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Original Article

## Antepartum depression: The prevalence, Associated Factors and Perinatal Outcomes: A cross-sectional Study

Mohamed Metwally Aboelabbas <sup>1\*</sup>

Ahmed Almorsy <sup>2</sup>

<sup>1</sup> Department of Psychiatry, Damietta Faculty of Medicine, Al-Azhar University, Damietta, Egypt.

<sup>2</sup> Department of Obstetrics and Gynecology, Damietta Faculty of Medicine, Al-Azhar University, Damietta, Egypt.

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### ABSTRACT

**Objective:** The current study aimed to track the prevalence of antepartum depression (APD), its associated factors and perinatal outcomes among Egyptian pregnant women.

**Methods:** The current work included 122 pregnant women, with singleton normal pregnancy. They were evaluated for antepartum depression and perceived stress. In addition, demographics and obstetric data were collected and documented. The psychiatric status was assessed in the third trimester (preferably at 35 to 37 week of gestation). Then, the feto-maternal outcome was recorded. The primary outcome was the prevalence of APD and perceived stress. Neonatal outcome was document especially preterm birth and neonatal weight.

**Results:** APD was recognized among 28 women (23.0%). The APD was significantly associated with employment (82.1% and 57.4%, in those with and without APD respectively). The unplanned pregnancy was significantly increase in women with than those without APD (35.7% vs 9.6%). Maternal obesity, low birth weight and preterm delivery were associated with APD. Finally, the perceived stress score was significantly higher among women with APD than those without APD ( $18.92 \pm 7.30$  vs  $14.75 \pm 9.07$ ).

**Conclusions:** APD was reported in nearly one of four women and significantly associated with maternal obesity, unplanned pregnancy and employment. In addition, preterm birth and low birth weight significantly increased with APD.

**Keywords:** Depression; Prevalence; Perinatal; Maternal Obesity; Preterm birth.



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\* Corresponding author

Email: [drmabas@mail.com](mailto:drmabas@mail.com); [drmabas@gmail.com](mailto:drmabas@gmail.com)

## INTRODUCTION

Mental health defined by the world Health Organization as ““a state of well-being in which every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and can contribute to her community”<sup>(1)</sup>. Thus, and on the extreme side, the mental disorders are disturbances of thought, emotions, behavior, and relationships and communications with others, with substantial suffering and functional impairment of one or more major activities of life<sup>(2)</sup>.

The mental health disorders of the pregnant or non-pregnant mothers have gained a significant health concern, due to associated potential harmful effects on both mothers and their siblings<sup>(3,4)</sup>. Depression is a prevalent disorder as it affects about 300 million people worldwide. It is a major cause of disturbances of the daily health activities and may lead to major social disability<sup>(5)</sup>.

Antepartum depression is a pregnancy-related mood disorder characterized by a reduced interest or pleasure in almost all activities, marked weight loss, sleep disturbances, fatigue, anorexia, feeling of hopelessness, decreased self-esteem, as well as a reduced thinking ability and/or concentration<sup>(6,7)</sup>. Depression is the commonest psychiatric disorder of pregnancy. However, it is usually neglected in the lower and middle than higher-income countries<sup>(8,9)</sup>.

Antepartum depression (APD) affects 12%-42% of pregnant women in middle- and low-income countries<sup>(10-12)</sup>. It usually associated with different factors (e.g., sociodemographic, lifestyle, obstetric, and psychosocial factors). The psychosocial factors include but not limited to the domestic violence, stress, and lack of social support. Other poor lifestyle factors (e.g., smoking (positive or negative) and alcoholism) are thought to be associated with APD. In addition, other factors could contribute. These include poverty<sup>(13)</sup>, low educational level<sup>(14)</sup>, young age of marriage, sleep deprivation, lack of other family member's support, obesity, unintentional pregnancies<sup>(11)</sup>, past history of complicated pregnancies, depression or other psychiatric disorders<sup>(14)</sup>, physical and sexual abuse, and relationship conflicts<sup>(11)</sup>.

From the other aspect, the APD had been linked to different adverse maternal-fetal outcomes (e.g., preeclampsia, preterm premature delivery, small for gestational age, low birth weight, lower Apgar Scores and an increased liability to childhood behavioral disorders later in life<sup>(11,15,16)</sup>. APD is also a significant risk factor for postpartum depression (PPD) that affects the normal child care and development. PPD also affects the interaction between the mother and her infant and disturbed the whole family life<sup>(17,18)</sup>.

Reviewing literature, a few studies in developing countries investigated the problem of APD and its association with perinatal outcome. Cross-sectional or

retrospective studies are limited in their ability to tract the association between APD and perinatal outcome. However, longitudinal studies provide a suitable option to track the problem. These are also few in developing countries, mainly in Africa and Egypt is not an exception. Results are also heterogeneous<sup>(18,19)</sup>. Thus, the current work was designed to track the prevalence of APD, its associated factors and perinatal outcomes among a cohort of pregnant Egyptian women.

## PATIENTS AND METHODS

The current work had been carried out in Al-Azhar University Hospitals during the period extended from December 2018 to March 2022. Women were included during their first half of the pregnancy (before the 20<sup>th</sup> week of gestation), and followed-up till delivery.

**Inclusion criteria:** Women 18 years or older, in their first half of the pregnancy, and without significant medical complications. Additionally, women and her husband must assign informed written consent to be eligible for participation in the study. Then, all women were followed-up till the delivery during their antenatal care visits.

### Methods:

At inclusion, women characteristics were analyzed and documented. These included woman demographics, special habits, obstetrics and medical history. The psychiatric status was assessed in the third trimester (preferably at 35<sup>th</sup> to 37<sup>th</sup> weeks of gestation). Women who escaped psychiatric evaluation were excluded from the study. Then, the fetomaternal outcome was recorded.

**Ethical considerations:** The study protocol was reviewed and approved by the research and ethics committee of Damietta Faculty of Medicine, Al-Azhar University (Damietta, Egypt) (DFM-IRB00012367-22-01-010)

**Primary outcome** of the study was the prevalence of APD and perceived stress

**Birth Outcomes:** Two birth outcomes were evaluated. Preterm birth (PTB) was assessed as offspring who were born earlier than / before 37 weeks. The second is the neonatal birth weight. In addition, any complications related to pregnancy or delivery were documented.

**Study tools:** The antepartum depression had been assessed by the Edinburgh Postnatal Depression Scale (EPDS); the commonest tool to screen depression among pregnant women and mothers. It is a valid and useful tool for the assessment of depression. It is a 10-questions survey, with 4-likert response (0 to 3). The final score ranged between 0 to 30. Values  $\geq 13$  were indicative of depression<sup>(20)</sup>. However, the clinical judgment must be in line with the score to consider the diagnosis of APD. The questionnaire management was corrected by a psychiatrist (not involved in the study), while clinical assessment through clinical structured interview was completed by the

first author (who was blinded to the result of the questionnaire).

Exposure to intimate violence was also assessed by a simple and fast 4-items check tool with a 5-point scale (never, rarely, sometimes, fairly often, frequently). Each item scored 1 to 5. The score ranged between 0 and 20 and values greater than 10 indicate positive results. A fifth question may be added to check for sexual violence <sup>(21,22)</sup>.

Finally, the perceived stress was assessed by a screening tool composed of 10 questions with a 4- choice answers; the Perceived Stress Scale. The maximum score was 40, and low stress was assigned for values (0-13), moderate for values (14-26), and high for scores 27 or higher.

**Data analysis:** The collected data were fed to an excel sheet and anonymized. Quantitative data were presented by their means and standard deviations. On the other side, qualitative data were expressed by their relative frequency and percentages. Groups were compared by independent samples student “t” test or Chi-square test, according to the type of data. The statistical package for social sciences (SPSS), version 16 was used to complete all analyses. P value < 0.05 was a marker of significance.

## RESULTS

The primary outcome of the current work was the development of antepartum depression (APD). It was recognized among 28 women (23.0%). Then we compared women with APD and those without. The women age ranged between 18 and 38 years. They had higher education and employed. Their social level was middle to high. The APD was significantly associated with employment. However, patient age, education or social level did not significantly associate with antepartum depression (Table 1).

The obstetric history revealed that, the women were mainly multigravida, with increased unplanned pregnancy, and lower previous miscarriage. Exposure to smoking was only lower in both groups. the exposure to partner violence was minimal. APD was associated with significant increase of unplanned pregnancy and maternal obesity (Table 2). Finally, adverse pregnancy outcome was significantly associated with antepartum depression. For example, birth weight was significantly reduced with APD. In addition, preterm delivery significantly increased with APD. Finally, the perceived stress was significantly increased among APD than non-APD groups (Table 3).

**Table (1):** Maternal characteristics among study populations

Variable		Antepartum depression		Test	P value
		Yes (n=28)	No (n=94)		
Age (years)	Mean±SD	28.64±.88	29.37±4.43	0.79	0.43
	Min. – Max.	19-35	18- 38		
Maternal Education (n,%)	Secondary or lower	7 (25.0%)	29 (30.9%)	1.50	0.47
	Higher Education	13 (46.4%)	48 (51.1%)		
	Postgraduates	8 (28.6%)	17 (18.1%)		
Employment (n,%)	Yes	23(82.1%)	54 (57.4%)	<b>5.65</b>	<b>0.017*</b>
	No	5 (17.9%)	40 (42.6%)		
Social level (n,%)	Low	4 (14.3%)	11 (11.7%)	0.20	0.90
	Middle	20 (71.4%)	71 (75.5%)		
	High	4(14.3%)	12 (12.8%)		

**Table (2):** Obstetric history among study populations

Variable		Antepartum depression		Test	P value
		Yes (n=28)	No (n=94)		
Gravidity	Primigravida	8(28.6%)	22 (23.4%)	0.31	0.57
	Multigravida	20 (71.4%)	72 (76.6%)		
Unplanned pregnancy	Yes	10 (35.7%)	9 (9.6%)	<b>11.21</b>	<b>0.001*</b>
	No	18 (64.3%)	85 (90.4%)		
Previous miscarriage	Yes	5 (17.9%)	15 (16.0%)	0.06	0.81
	No	23 (82.1%)	79 (84.0%)		
Tobacco exposure	Yes	7 (25.0%)	23 (24.5%)	0.003	0.95
	No	21 (75.0%)	71 (75.5%)		
Maternal obesity	Yes	11 (39.3%)	18 (19.1%)	<b>4.82</b>	<b>0.028*</b>
	No	17 (60.7%)	76 (80.9%)		
Exposure to Partner violence	Yes	1 (3.6%)	2 (2.1%)	0.18	0.66
	No	27 (96.4%)	92 (97.9%)		
Previous CS	Yes	5 (17.9%)	15 (16.0%)	0.06	0.81
	No	23 (82.1%)	79 (84.0%)		

**Table (3): Pregnancy outcome and perceived stress among study populations**

Variable		Antepartum depression		Test	P value
		Yes (n=28)	No (n=94)		
Mode of delivery	CS	9 (32.1%)	21 (22.3%)	1.12	0.29
	NVD	19 (67.9%)	73 (77.7%)		
Infant gender	Male	17 (60.7%)	53 (56.4%)	0.16	0.68
	Female	11 (39.3%)	41 (43.6%)		
Birth weight (kg)	Mean±SD	3.040±0.149	3.107±0.122	2.40	0.018*
	Min. – Max.	2.78-3.36	2.87- 3.40		
GA (weeks) at Delivery	Mean±SD	38.11±1.34	39.20±1.04	4.55	<0.001*
	Min. – Max.	36-41	37- 41		
Preterm delivery	Yes	3 (10.7%)	0 (0.0%)	10.32	0.001*
	No	25 (89.3%)	94 (100.0%)		
Perceived stress	Low	4 (14.3%)	38 (40.4%)	6.60	0.027*
	Middle	14 (50.0%)	31 (33.0%)		
	High	10 (35.7%)	25 (26.6%)		
	Mean±SD	18.92±7.30	14.75±9.07		
EBDS score	Mean±SD	17.39±1.66	8.95±1.75	22.0	<0.001*
	Min. – Max.	15-21	4-12		

## DISCUSSION

The results of the current work revealed that; the incidence of the antepartum depression was 23%. It was significantly associated with increased employment, unplanned pregnancy, and maternal obesity. In addition, the women with APD had neonates significantly lower in birth weight, and increased rate of preterm delivery. Finally, the perceived stress was significantly higher among APD. The reported incidence agrees with Al Rawahi *et al.* (7) who reported that, 24.4% of included women EBDS scores suggested antenatal depression. In addition, the reported incidence of APD in the current work is in line with women from Brazil (24.3%) (23) and Turkey (21.6%) (24). However, the reported prevalence is higher than that reported from Jordan (19.0%) (25), Morocco (19.2%) (26), Bangladesh (18.0%) (27), and Italy (14.9%) (28). However, the current prevalence is lower than that reported from Ethiopia (27.6%-31.1%) (6). The differences might be due to the usage of different tools for diagnosis of APD. In addition, different demographic criteria and sample size may have a role.

The APD significant association with unplanned pregnancy may be related to the stress of child care, especially in employed women, who were increased in the current work in overall women in the study and in those who had APD. These results are in line with previous studies from Turkey and Brazil (29, 30).

In the current work obese women were more likely to had APD. These results are in line with Tuthill *et al.* (31) who reported that, maternal obesity was significantly associated with an increased APD in both nulliparas and multiparas. The APD prevalence was proportionately correlated with the severity of obesity. The association between maternal obesity and antenatal depression is of concern due to increased prevalence of obesity in women presenting for antenatal care (32). Dachew *et al.* (33) in their meta-analysis come to a conclusion that pre-pregnancy obesity was associated with an increased risk of maternal ante- and post-

partum depression. They recommended mental health screening and care for those women.

The current study indicated an association between APD and preterm birth and low birth weight. These results are in line with previous studies. For example, Sanchez *et al.* (34) found that APD was associated with higher odds of preterm birth. In addition, Rahman *et al.* (35) reported that women with APD were more likely to deliver low birth weight neonates (1.9-times higher than those without APD). Similarly, Wado *et al.* (36) reported those with APD were 1.87-times as likely to have low birth weight neonates when compared with women without APD.

A number of mechanisms have been postulated to explain the association between APD and increased risk of low birth weight and preterm birth. These included hyperactivity or dysregulation of hypothalamic-pituitary-adrenal axis (37-39), increased proinflammatory cytokines due to increased catecholamines, oxidative stress and finally, the stigma of APD that could prevent women to receive adequate antenatal care, which may lead to increased adverse perinatal outcome (40-42).

The current work showed that there was no significant association between partner violence and APD. This is contradiction to previous studies from lower and higher income countries. These studies recognized the intimate partner violence, as a contributing factor for antepartum anxiety and depression (27, 43-45).

**In conclusion**, the current work shed light on the magnitude of APD in pregnant Egyptians. APD was significantly associated with obesity, unplanned pregnancy and employment. The neonatal outcome adversely affected in women with APD, with significant increase of preterm birth and low birth weight.

A limitation of the current study is its cross-sectional design, as it could not establish the cause-and-effect relationship. Another limitation includes the small sample

size. However, this limitation did not impair the value of the current work, being unique in the exploration of the problem among Egyptian females and expected with other studies to build a map of the problem in Egypt.

Conflict of Interest: None

Financial disclosure: None

Data availability: Data is available on request.

Author's Contribution: Authors contributed equally to this work.

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