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ORIGINAL ARTICLE

An evaluation of postnatal depression women in Kuwait: findings from a web-based survey

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ABSTRACT

OBJECTIVES: To measure the prevalence and associated factors, and experience of women about screening for postnatal depression in Kuwait.

METHODS: A descriptive, cross-sectional study was conducted in which a sample 158 women who had recently attended obstetric clinics in Kuwait during the COVID-19 pandemic in Kuwait was included. Data were collected during January 2021 to the last week of May 2021 using a validated questionnaire comprising of two parts, sociodemographic part also including questions about COVID-19, and Edinburgh Postnatal Depression Scale. The questionnaire was distributed through healthcare providers to the eligible women who had recently given birth in Kuwait. Women were also snowballed through those who answered the questionnaire. The statistical significance of observed differences between variables was analyzed using the Chi-squared test.

RESULTS: Postnatal depression was found in 31 (19.6%), highly possible in 23 (14.6%), and probable in 52 (32.9%) women in our study. A large proportion of the women (105 or 66.5%) said that they were not aware of a screening process for postnatal depression, whereas only 5.7% said that they had been screened for it. In the sample, 97 (65.1%) women who were not screened had postnatal depression ($P < 0.05$).

CONCLUSION: Maternal postnatal depression was high in Kuwaiti women who were either in their third trimester or had just given birth to a baby. The lack of awareness about the screening process and extremely low levels of screening for postnatal depression indicates the need to improve these women's access to adequate screening services around pregnancy.

KEYWORDS: Postnatal Depression (MeSH); Depression, Postpartum (MeSH); Kuwait (MeSH); Women's experience (Non-MeSH); Screening (Non-MeSH); Mass Screening (MeSH); Maternal screening tests (Non-MeSH); Edinburgh Postnatal Depression Scale (MeSH).

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INTRODUCTION

Postnatal depression (PND) negatively affects both mothers and their newborns.[1] It typically begins four to six weeks after childbirth, peaking around two to three months postpartum.[2] According to the American College of Obstetricians and Gynecologists, one in seven women experiences minor or major depressive episodes during pregnancy.[3] In Kuwait, approximately 45% of women suffer from PND.[4] Several risk factors have been associated with PND, including exposure to intimate partner violence, which increases the risk fivefold.[5] Traumatic childhood events, such as neglect or sexual abuse, chronic conditions like high maternal body mass index, pregnancy-related anxiety, and recent catastrophic events also contribute to PND.[6,7] Stress, insufficient family support, social and financial challenges, poor socioeconomic status, and a lack of partner support further increase the risk.[1,3,8] Additional factors include low education levels, unplanned pregnancies, avoiding breastfeeding, and a prior history of depression.[9] Other triggers include difficulties in newborn care, loss of the infant, and partner smoking. Depression during pregnancy, stressful events, traumatic births, and neonatal medical complications further heighten the risk of PND.[3,10]

PND, a subset of perinatal depression, can severely affect not only the health of mothers but also their partners and newborns. Studies show that untreated perinatal depression can lead to lasting mental health issues in mothers, as well as increased risks of premature birth, low birth weight, and delayed neurobehavioral development in the fetus.[3,10,11] PND can significantly harm newborn wellbeing, with maternal emotional distress impacting fetal cognitive and behavioral development. In some cases, it can lead to poor maternal-infant bonding, behavioral issues in children, and, in severe instances, has been linked to suicide and infanticide.[12]

Despite the significant impact of PND on mothers, babies, and families, it often goes underdiagnosed in many communities. Many women may not disclose their feelings, and symptoms can be missed during brief consultations.[12] Additionally, women may avoid seeking treatment due to social stigma, self-stigma, lack of awareness, fears surrounding mental health treatments, or unrealistic expectations of motherhood.[13] It is crucial for physicians to recognize the risk factors for PND to identify women

at higher risk, as many may not seek the treatment they need. [14] Previous studies indicate that 35.7% of screened women experience PND.[5] Screening is essential, and all women should be screened during both the antenatal and postnatal periods. The American College of Obstetricians and Gynecologists recommends screening for PND at least once per trimester using standardized, validated tools.[3] Although PND screening is not yet routine in all settings, it requires greater attention to avoid missing potential cases of depression.[10] Screening alone offers clinical benefits, and regular monitoring of behavioral changes, along with providing support through home visits, can help prevent PND.[15,16] However, screening during the perinatal period became more challenging during COVID-19, exacerbating existing mental health issues and provoking new ones in pregnant women.[17]

Kuwaiti society, much like other Middle Eastern Arab countries, is shaped by its collectivist, conservative culture and Muslim beliefs. In such societies, the stigma surrounding mental illness is often heightened, with psychiatric symptoms frequently attributed to religious or supernatural causes. This cultural perspective results in individuals being hesitant to disclose their mental health struggles within their communities.[18] The primary aim of this study was to assess the prevalence and factors associated with high-risk PND in women. A secondary aim was to determine whether these women were screened for PND during their postnatal clinic visits.

METHODS

Study design: The study employed a web-based cross-sectional survey, utilizing the snowball sampling method. It targeted women who had attended postnatal clinics in Kuwait within six months, as PND typically begins within the first few months after childbirth. The online questionnaire facilitated the assessment of high-risk PND prevalence while adhering to physical distancing measures during the COVID-19 pandemic.

Study population and sample: The study population included all Kuwaiti women with live births in the past year who attended postnatal clinics. The target sample size was set at 300 women, determined using the formula for a single population proportion, with an assumed high-risk PND prevalence of 19%, a 95% confidence interval, and a 5% margin of error. To account for a potential 25% non-response rate, the final sample size was increased to 375. It is important to note that Kuwait offers free medical care, including comprehensive prenatal and birth services, and all births occur in hospitals.

Inclusion and exclusion criteria: Participants were included if they met the following criteria: 1) Kuwaiti nationality, 2) ability to read and write Arabic, and 3) willingness to participate in the survey. Women being treated for medical conditions were excluded to avoid potential bias related to their mental status during data collection.

Data collection: Data were gathered from mid-January 2021 to the end of May 2021 by trained data collectors. A standardized e-questionnaire, created using Google Forms, was used for the survey. It was disseminated via social media platforms such as Twitter, Facebook, Instagram, and WhatsApp to facilitate snowball sampling. Simultaneously, a resident in obstetrics and gynecology, as well as a pediatrician, gynecologist, obstetrician, dermatologist, and family physician, invited participants through their networks. Women who agreed to participate were sent a link to the Google form-based questionnaire through social media. All survey questions were mandatory to ensure completeness of the data.

Measurements: The questionnaire comprised two parts. The first part collected sociodemographic characteristics and identified factors that increase the risk of PND, including whether women attending antenatal and postnatal clinics were screened for PND.

Sociodemographic questions included age (categorized as less than 24, 25-29, 30-34, and 35 or older), marital status (single, married, living together, separated/divorced), education level (high school, college, or master's certificate), number of children born to the mothers who were still living (0, 1, 2, 3, 4, or more), and whether the pregnancy was planned (yes/no).

Additionally, five questions assessed family ties, family roles, and the emotional support participants received from family and friends, with higher scores indicating greater social support. Questions 6 to 11 focused on the partner's role, where a higher score suggested lower partner support. Data collectors evaluated participants' screening for depression during routine postnatal checkups. The questionnaire was initially developed in English and subsequently translated into Arabic.

Assessment of postnatal depression using the Edinburgh Postnatal Depression Scale: The second part of the questionnaire utilized the Edinburgh Postnatal Depression Scale (EPDS) to evaluate postnatal depression. Following permission for its use, the Arabic version of the scale, which is translated and endorsed by the Ministry of Health in Bahrain, was employed. The EPDS is a widely recognized 10-item self-reported instrument specifically designed to assess both prenatal and postnatal depression, boasting a sensitivity of 86%, specificity of 78%, and a positive predictive value of 73%. The scale comprises 10 brief questions with four response options reflecting the women's feelings over the past seven days. Scores for each question are recorded as 0, 1, 2, or 3, according to symptom severity, with certain items scored in reverse (3, 2, 1, and 0). The total score is calculated by summing the scores of all 10 items, yielding a possible range of 0 to 30. Participants scoring 13 or higher are considered to be at high risk of depression and are advised to seek medical attention. Those with scores between 10 and 12 are classified as at moderate risk, while scores of 9 or below indicate a low risk of postnatal depression.[19]

Statistical analysis: Data were analyzed using the Statistical Package for Social Sciences (SPSS) version 28. Descriptive statistics, including frequencies, percentages, and 95% confidence intervals, were employed to estimate the prevalence of antenatal

depression and to characterize the sample. Mean and standard deviations were calculated for quantitative variables. The binary outcome variable for PND was determined by categorizing responses: "possible depression," "fairly high possibility of depression," and "probable depression" were considered as YES, while "depression not likely" was marked as NO. Associations between categorical variables (PND vs. no PND) were evaluated using the Chi-square test, and an independent sample t-test was applied to compare two independent quantitative variables. A p-value of <0.05 was deemed statistically significant.

Ethics approval and consent to participate: Ethical approval was granted by the Research and Ethics Committee at the College of Medicine and Medical Sciences of Arabian Gulf University (E45-PI-4/20). To ensure privacy and confidentiality, participants' names and contact details were omitted from the datasets. Informed verbal consent was obtained from each participant prior to their involvement by ticking the option, "Yes, I agree and hereby give my informed consent."

RESULTS

Socio-demographic characteristics: A total of 158 responses responded to the questionnaire as they fit the definition of the postnatal period. The participants' ages ranged from 18 to 39 years, with the majority (48.1%) falling within the 25 to 34 age range. Forty-six respondents (29.1%) were over 35 years old, while thirty-six women (22.8%) were aged between 18 and 24 years. Most participants (96.8%) were married. Regarding education, 128 women (81%) had attained a college degree, and 6.3% respondents held a university degree. In terms of employment status, Majority (70.3%) were employed. More than a third women (n=59, 37.3%) had been pregnant four or more times, followed by 41 women (25.9%) who were pregnant twice. The data also highlights that 105 (66.5%) women were unaware of the screening process for PND both during and after pregnancy, and most of them (149, or 94.3%) were not screened for PND (Table I).

Table II presents the prevalence of self-reported postnatal depression among 158 women in Kuwait. Based on the Edinburgh Postnatal Depression Scale, 23 women (14.6%) were classified as having a fairly high possibility of depression, while 52 women (32.9%) were identified as experiencing probable depression. Table III displays the factors related to the risk of PND using Likert scale and questions consisted of five categories: strongly disagree, disagree, neutral, strongly agree, and agree, with a value from 1 to 5. The first two categories were merged into a single category of disagree, and the last two into a single category of agree due to the low data size in each cell. A higher score near 5 means the score favors agreement and vice versa (Tables III and V). The most significant indictors were "I can rely on my family members when I am sick or require care" and "My family always stands by me and tries to help." These scored the highest, 4.47± 0.76 and 4.42± 0.85, respectively. In addition145 women agreed with "I was happy with the last pregnancy," (4.51± 0.70). The mean score for the factor "community's perception toward my depression affected me" was 2.17 ±1.05 indicating

Table I: Sociodemographic profile of the study participants

Variables		Frequency (n=158)	Percentage
Age (years)	18-24	36	22.8
	25-34	76	48.1
	≥35	46	29.1
Level of education	High school or below	20	12.7
	College	128	81
	Higher studies	10	6.3
Current Occupation	Working	111	70.3
	Not working	22	13.9
	Student	25	15.8
Marital status	Married	153	96.8
	Divorced / Widow	5	5.2
Number of previous pregnancies	One	35	22.2
	Two	41	25.9
	Three	23	14.6
	≥4 times	59	37.3
Number of children	≤1 child	51	32.3
	Two children	42	26.6
	Three children	25	15.8
	≥4 children	40	25.3
Awareness about screening for postnatal depression	Yes	53	33.5
	No	105	66.5
Screened for postnatal depression	Yes	9	5.7
	No	149	94.3

that most of the women disagreed that social perception was a factor related to PND (Table III).

The statistical differences across sociodemographic characteristics and the outcome variable of the presence or absence of PND among women showed a significant difference between the variables related to whether the participant had been screened for depression during pregnancy (P = 0.031). However, the results were not statistically significant across sociodemographic variables of age, educational qualification, employment status, marital status, and the occurrence of PND (p > 0.05) [Table IV].

Scores for variables representing support and help were higher among the women without PND (p<0.001). Similarly, factors related to comfort level of sharing feelings with family and friends and receiving help from family when sick or requiring care also had higher scores for normal women (p<0.01). In addition, a caring and supportive husband, a sound marital relationship and having a trusted confidante also had higher mean scores (Table V).

DISCUSSION

This study evaluated PND among women who recently gave birth in Kuwait, revealing that 19.6% of participants had a possible risk for PND, 14.6% showed a fairly high possibility of depression, and 32.9% were classified as having probable depression. Despite the significance of these findings, most women (66.5%) were unaware of screening for PND, and a staggering 94.3% had not undergone any screening during their most recent birth. These results highlight a critical gap in maternal mental health care and underscore the need for systematic screening during both antenatal and postnatal periods.

Studies of the prevalence of PND among pregnant women emphasize that this condition is a global phenomenon, with from 4.0% to 63.9% women suffering from PND.[20] A previous study reported a PND rate of 46% in Kuwait.[21] The difference in prevalence of PND between the current study and the other studies is possibly because, out of the 158 pregnant women sampled, only 9 of them had been screened for PND during their regular postnatal visits.

The findings of this study suggested that sociodemographic characteristics related to the women's age, educational level, marital and employment status were not significant determinants of PND, although other studies have reported that sociodemographic and economic factors, and marital status can significantly affect the prevalence of PND. [22] In our study, not having family

Table II: Self-reported postnatal depression among women in Kuwait (n=158)

Categories based upon the scoring from the Edinburgh Postnatal Depression Scale	Frequency (%)	95% Confidence Interval
Depression unlikely	52 (32.9)	24.7-39.9
Depression possible	31 (19.6)	13.9-25.9
Fairly high possibility of depression	23 (14.6)	9.5-20.9
Probable depression	52 (32.9)	25.9-40.5

Table III: The mean scores for the response of the associated factors on the Likert scale items assessing postnatal depression in women in Kuwait

	Disagree n (%)	Neutral n (%)	Agree n (%)	Mean±SD
My family always stand by me and try to help	8 (5.1)	10 (6.3)	140 (88.6)	4.42 ± 0.85
I am comfortable sharing my feelings with my family	5 (3.2)	14 (8.9)	139 (88)	4.38 ± 0.80
I can rely on my family members when I am sick or require care	6 (3.8)	5 (3.2)	147 (93)	4.47 ± 0.76
I can easily talk about my problems and thoughts with my friends	29 (18.4)	35 (22.2)	94 (59.5)	3.64 ± 1.12
I have someone that I can trust and seek help from	12 (7.6)	8 (5.1)	138 (87.3)	4.33 ± 0.99
My husband is supportive and considerate	13 (8.2)	14 (8.9)	131 (82.9)	4.21 ± 0.98
I feel safe in my relationship with my husband	9 (5.7)	18 (11.4)	131 (82.9)	4.29 ± 0.91
I'm worried about sharing my thoughts with my husband	90 (57)	34 (21.5)	34 (21.5)	2.46 ± 1.20
There were situations in my relationship where I have felt afraid and unsafe	87 (55.1)	28 (17.7)	43 (27.2)	2.59 ± 1.27
I have been emotionally or physically or verbally abused by my partner	111 (70.3)	13 (8.2)	34 (21.5)	2.18 ± 1.25
I was happy with the last pregnancy	3 (1.9)	10 (6.3)	145 (91.8)	4.51 ± 0.70
The community's perception toward my depression affected me	105 (66.5)	37 (23.4)	16 (10.1)	2.17 ± 1.05

Table IV: Cross-tabulation of sociodemographic variables with postnatal depression (PND)

Characteristics of the participants		Presence of PND with any probability		p-value
		No (n=52) n (%)	Yes (n=106) n (%)	
Age (years)	18-25	8 (22.2)	28 (77.8)	0.295
	25-34	27 (35.5)	49 (64.5)	
	≥35	17 (37)	29 (63)	
Education level	High school or below	6 (30)	14 (70)	0.859
	College	42 (32.8)	86 (67.2)	
	Higher studies	4 (40)	6 (60)	
Current Occupation	Working	38 (34.2)	73 (65.8)	0.087
	Not Working	10 (45.5)	12 (54.5)	
	Student	4 (16)	21 (84)	
Marital status	Married	50 (32.7)	103 (67.3)	0.664
	Divorced/Widow	2 (40)	3 (60)	
Number of pregnancies	One	9 (25.7)	26 (74.3)	0.782
	Two	14 (34.1)	27 (65.9)	
	Three	8 (34.8)	15 (65.2)	
	≥4 times	21 (35.6)	38 (64.4)	
Number of children	≤1 child	13 (25.5)	38 (74.5)	0.108
	Two children	15 (35.7)	27 (64.3)	
	Three children	13 (52)	12 (48)	
	≥4 children	11 (27.5)	29 (72.5)	
Awareness about screening for PND	Yes	13 (24.5)	40 (75.5)	0.111
	No	39 (37.1)	66 (62.9)	
Screened for PND	Yes	0 (0)	9 (100)	0.031
	No	52 (34.9)	97 (65.1)	

and friends' help and support during pregnancy was also observed to be statistically significant factors associated with PND in our study. This is possibly because during pregnancy, women feel more vulnerable due to physical, psychological, and hormonal changes, and need support of their family.[22] These findings are also consistent with the outcomes of other studies conducted elsewhere.[10,22] Maternal anxiety and concern about pregnancy are strong predictors of PND. This anxiety before birth has been previously linked with PND.[23,25] Although a significant majority of the women in this study agreed that they were happy with their last pregnancy, 20% of these women had a high probability of PND. It is possible that these women were unwilling to reveal their feelings due to concerns about mental health treatment methods or lack of awareness of PND. Another reason could be their perceptions of social or self-stigma toward depression.[12]

The findings of this study indicated that approximately 95% of the women had not been screened for PND even once during their follow- up checkups. In addition, 6 out of every 10 women lacked the awareness of the need for screening tests for depression during pregnancy. Healthcare providers can frequently miss PND because of a limited knowledge, [26] or a lack of empathetic attitude,[27] which may negatively impact women limiting their ability to share a range of symptoms. Several studies report that PND is underdiagnosed and not recognized as women are not routinely screened for their mental wellbeing, not also by general practitioners.[10,12,28,29]

It is critical that women continue to receive additional screening during their prenatal and postpartum care visits. Further, the American College of Obstetricians and Gynecologists recommends several validated assessment tools that could be used for screening PND. For women to accept their illness and share their depressive episodes, they must also have a certain level of trust and rapport with their physicians. Pregnancy and motherhood are considered joyful experiences by society, so women may feel uncomfortable sharing their depressive feelings. Because the level of trust and comfort that a pregnant woman feels towards her physician is deep, gynecologists or obstetricians play a vital role in the screening procedure. If obstetric care providers are informed about the clinical implications of risk factors for depression, they can more efficiently identify pregnant women who are potentially prone to depression. For instance, normal pregnancy shares some signs and symptoms of depression, like experiencing emotional changes, insomnia, and weight gain.

It is generally observable that aforementioned factors could increase the risk of PND; in brief PND could stem from violence or traumatic experiences in one's childhood which could effectively lead to feelings of fear

Table V: Comparison of the response of pregnant women with levels of postnatal depression

Variables	Postnatal Depression		P-value
	No (Mean ± SD)	Yes (Mean ± SD)	
My family always stand by me and try to help	4.77 ± 0.51	4.25 ± 0.93	<0.001
I am comfortable sharing my feelings with my family	4.65 ± 0.62	4.25 ± 0.85	<0.001
I can rely on my family members when I am sick or require care	4.73 ± 0.49	4.34 ± 0.84	<0.001
I can easily talk about my problems and thoughts with my friends	4.06 ± 1.02	3.43 ± 1.11	<0.001
I have someone that I can trust and seek help from	4.52 ± 0.94	4.24 ± 1.00	<0.05
My husband is supportive and considerate	4.50 ± 0.75	4.07 ± 1.04	<0.05
I feel safe in my relationship with my husband	4.46 ± 0.83	4.21 ± 0.93	0.068
I'm worried about sharing my thoughts with my husband	2.40 ± 1.29	2.48 ± 1.16	0.519
There were situations in my relationship where I have felt afraid and unsafe	2.35 ± 1.19	2.72 ± 1.30	0.087
I have been emotionally or physically or verbally abused by my partner	1.92 ± 1.06	2.30 ± 1.32	0.119
I was happy with the last pregnancy	4.73 ± 0.49	4.40 ± 0.76	<0.05
The community's perception toward my depression affected me	1.71 ± 0.89	2.40 ± 1.06	<0.001

and isolation which in turn contributes to low esteem issues and depression. Moreover, similar effects could also be triggered due to sexual abuse, cases of neglect, and any plausible chronic diseases which may intimidate the to-be mother from raising a baby. It is also necessary to note other societal factors such as lack of family and relative support, possible stress induced from daily life work activities is likely to put them at a higher risk of depression. Which may affect their infant as well.

Strengths and limitations

This study has several strengths. The cross-sectional survey design was cost-effective and facilitated data collection from women who recently gave birth, a group that can be challenging to reach physically. Conducted during the COVID-19 pandemic, this research provides a unique perspective on factors associated with PND and contributes valuable insights to the limited literature on this subject in Kuwait. Additionally, the findings underscore the importance of integrating mental health screening with maternal health services to aid in treatment planning and preventive interventions for PND.

However, the study also has limitations. The pandemic restricted access to antenatal and postnatal clinics, affecting data collection due to lockdowns. Being an online survey, the accuracy of participant responses may be limited, impacting the validity of the findings. While Kuwaiti women attending postnatal clinics were eligible, data collection was constrained by specific clinic locations and the timeframe since childbirth. Furthermore, the Edinburgh PND Scale used is not highly specific, potentially leading to false positives. Despite these limitations, it remains a suitable tool for this modern population. Lastly, the non-probabilistic sampling strategy may limit the generalizability of the results, and it is possible that women with PND were less likely to respond, potentially skewing the prevalence estimates downward.

CONCLUSION

We observed a high prevalence of PND among Kuwaiti women. This finding, coupled with the lack of screening for most participants in the study, emphasize the urgent need to integrate depression screening during the perinatal period in Kuwait. Healthcare providers must receive specialized training to understand that PND can significantly affect mothers, their babies, and families. At the national healthcare level, implementing routine screening for depression with a validated tool is strongly recommended. Factors associated with PND included insufficient paternal support, lack of familial and social care, maternal anxiety related to pregnancy, and community perceptions of depression. Future studies should employ more robust designs to assess women's burden of PND and their satisfaction with screening and treatment processes.

REFERENCES

1. Alhusen JL, Alvarez C. Perinatal depression: a clinical update. Nurse Pract 2016;41(5):50-5. https://doi.org/10.1097/01.NPR.0000480585.72293.6a
2. World Health Organization. Maternal and perinatal health. 2022. [Accessed on: Januray 10, 2023]. Available from URL: https://www.who.int/reproductivehealth/publications/maternal_perinatal_health/en/
3. ACOG. ACOG Committee Opinion No. 757: Screening for perinatal depression. Obstet Gynecol 2018;132(5):e208-e12. https://doi.org/10.1097/AOG.0000

000000002927

4. Gerbasi ME, Kosinski M, Meltzer-Brody S, Acaster S, Fridman M, Huang MY, et al. Achieving clinical response in postpartum depression leads to improvement in health-related quality of life. Curr Med Res Opin 2021;37(7):1221-31. https://doi.org/10.1080/03007995.2021.1910734
5. Sheeba B, Nath A, Metgud CS, Krishna M, Venkatesh S, Vindhya J, et al. Prenatal depression and Its associated risk factors among pregnant women in Bangalore: a hospital based prevalence study. Front Public Health 2019;7:108. https://doi.org/10.3389/fpubh.2019.00108
6. de Los RS, Dude A, Adams M, Castille D, Ouyang DW, Plunkett BA. The association between maternal body mass index and the Risk of perinatal depression. Am J Perinatol 2021. https://doi.org/10.1055/s-0041-1733830
7. Taylor BL, Howard LM, Jackson K, Johnson S, Mantovani N, Nath S, et al. Mums alone: exploring the role of isolation and loneliness in the narratives of women diagnosed with perinatal depression. J Clin Med 2021;10(11):2492. https://doi.org/10.3390/jcm10112492
8. van Lee L, Chia A, Phua D, Colega M, Padmapriya N, Bernard JY, et al. Multiple modifiable lifestyle factors and the risk of perinatal depression during pregnancy: findings from the GUSTO cohort. Compr Psychiatry 2020;103:152210.https://doi.org/10.1016/j.comppsych.2020.152210
9. Garman EC, Schneider M, Lund C. Perinatal depressive symptoms among low-income South African women at risk of depression: trajectories and predictors. BMC Pregnancy Childbirth 2019;19(1):202.https://doi.org/10.1186/s12884-019-2356-2
10. Yedid Sion M, Harlev A, Weintraub AY, Sergienko R, Sheiner E. Is antenatal depression associated with adverse obstetric and perinatal outcomes? J Matern Fetal Neonatal Med 2016;29(6):863-7. https://doi.org/10.3109/14767058.2015.1023708
11. Greene MM, Rossman B, Patra K, Kratovil AL, Janes JE, Meier PP. Depression, anxiety, and perinatal-specific posttraumatic distress in mothers of very low birth weight infants in the neonatal intensive care unit. J Dev Behav Pediatr 2015;36(5):362-70. https://doi.org/10.1097/DBP.0000000000000175
12. Avalos LA, Raine-Bennett T, Chen H, Adams AS, Flanagan T. Improved perinatal depression screening, treatment, and outcomes With a universal obstetric program. Obstet Gynecol 2016;127(5):917-25.https://doi.org/10.1097/AOG.0000000000001383
13. Lara-Cinisomo S, Clark CT, Wood J. Increasing diagnosis and treatment of perinatal depression in latinas and african american women: addressing stigma is not enough. Womens Health Issues 2018;28(3):201-4. https://doi.org/10.1016/j.whi.2018
14. Long MM, Cramer RJ, Bennington L, Morgan FG, Wilkes CA, Fontanares AJ, et al. Perinatal depression screening rates, correlates, and treatment recommendations in an obstetric population. Fam Syst Health 2020;38(4):369-79. https://doi.org/10.1037/fsh0000517
15. Boyce PM, Judd F. Screening for perinatal depression: is it enough? Med J Aust 2019;210(1):19-20. https://doi.org/10.5694/mja2.12010
16. Terrazas C, Segre LS, Wolfe C. Moving beyond depression screening: integrating perinatal depression treatment into OB/GYN practices. Prim Health Care Res Dev 2018;20:e52. https://doi.org/10.1017/S1463423618000529
17. Ellington K. Perinatal depression screening: Improving outcomes during COVID-19. Nursing 2021;51(10):50-4. https://doi.org/10.1097/01.NURSE.0000752437.92484.1b
18. Almazeedi H, Alsuwaidan MT. "Integrating Kuwait's mental health system to end stigma: a call to action". J Ment Health 2014;23(1):1-3. https://doi.org/10.3109/09638237.2013.775407
19. Bied A, Njuguna S, Mohd Shukri NH, Zainudin Z. Psychometric features of the edinburgh postnatal depression scale among malaysian women: a cross-sectional study. Cureus 2023;15(2):e34822. https://doi.org/10.7759/cureus.34822
20. Arifin SRM, Cheyne H, Maxwell M. Review of the prevalence of postnatal depression across cultures. AIMS Public Health 2018;5(3):260-95. https://doi.org/10.3934/publichealth.2018.3.260
21. Alhamadan N, Ajan A, Alali A, Badr HE. Postpartum depression and health related quality of life: a necessary assessment Int J Fam Commun Med 2017;1:11-7. https://doi.org/10.15406/ijfcm.2017.01.00003
22. Hamel C, Lang E, Morissette K, Beck A, Stevens A, Skidmore B, et al. Screening for depression in women during pregnancy or the first year postpartum and in the general adult population: a protocol for two systematic reviews. Syst Rev 2019;8(1):27.https://doi.org/10.1186/s13643-019-0950-3
23. Eichler J, Schmidt R, Hiemisch A, Kiess W, Hilbert A. Gestational weight gain, physical activity, sleep problems, substance use, and food intake as proximal risk factors of stress and depressive symptoms during pregnancy. BMC Pregnancy Childbirth 2019;19(1):175. https://doi.org/10.1186/s12884-019-2328-6
24. Lilliecreutz C, Josefsson A, Mohammed H, Josefsson A, Sydsjo G. Mental disorders and risk factors among pregnant women with depressive symptoms in Sweden-A case-control study. Acta Obstet

Gynecol Scand 2021;100(6):1068-74.https://doi.org/10.1111/aogs.14110

25. Yu M, Li H, Xu DR, Wu Y, Liu H, Gong W. Trajectories of perinatal depressive symptoms from early pregnancy to six weeks postpartum and their risk factors-a longitudinal study. J Affect Disord 2020;275:149-56.https://doi.org/10.1016/j.jad.2020.06.015
26. Branquinho M, Shakeel N, Horsch A, Fonseca A. Frontline health professionals' perinatal depression literacy: a systematic review. Midwifery 2022;111:103365. https://doi.org/10.1016/j.midw.2022.103365
27. Pinar S, Bedford H, Ersser S, McMillan D. Women's experiences of perinatal depression: Symptoms, barriers and enablers to disclosure, and effects on daily life and interaction within the family. Midwifery 2022;112:103389. https://doi.org/10.1016/j.midw.2022.103389
28. Ford E, Shakespeare J, Elias F, Ayers S. Recognition and management of perinatal depression and anxiety by general practitioners: a systematic review. Fam Pract 2017;34(1):11-9. https://doi.org/10.1093/fampra/cmw101
29. Dikmen-Yildiz P, Ayers S, Phillips L. Depression, anxiety, PTSD and comorbidity in perinatal women in Turkey: A longitudinal population-based study. Midwifery 2017;55:29-37.https://doi.org/10.1016/j.midw.2017.08.003

AUTHORS' CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under:

RA, MA, AMA, DA, LA, DN, ATA, SA & LJA: Concept and study design, acquisition, analysis and interpretation of data, drafting the manuscript, approval of the final version to be published

AA: Analysis of data, critical review, approval of the final version to be published

JA: Concept and study design, critical review, supervision, approval of the final version to be published

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

CONFLICT OF INTEREST

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DATA SHARING STATEMENT

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