$0.008^2$

Table 4: Association of post-partum depression with patients' demographic data and clinical history

<sup>*T*</sup>: Mann-Whitney test, <sup>2</sup>: Chi-square test,  $P \leq 0.05$ : Significant (**Bold**), P > 0.05: Non-significant.

Table 4	5:	Association	of	post-partum	depression	with	labor	characteristics	among	the
studied	m	others								

Variables		Normal	Depression	
		( <b>n=76</b> )	( <b>n=26</b> )	<b>P-value</b>
Mode of delivery (n. %)	Normal (n=32)	26 (81.25%)	6 (18.75%)	
	CS (n=70)	50 (71.4%)	20 (28.6%)	0.291 <sup>2</sup>
<b>Term</b> ( <i>n</i> . %)	Full term (n=92)	72 (78.3%)	20 (21.7%)	_
	Preterm (n=10)	4 (40%)	6 (60%)	$0.008^{2}$
Maternal comp. (n. %)	Absent (n=97)	75 (77.3%)	22 (22.7%)	
	Present (n=5)	1 (20%)	4 (80%)	$0.004^2$
<b>Baby Comp.</b> ( <i>n</i> . %)	Absent (n=92)	72 (78.3%)	20 (21.7%)	
	Present (n=10)	4 (40%)	6 (60%)	$0.008^{2}$
Gender of baby (n. %)	Male (n=52)	42 (80.8%)	10 (19.2%)	
	Female (n=50)	34 (68%)	16 (32%)	$0.139^2$

Variables		Normal	Depression	
		( <b>n=76</b> )	( <b>n=26</b> )	<b>P-value</b>
Time to start feeding	Median	3	4	
(hour)	(IQR)	(2-6)	(3.25 - 8.75)	<b>0.024<sup>1</sup></b>
Type of feeding (n.	Breastfeeding	44 (57.9%)	12 (46.2%)	
%)	Bottle feeding	32 (42.1%)	14 (53.8%)	$0.299^2$
Time to first contact	Median	2	1	
(hour)	(IQR)	(1 – 2)	(1-2)	$0.188^{1}$
Late pregnancy EPD	Median	3	12	
score	(IQR)	(2-3)	(8 – 13)	<0.001 <sup>1</sup>
Late pregnancy	Normal (n= 86)	76 (88.4%)	10 (11.6%)	
depression	Depression	0 (0%)	16 (100%)	<0.001 <sup>2</sup>
	(n=16)			

<sup>1</sup>: Mann-Whitney test, <sup>2</sup>: Chi-square test,  $P \leq 0.05$ : Significant (**Bold**), P > 0.05: Non-significant.

Table	6:	Multivariate	logistic	regression	analysis	for	predictors	of	depression	in	late
pregn	anc	У									

Variables	Depression in late pregnancy						
	Estimate	SE	P value	Odds (CI 95%)			
SE score	0.032	0.02	0.04	1.03 (1.001 - 1.02)			
Occupational level							
Unemployed	-	-	-	Ref.			
Employed	1.138	0.79	0.44	1.83 (0.38 - 9.32)			
History of depression							
Negative	-	-	-	Ref.			
Positive	2.575	1.06	0.04	3.87 (1.24 – 12.24)			
History of PPD							
Negative	-	-	-	Ref.			
Positive	0.559	0.68	0.41	1.75(0.46 - 6.65)			
Family history of depression							
Negative	-	-	-	Ref.			
Positive	1.115	1.24	0.19	4.37 (0.47 – 40.79)			

## Table 7: association of postpartum depression and maternal bonding

Variables		Normal (n=76)	Depression (n=26)	P-value
PBQ score	Median	9	31	
	(IQR)	(6-10)	(21.25 - 35)	<0.001 <sup>1</sup>
PBQ grades	Normal <13	75 (93.75%)	5 (6.25%)	$< 0.001^2$
	Poor bonding≥13	1 (4.5%)	21(95.5%)	

Variables	Post-partum depression					
	Estimate	SE	P value	Odds (CI 95%)		
Socio-economic score	0.026	0.02	0.08	1.04 (0.9 - 1.09)		
Occupational level						
– Unemployed	-	-	-	Ref.		
– Employed	0.129	0.78	0.92	1.07 (0.28 – 4.11)		
History of depression						
– Negative	-	-	-	Ref.		
– Positive	1.578	0.70	0.04*	4.61 (1.09 – 15.81)		
History of PPD						
– Negative	-	-	-	Ref.		
– Positive	1.337	0.72	0.08	2.83 (0.87 – 9.19)		
Family history of depression						
– Negative	-	-	-	Ref.		
– Positive	1.514	0.87	0.47	1.91 (0.32 – 11.23)		
Maternal complication						
– Absent	-	-	-	Ref.		
– Present	2.921	1.21	0.02*	30.86 (1.62 - 586.7)		
Term						
– Full term	-	-	-	Ref.		
– Preterm	1.477	0.92	0.06	10.56 (0.94 – 118.6)		
<b>Baby complications</b>						
– Absent	-	-	-	Ref.		
– Present	0.756	0.42	0.09	1.75 (0.66 – 4.39)		
Time to start feeding	0.092	0.07	0.26	0.78 (0.75 – 1.19)		

Table 8: Multivariate logistic regression analysis for pro	redictors of postpartum dej	pression
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### DISCUSSION

Despite the fact that being a mother is a wonderful and special experience, the adjustment to motherhood is frequently marked by stress and strain due to the significant and quick intrapersonal and interpersonal changes that take place in a variety of physical, psychological, social, economic, and family aspects [2].

It has been discovered that maternal depression negatively impacts the developmental outcomes of children, including physical consequences including delayed growth, decreased birth weight, and feeding issues [20].

Our results showed that the frequency of late pregnancy depression was (15.7%) of the participants in agreement with the study of **Adeoye et al., [21]** who found that the prevalence of antepartum depression was 14.1% and accordance to **Kiepura, Kmita [22]** who they found that the prevalence was 10%.

This study shows also that (25.5%) of the mothers had possible postpartum depression in agreement with the study of **Hildingsson & Rubertsson**, [23] which showed during postpartum follow-up, 19%

reported depressive symptoms 2 months after birth,. As well, **Ghafoor et al., [24]** regarding EPD scale (49.5%) women out of the recruited 200 participants had postpartum depression and this disagreement may be due to different sample size . Also, **Badr et al., [11]** they found that the prevalence of depression was 19% . Also, **Abdelwahid et al.[ 31]** they found that PPD was detected in 22% of the studied women.

According to our findings, mothers with late pregnancy depression had significantly higher socio-economic scores (P = 0.023). It was more frequent in mothers who were employed than mothers who were unemployed which can be attributed to life stress related to nature of their occupation. In agreement with our results Jeong et al., [25] who reported that there was no statistically significant difference between non-depressed pregnant women and depressed pregnant women as regard age, (P=0.806) while in contrast with our results there was statistically significant difference between non-depressed pregnant women and depressed pregnant women as Educational Level (<12 years, %), (P= 0.001). This difference returned to the gap in sample size and Study design, as study of Jeong et al., [25] conducted on 1262 patients in cross sectional study.

Our results showed that (40%) of mothers who had positive history of depression and positive family history of depression depression develop late pregnancy (P=0.048, OR=4.44, 95% CI=1.09-18.1).Also, socioeconomic score and history of depression can be used as independent factors for predicting depression in late pregnancy. According to Bunevicius et al., [26] they found that, a personal history of depression in the past, a personal history of psychiatric treatment in the past and high scores were related neuroticism to depression during the last trimester.

Our results showed that patients with postpartum depression had significantly higher socio-economic scores (P = 0.038). It was more frequent in mothers who were employed than mothers who were unemployed. In agreement with Abd Elaziz & Halim, [28] who found that there was statistically significant difference between depression cases and normal cases (Nondepression) as regard work and educational level with p-value 0.0346 and 0.0158, respectively. In disagreement with our results Suhitharan et al., [27] who found that there was no statistically significant difference between PPD cases and control as regard Occupation (P= 0.4752).This difference may be returned to the difference in sample size and Study design, as their study was conducted on 479 patients in case-control study.

Our findings showed that (60%) of mothers had positive history of depression and positive family history of depression develop postpartum depression. Also (45.5%) of mothers with positive history of post-partum depression develop PPD. In agreement with our results **Suhitharan et al., [27]** who found that there was statistically significant difference between PPD cases and control as regard family history of depression and history of depression, (P<0.001).

Our results showed that there is a statistically significant positive association between PPD and postpartum bonding which means that depression associated with poor bonding this can be explained that depressed mothers suffer from lake of interest and energy and unable to care of their babies this lead to defect in maternal bonding. According to **Alturki et al., [29]** they found that higher PBQ subscale scores were associated with a greater risk of depression as determined by the EPDS questionnaire.

Our findings showed that after applying logistic regression analysis for predictors of postpartum depression, history of depression and maternal complications can be used as independent factors predicting for which can postpartum depression be attributed to stress induced by these conditions which affect the mother during postpartum period. Also, the study of Cho et al., [30] showed that women who were employed, breastfed, faced high parenting burdens during the previous month, had poor subjective health status, high stress level, and a past depression diagnosis were more likely to develop PPD.

# Limitations of the study:

Our sample restricted to the same place and small population. And there were Difficult communications with illiterate mothers. Refusal of screening while they are not feeling sick. Fear and psychological effects of positive diagnosis of perinatal depression. While cohort study can identify associations, it cannot establish causality. Other factors may be responsible for the observed relationship between depression and bonding.

### **Conclusion:**

the study found a substantial association between the depression scores during the late pregnancy and postpartum stages and identified а variety of maternal. socioeconomic, and clinical factors that independently contribute to depression during both of these stages. Targeted treatments to enhance maternal mental health during and after pregnancy can be guided by these findings. To validate these findings across a range of groups and therapeutic contexts, more research is recommended.

### **Recommendation:**

We recommend according to our study that early screening of depression during late pregnancy is a very important step in diagnosis and early management of PPD and improves the outcome as PPD not only affects mother, but also has bad effects on the baby and the maternal bonding.

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