ORIGINAL ARTICLE

Assessment of the Edinburgh Postnatal Depression Scale as a Screening Tool for Postpartum Depression Among Women Delivering at Egyptian Tertiary Care System University Hospital: Prevalence and Risk Factors Analysis

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Abstract

Background: ***The stress of giving birth, the quick changes in the body's systems, and the duty of child raising are the main factors contributing to postpartum depression(PPD), a multifactorial condition. Developed by Cox for use in the puerperium and during pregnancy, the Edinburgh Postnatal Depression Scale(EPDS) is a screening tool for postpartum depression.***

Aim and objectives: ***Using the EPDS as a screening tool for PPD, this study aims to examine the prevalence and risk factors among women giving birth at the University Hospital of the Egyptian Tertiary Care System.***

Patients and methods: ***From October 2023 through October 2024, two thousand individuals who had vaginal or cesarean deliveries and were followed up on were included in this observational cross-sectional study. An initial translated version of the EPDS and a second subset of obstetrical and related psychosocial components were administered to all patients.***

Results: ***In the whole studied population, the depressed mothers were 341 mothers (17%), while the non-depressed mothers were 1659 mothers(83%). The mothers who suffered from depression were categorized as follows: 160(or 8%) were moderately depressed, scoring 10–12 on the Edinburgh Post-Depression Scale(EPDS), and 181(or 9%) were severely depressed, scoring 13 or higher. Regarding the presence of personal mental history, 80% of women were depressed while 20% non-depressed(p=0.016). Regarding the presence of family mental history, 50% of women were depressed, while 50% of them were non-depressed, p=0.135.***

Conclusion: ***Comprehensive screening and intervention programs that are culturally sensitive are necessary because the results show that biological, psychological, and social factors all interact in a complex way to cause PPD.***

Keywords: EPDS; PPD; Screening

1. Introduction

There are usually a lot of emotional, social, and physical shifts that occur around the time a woman becomes a mother. New mothers are more likely to devote themselves fully to caring for their infants when they experience a sense of fulfillment in their role as mothers, despite the immense demands of this duty. A mother's bond with her newborn is fragile, yet it develops quickly after giving birth and continues throughout the years; any disruption to this bond can affect the infant's maturation.[1]

There is a correlation between the stress of puerperium and the development of mental disease. Most of the time, this mental disease is the beginning of a new disorder, although it can also be a return of an earlier mental illness. Among the non-psychotic depressive illnesses, postpartum depression(PPD) begins during the puerperium. Most women report the onset of symptoms within the first week after giving birth, though they can persist for up to a year after the big day.[2]

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Worldwide, women and men of childbearing age suffer from depression at much higher rates than the general population, as reported by the World Health Organization(WHO). Prevalence estimates for PPD on a global scale vary from 4.63 to 63.9%. Minor or serious postpartum depression arises in 10–20% of Western parturients. Nonetheless, low- and middle-income emerging nations have a higher prevalence. Prevalence estimates in China range from 11% to 14%, while in Africa they fall anywhere from 6.6% to 50.4%.[3]

There are three distinct types of postpartum psychological disorders: the "blues," PPD, and postpartum psychosis. Periods of melancholy, sobbing, worry, forgetfulness, and irritability are symptoms of postpartum blue, a short-lived depression disorder. Within 10 days, it typically goes away on its own.[4]

PPD continues for a longer period of time. There are a lot of factors at play here, but the most important ones are the demanding nature of child-rearing, the stress of giving birth, and the quick changes that occur in the body's systems. A number of studies have linked PPD to variables such as the mother's age, marital status, substance usage, infertility prior to conception, abortions, nausea and vomiting throughout pregnancy, delivery method, neonatal prognosis, and the mother's level of stress during puerperium.[5]

In order to determine the frequency and risk factors of PPD, this study will evaluate the EPDS as a screening tool among women giving birth at the University Hospital, which is part of Egypt's tertiary care system.

2. Patients and methods

The 2000 patients who participated in this observational cross-sectional study were chosen from the outpatient Obstetrics and Gynecology clinics at Al Azhar University Hospitals. They had either a vaginal or cesarean delivery and were followed up with. The study ran from October 2023 to October 2024. We used a systematic random sampling procedure to gather our samples.

We made sure to get patients' written informed permission. Following clearance from the relevant local ethics committee, the research may proceed.

Exclusion criteria:

Individuals experiencing difficulty understanding the study's questionnaire, as well as pregnant women taking mental medication.

Every patient had to go through the following: a full medical history, a personal history, any complaints they might have, a review of their previous surgeries and medical conditions, a review of their family medical history, and finally, a thorough physical examination that included vital signs like blood pressure, temperature, heart rate, and respiratory rate as well as signs of illness like pallor, cyanosis, jaundice, and enlarged lymph nodes.

Along with the nursing staff and family wing matron, the data collection team also included an intern doctor. Each patient was given a separate set of questionnaires and led to a separate room. A translated version of the EPDS made up the first section of the questionnaire, while obstetrical and related psychosocial aspects made up the second.

After participants finished filling out the surveys, the data collectors double-checked them for accuracy before returning them to the researcher in a sealed envelope. The data collection team received thorough instruction in both technical and interpersonal skills. Language clarity, font size, and other necessary adjustments were made to the questionnaires. At regular intervals, the researchers would also visit the data collection room to ensure that the data was complete.

Maternal age, parity, educational attainment, profession, and family structure were all considered socio-demographic factors. Included in the category of "obstetrical and Associated Factors" were things like postpartum blues, the method of delivery, the obstetrical outcome (i.e., whether the baby was healthy or unwell), and nausea and vomiting throughout pregnancy. Babies are considered unwell if they spend three days or more in the neonatal intensive care unit (NICU).

Problems with conceiving and previous H/O abortions were linked to this pregnancy. Psychosocial variables of PPD were the subject of a comprehensive research review. Considerations included postpartum nurse attitude, the difficulty of the puerperium, the baby's preferred sex, the availability of social support, family strife, the recent death of a family member, and a history of chronic illness in a prior pregnancy.

Primary outcome:

Was to determine how common PPD was. We used EPDS to accomplish this. The Arabic version of the EPDS scale has been validated for screening for PPD. The EPDS score was translated into Arabic and utilized. Following the lead of several studies, we employed an EPDS cut-off value of 13 or higher to identify PPDes.

Secondary outcome:

The aim was to find out the risk factors associated with PPD in Egyptian women.

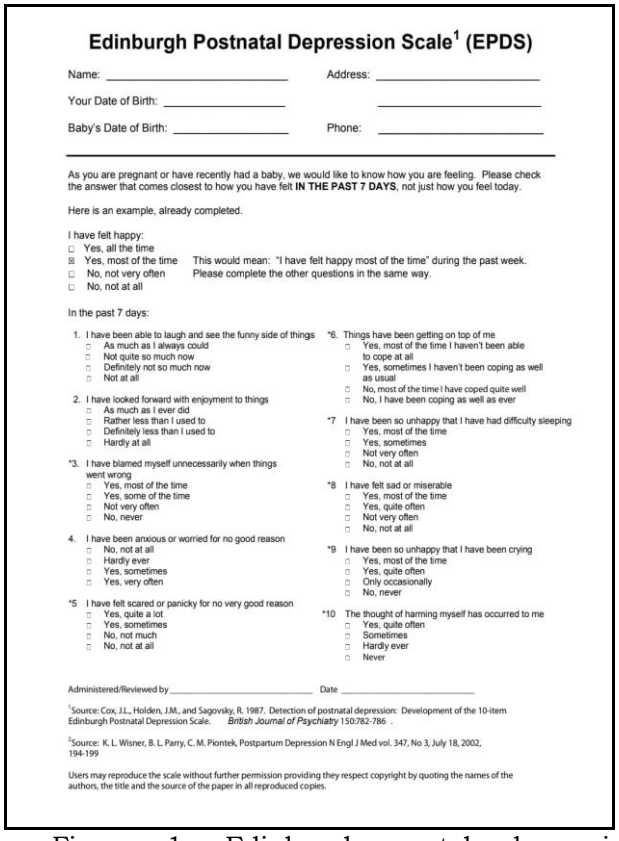
Sample Size Calculation:

Based on the work of Vishal et al.[3] this study uses Epi Info STATCALC to determine the sample size, taking into account the following assumptions: With an 80% power, the two-sided confidence level is 95%, with an odds ratio of 1.115 and a 5% margin of error. Based on the results of

the Epi-Info analysis, the maximum sample size was 1900. This led to an increase in the sample size to 2000 participants in order to account for potential cases of dropout during follow-up.

Statistical analysis:

Data was analyzed using SPSS v22, which was developed by IBM Inc. and is based in Chicago, IL, USA. Standard deviation(SD) and mean(IQR) were used to display quantitative variables. When comparing the means of two samples, we utilized Student's t-test to see whether there was a statistically significant difference. To determine whether a treatment had a statistically significant effect, researchers utilized a paired t-test, which involved comparing a patient's readings taken at the beginning and end of the treatment period. Qualitative factors were displayed using percentages and frequency counts. X2-test, also known as the Chi-square test, is a statistical tool for determining whether there is a statistically significant relationship between two or more variables, grades, or percentages. The Z-test is used to compare two percentages for statistical significance. It was deemed significant if the two-tailed P-value was ≤0.05.



Edinburgh Postnatal Depression Scale[1] (EPDS)

Name: _____ Address: _____

Your Date of Birth: _____ _____

Baby's Date of Birth: _____ Phone: _____

As you are pregnant or have recently had a baby, we would like to know how you are feeling. Please check the answer that comes closest to how you have felt **IN THE PAST 7 DAYS**, not just how you feel today.

Here is an example, already completed.

I have felt happy:
- ☐ Yes, all the time
- ☒ Yes, most of the time — This would mean: "I have felt happy most of the time" during the past week.
- ☐ No, not very often — Please complete the other questions in the same way.
- ☐ No, not at all

In the past 7 days:

1. I have been able to laugh and see the funny side of things
   - ☐ As much as I always could
   - ☐ Not quite so much now
   - ☐ Definitely not so much now
   - ☐ Not at all
2. I have looked forward with enjoyment to things
   - ☐ As much as I ever did
   - ☐ Rather less than I used to
   - ☐ Definitely less than I used to
   - ☐ Hardly at all

*3. I have blamed myself unnecessarily when things went wrong
   - ☐ Yes, most of the time
   - ☐ Yes, some of the time
   - ☐ Not very often
   - ☐ No, never
4. I have been anxious or worried for no good reason
   - ☐ No, not at all
   - ☐ Hardly ever
   - ☐ Yes, sometimes
   - ☐ Yes, very often

*5 I have felt scared or panicky for no very good reason
   - ☐ Yes, quite a lot
   - ☐ Yes, sometimes
   - ☐ No, not much
   - ☐ No, not at all

*6. Things have been getting on top of me
   - ☐ Yes, most of the time I haven't been able to cope at all
   - ☐ Yes, sometimes I haven't been coping as well as usual
   - ☐ No, most of the time I have coped quite well
   - ☐ No, I have been coping as well as ever

*7 I have been so unhappy that I have had difficulty sleeping
   - ☐ Yes, most of the time
   - ☐ Yes, sometimes
   - ☐ Not very often
   - ☐ No, not at all

*8 I have felt sad or miserable
   - ☐ Yes, most of the time
   - ☐ Yes, quite often
   - ☐ Not very often
   - ☐ No, not at all

*9 I have been so unhappy that I have been crying
   - ☐ Yes, most of the time
   - ☐ Yes, quite often
   - ☐ Only occasionally
   - ☐ No, never

*10 The thought of harming myself has occurred to me
   - ☐ Yes, quite often
   - ☐ Sometimes
   - ☐ Hardly ever
   - ☐ Never

Administered/Reviewed by _____ Date _____

[1]Source: Cox, J.L., Holden, J.M., and Sagovsky, R. 1987. Detection of postnatal depression: Development of the 10-item Edinburgh Postnatal Depression Scale. *British Journal of Psychiatry* 150:782-786 .

[2]Source: K. L. Wisner, B. L. Parry, C. M. Piontek, Postpartum Depression N Engl J Med vol. 347, No 3, July 18, 2002, 194-199

Figure 1. Edinburgh postal depression scale(EPDS) questionnaire.

(After: Cox et al.,[6] & Wisner et al.,[7])

3. Results

Table 1. The Socio-demographic characteristics of the participants.

VARIABLE	CATEGORIES			TOTAL	MEAN [95% CI]
AGE	17-24 years	25-34 years	35-44 years		
N(%)	840 (42%)	980 (49%)	180(9%)	2000 (100%)	26.13 [25.45-26.81]
RESIDENCY	Great Cairo	Delta	Upper Egypt		
N(%)	980(49%)	600 (30%)	420(21%)	2000(100%)	-
EDUCATION	6 years or less	7-12 years	>12 years		
N(%)	80(4%)	1060 (53%)	860 (43%)	2000 (100%)	12.59 [12.20-12.98]
OCCUPATION	Housewife	Employed	-		
N(%)	1800 (90%)	200(10%)	-	2000 (100%)	-

The mothers who took part in the study were between the ages of 18 and 41, with a mean age of 26.13 (SD±5.3) years and a median age of 25. Their ages at marriage ranged from 18 to 30 years, with a mean age of 25.6(SD±3.24) years and a median of 23. Of the mothers who participated, over 40% had completed some form of post-secondary education, with an average of 12.6 years and a median of 12 years. Surprisingly, only 10% of these mothers had jobs, while the other 90% were stay-at-home mothers.

Table 2. Relationship between psychological factors and PPD.

VARIABLE	CATEGORIES	DEPRESSED	NON-DEPRESSED	TOTAL	OR[95% CI]	P-VALUE
PERSONAL MENTAL HISTORY	Yes	8(80.0%)	2(20.0%)	10	15.72[1.59-155]	0.016*
	No	319(16.0%)	1671(84.0%)	1990		
FAMILY MENTAL HISTORY	Yes	10(50.0%)	10(50.0%)	20	5.08[0.69-37.18]	0.135*
	No	327(16.5%)	1653(83.5%)	1980		
DEPRESSION DURING PREGNANCY	Yes	263(52.5%)	237(47.5%)	500	20.54[8.84-47.74]	<0.001*
	NO	77(5.1%)	1423(94.9%)	1500		

As regarding presence of personal mental history, 80% of women were depressed while 20% non-depressed, p=0.016. Regarding presence of family mental history, 50% of women were depressed while 50% of them non-depressed, p=0.135.

Table 3. Percentage of post-partum depression

Depressed	Non-depressed
341 mothers(17%)	1659 mothers(83%).

In whole studied patients, the depressed mothers were 341 mothers(17%), while non-depressed mothers were 1659 mothers(83%), table 3; figure 2.

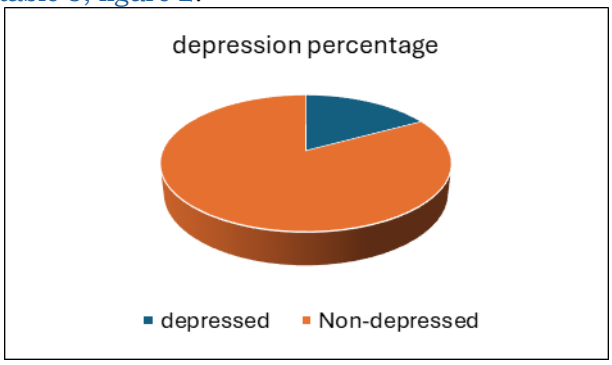


Figure 2. Percentage of depression post-partum.

Table 4. An overview of the study's newborn-related characteristics.

VARIABLE	CATEGORIES		
NEWBORN SEX	Male	Female	-
N(%)	1200(60%)	800(40%)	-
DESIRED NEWBORN SEX	Male	Female	NO DIFFERENCE
N(%)	1100(55%)	700(35%)	200(10%)
BABY'S SEX AGREEMENT WITH MOTHER'S DESIRE	Agree or no difference	Do not agree	-
N(%)	1560(78%)	440(22%)	
NEWBORN ILLNESS	Yes	No	-
N(%)	30(1.5%)	1970(98.5%)	-
NICU ADMISSION	Yes	No	-
N(%)	280(14%)	1720(86%)	-

The previous table (4) showed that the gender of newborn was male in 1200 newborns, and female in 800 newborns, while the desired newborn sex was 1100 males, while 700 females, but 200 women had no difference regarding the desire of their babies. On the other hand, 1560 women(78%) agreed the sex of babies. Regarding the illness of newborn, 30 newborn developed illness, while 280 were admitted in NICU.

Table 5. Study participants' psychological characteristics.

VARIABLE	CATEGORIES		
PERSONAL MENTAL HISTORY	Yes	No	DON'T KNOW
N(%)	10(0.5%)	1990(99.5%)	-
FAMILY MENTAL HISTORY	Yes	No	DON'T KNOW
N(%)	20(1%)	1800(90%)	180(9%)
DEPRESSION DURING PREGNANCY	Yes	No	DON'T KNOW
N(%)	500(25%)	1500(75%)	

The previous table (5) showed that 10 women showed personal mental history, 20 women had a family mental history, while 500 women developed depression during pregnancy.

Table 6. Relationship between sociodemographic factors and PPD.

VARIABLE	CATEGORIES	DEPRESSED	NON-DEPRESSED	TOTAL	OR [95% CI]	P-VALUE
AGE	17-24 years	185(22%)	655(78%)	840	1	0.211
	25-34 years	137 (14%)	843 (86%)	980	0.57[0.28-1.15]	0.117
	35-44 years	19(10.5%)	161 (89.5%)	180	0.37[0.08-1.72]	0.266
RESIDENCE	Great Cairo	201(20.5%)	779(79.5%)	980	1	0.360
	Delta	79(12.9%)	521 (87.1%)	600	0.57[0.25-1.31]	0.187
	Upper Egypt	61(14.6%)	359	420	0.66[0.26-	0.378

			(85.4%)		1.66]	
EDUCATION	6 years or less	11(12.5%)	69(87.5%)	80	1	0.145
	7-12 years	229 (21.6%)	831 (78.4%)	1060	1.93[0.23-16.36]	0.547
	>12 years	101 (11.8%)	759 (88.2%)	860	0.93[0.11-8.26]	0.951
OCCUPATION	Housewife	333 (18.5%)	1467 (81.5%)	1800	1	0.089
	EMPLOYED	8(4.2%)	192 (95.8%)	200	0.19[0.03-1.46]	

The previous table (6) showed that the most common category of age was 25-34 years, the most habitant area was the delta. On the other hand, most of our patients completed 7-12 years of education, while 90% of them were housewives.

4. Discussion

Mothers' ages in our study varied from 18 to 41 years old, with a mean of 26.13(SD±5.3) years and a median of 25 years. The average age at marriage was 25.6(SD±3.24) years, with a median of 23 years, and the age range from 18 to 30 years was represented.

These results, supported by Mohamed et al.,[8] They set out to determine how common postpartum depression is and how much moms knew about it. With an average age of 28.4±5.5 years, they demonstrated that most of the moms surveyed were between the ages of 20 and 35. The majority of moms' marital lengths were between one and five years.

Of the moms who took part in our survey, just 10% had jobs while 90% stayed at home to care for their children.

In accordance, Mohamed et al.,[8] reported that the majority of studied mothers were unemployed.

These findings came in line with Aslam et al.,[9] according to whom the majority of participants were jobless.

The study found that almost 40% of mothers had completed some kind of post-secondary education, with a mean of 12.6 years and a median of 12 years.

These results, confirmed by Daliri et al.,[10] who reported that less than half studied mothers had a secondary education.

We observed that 17% of Egyptian women suffer from postpartum depression, with 8% reporting moderate depression and 9% severe depression.

Similarly, in Ghana, the prevalence of PPD was 50.4%, as reported by Daliri et al.[10] However, research by Mokwena & Modjadji,[11] revealed that the prevalence of PPD was 22% in South Africa.

The results of the current study were in disagreement with those of other studies conducted in Africa. As reported by Obioha et al.,[12] in Southwest Nigeria, the prevalence of PPD was found to be 52.3%.

In comparison to neighboring middle eastern countries, the study's findings disagree with those of Almuqbil et al.,[13] who found that the prevalence of PPD was 59.68% in Saudi Arabia, and 60% in Libya, according to Saeed et al.,[14] also, in Iraq, Al-Imam et al.,[15] discovered a prevalence of PPD of 51.49 percent.

The prevalence of PPD varied obviously not just among countries but also within the same nation. So, while Sohag City indicated a lower prevalence of PPD, the current study found a greater one in Egypt, Salem et al.,[16] who found that the incidence of PPD was 7.32%. This variation might arise from having noticed that the Sohag study's participants were exclusively women between the ages of 20 and 35 years who were within six weeks postpartum.

Our study found that younger mothers(17-24 years) had a higher prevalence of PPD(22%) compared to older age groups.

This aligns with findings from other studies, such as Chaudron et al.,[17] who reported that younger maternal age was a risk factor for PPD. However, the association was not statistically significant in this study, which could be due to other confounding factors.

In our study, mothers with 7-12 years of education had the highest prevalence of PPD(21.6%).

Similarly, Elashiry et al.,[18] found that there was a statistically significant relationship between the educational level of women and PPD. However, the same author agreed with the current study and reported that two-thirds of illiterate mothers were depressed.

This contrasts with some studies that show an inverse relationship between education level and PPD risk Gelaye et al.[19] The reasons for this finding warrant further investigation and may be related to specific socio-cultural factors in Egypt.

In our study, housewives had a higher prevalence of PPD(18.5%) compared to employed mothers(4.2%). While this difference was not statistically significant, it's consistent with other studies that have found employment to be a protective factor against PPD.[20]

In our study, mothers of male infants had a higher prevalence of PPD(21.7%) compared to those with female infants(12.6%).

This finding is interesting, as it contradicts some studies from other cultures where the preference for male children is strong.[21] It may

reflect changing attitudes towards child gender in Egypt or other underlying factors that require further exploration.

In our study, all of the infants with illness experienced PPD, highlighting the significant impact of infant health on maternal mental well-being.

This is consistent with other studies that have found a strong association between infant health problems and PPD.[22]

In our study, women with a personal history of mental health issues had a significantly higher risk of PPD(80% vs. 16%, p=0.016).

This strong association is well-documented in the literature Robertson et al.,[23] and underscores the importance of identifying and supporting women with pre-existing mental health conditions during the perinatal period.

In our study, there was a strong association between depression during pregnancy and PPD(52.5% vs. 5.1%, p<0.001).

Consistent with other research, this data confirms that prenatal depression is a major predictor of postpartum depression.[24]

We found three major factors that predicted PPD using the logistic regression model: anxiety and sadness when pregnant(OR:11.21, 95% CI: 3.79-33.19). Having a baby girl(odds ratio:0.29, confidence interval:1.098-0.85). Feeling overwhelmed by more than two stressful situations(OR:1.76, 95% CI:0.84-3.66).

4. Conclusion

The results underscore the necessity for all-encompassing screening and intervention programs that are culturally relevant, since they show how biological, psychological, and social components interact intricately to cause PPD.

Disclosure

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Authorship

All authors have a substantial contribution to the article

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Conflicts of interest

There are no conflicts of interest.

References

1. Aljaffer MA, Almadani AH, Almustafa AA, et al. Postpartum Depression at a Tertiary Care Hospital in Saudi Arabia: Prevalence and Associated Factors. Cureus.2023;15:e37758.
2. Dadi AF, Mwanri L, Woodman RJ, et al. Causal mechanisms of postnatal depression among women in Gondar town, Ethiopia: application of a stress-process model with generalized structural equation modeling. Reprod Health.2020;17:63.
3. Vishal AK, Prasad GK, Bhasin D, et al. Prevalence of Post-Partum Depression and Factors Associated in a Tertiary Care Centre:A Cross-Sectional Study. J Cardiovasc Dis Res. 2022;13:272-85.
4. Sharma V. Is postpartum depression a clinically useful concept? Expert Rev Neurother.2021;21:945-7.
5. Abebe A, Tesfaw G, Mulat H, et al. Postpartum depression and associated factors among mothers in Bahir Dar Town, Northwest Ethiopia. Ann Gen Psychiatry.2019;18:19.
6. Cox JL, Holden JM, Sagovsky R. Detection of postnatal depression. Development of the 10-item Edinburgh Postnatal Depression Scale. Br J Psychiatry.1987;150:782-786.
7. Wisner KL, Moses-Kolko EL, Sit DK. Postpartum depression:a disorder in search of a definition. Arch Womens Ment Health.2010;13(1):37-40.
8. Mohamed DO, Abdelhafez AA, Zaki SM, et al. Assessment of Knowledge, Attitudes and prevalence of postpartum depression among new mothers in Minia City. Minia Scientific Nursing Journal.2024 Jun 30;15(1):30-40.
9. Aslam M, Nawab T, Ahmad A, et al. Postpartum depression and its clinico-social correlates-A community-based study in aligarh. Indian J Public Health.2022;66(4):473-479.
10. Daliri DB, Afaya A, Afaya RA, et al. Postpartum depression: The prevalence and associated factors among women attending postnatal clinics in the Bawku municipality, Upper East Region of Ghana. PCN Rep.2023;2(3):e143.
11. Mokwena K, Modjadji P. A comparative study of postnatal depression and associated factors in Gauteng and Free State provinces, South Africa. Afr J Prim Health Care Fam Med.2022;14(1):e1-e11.
12. Obioha EG, Balogun MR, Olubodun T, et al. Knowledge, Attitude and Prevalence of Postpartum Depression among Postnatal Mothers in Southwest Nigeria. African Journal of Health Sciences.2021;34(6):779-792.
13. Almuqbil M, Kraidiye N, Alshmaimri H, et al. Postpartum depression and health-related quality of life: a Saudi Arabian perspective. PeerJ.2022;10:e14240.
14. Saeed NM, Elrayani AS, Sherif RF, et al. Mediterranean Journal of Pharmacy & Pharmaceutical Sciences.2022;2(2):79-89.
15. Al-Imam A, Haligowska A, Motyka M, et al. Risk Factors influencing Post-Partum Depression Severity in Iraqi Women. AL-Kindy College Medical Journal.2023;19(2):147-155.
16. Salem MN, Thabet MN, Fouly H, et al. Factors affecting the occurrence of postpartum depression among puerperal women in Sohag city, Egypt. Proceedings in Obstetrics and Gynecology.2017;7(1).
17. Chaudron LH, Klein MH, Remington P, et al. Predictors, prodromes and incidence of postpartum depression. J Psychosom Obstet Gynaecol.2001;22(2):103-112.
18. Elashiry A, Abdel-Wahed W, Abd-Elaty ME, et al. Proportion and Predictors of Postpartum Depression among Women Attending Fayoum University Hospitals, Egypt. The Egyptian Journal of Hospital Medicine.2022;89(2):7657-7662.
19. Gelaye B, Rondon MB, Araya R, et al. Epidemiology of maternal depression, risk factors, and child outcomes in low-income and middle-income countries. Lancet Psychiatry.2016;3(10):973-982.
20. Miyake Y, Tanaka K, Sasaki S, et al. Employment, income, and education and risk of postpartum depression: the Osaka Maternal and Child Health Study. J Affect Disord.2011;130(1-2):133-137.
21. Xie RH, He G, Liu A, et al. Fetal gender and postpartum depression in a cohort of Chinese women. Soc Sci Med. 2007;65(4):680-684.
22. Vigod SN, Villegas L, Dennis CL, et al. Prevalence and risk factors for postpartum depression among women with preterm and low-birth-weight infants:a systematic review. BJOG.2010;117(5):540-550.
23. Robertson E, Grace S, Wallington T, et al. Antenatal risk factors for postpartum depression:a synthesis of recent literature. Gen Hosp Psychiatry.2004;26(4):289-295.
24. Norhayati MN, Hazlina NN, Asrenee AR, et al. Magnitude and risk factors for postpartum symptoms:a literature review. Journal of affective Disorders.2015 Apr 1;175:34-52.