

Translation and Validation of the Edinburgh Postnatal Depression Scale for Eritrea: A Screening Tool for Postpartum Depression in Primary Health Care Facilities

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Introduction: Postpartum depression (PPD) is a mood disorder characterized by symptoms such as changes in sleep and eating patterns, fatigue, sadness, crying, anxiety, and guilt. The Edinburgh Postnatal Depression Scale (EPDS) was developed to be used as a self-report questionnaire for English-speaking populations to screen for postnatal depression. This study aims to translate, validate, and [adapt the EPDS into Eritrean](#) settings.

Methods: This study employed a cross-sectional study design to evaluate the performance of the EPDS as a screening tool by using a sample of 380 mothers from four primary healthcare facilities. The standard Diagnostic and Statistical Manual of Mental Disorders was used as a criterion to assess depression in postpartum women.

Results: Postpartum depression was identified in 28 (7.4%) of the mothers based on the standard Diagnostic and Statistical Manual of Mental Disorders. The translated Tigrinya version EPDS has good internal consistency with Cronbach's alpha of 0.712. The exploratory factor analysis identified three factors, confirming the EPDS's multidimensionality. The area under the receiver operating characteristic curve was 0.87, and optimal sensitivity and specificity combination was found at 10/11 score cut-off points, 85.7% and 88%, respectively.

Conclusion: The Eritrean version of EPDS has proven to be a valid and reliable instrument for the identification of postpartum depression in clinical settings.

Plain language summary: Postpartum depression (PPD) is a significant concern affecting new mothers worldwide. Recognizing the need for practical screening tools tailored to specific cultural contexts, researchers set out to adapt and validate the Edinburgh Postnatal Depression Scale (EPDS).

Why was the study done?

Researchers aimed to adapt and validate the EPDS for Eritrea to provide a reliable tool for detecting PPD in mothers who recently gave birth. This is crucial as PPD is a severe condition affecting maternal and family well-being, and existing tools were not tailored for the Eritrean cultural context.

What did the researchers do and find?

The EPDS was translated into a local language and tested among new mothers in Asmara, Eritrea. Following the translation, they tested the scale's reliability and validity by administering it to a group of new mothers in primary healthcare settings in Asmara, Eritrea. The findings were promising; the translated EPDS retained its reliability and validity, effectively identifying mothers experiencing symptoms of postpartum depression. This validation suggests the adapted EPDS is a robust tool for screening PPD in the Eritrean context.

What do these results mean?

The successful validation of the EPDS for Eritrean mothers is a significant advancement for maternal health care in Eritrea. Healthcare providers can now use this culturally and linguistically appropriate tool to screen for postpartum depression, leading to early detection and intervention. Improving screening can significantly enhance new mothers' mental health and overall well-being, supporting healthier families and communities.

Keywords: EPDS, postpartum depression, Eritrea, validation, mental health, Tigrinya

Introduction

It is estimated that one in four individuals will experience some form of mental or behavioral disorder in their lifetime. Globally, approximately 10% of pregnant women and 13% of postpartum women experience mental disorders, primarily depression. In developing countries, these rates are higher, with 15.6% of women affected during pregnancy and 19.8% after childbirth.¹ Postpartum depression (PPD), a mood disorder characterized by symptoms such as changes in sleep and eating patterns, fatigue, sadness, crying, anxiety, and guilt, is classified by the Diagnostic and Statistical Manual of Mental Disorders (DSM) as a type of depressive episode occurring within one year of childbirth.² Although the exact cause of PPD remains unclear, factors such as hormonal changes, genetics, birth-related trauma, and socio-demographic variables are believed to play a role.^{3–5}

Accurately measuring the burden of pregnancy-related and postpartum morbidity is essential for addressing maternal health issues and achieving the health objectives outlined in the Sustainable Development Goals. The prevalence of postpartum depression varies widely across countries.^{6,7} This variation is mainly due to differences in health-seeking behaviors, cultural interpretations of symptoms, and socio-economic and other context-specific factors.^{8,9} Despite its prevalence, postpartum depression is often unrecognized,¹⁰ posing significant challenges to efforts aimed at reducing maternal morbidity and mortality.

In Eritrea, contrary to the expected high prevalence of common mental disorders, reported incidence and prevalence are notably low at 14.5%.¹¹ This discrepancy may be due to underreporting and under/misdiagnosis, stemming from a shortage of mental health facilities and adequately trained health professionals,^{11–13} particularly in primary healthcare facilities. This makes the probability of underdiagnosing cases of postpartum depression higher since the majority of pregnant mothers get maternal health services from such facilities. Hence, it is crucial to use easily administered screening tools like the Edinburgh Postnatal Depression Scale (EPDS) for early detection and treatment of mental disorders at community-level health facilities. This will facilitate the implementation of an integrated primary health care approach for mental health services, as it is cost-effective and helps to reduce the stigma associated with mental illness.

Developed in 1987 by Cox, Holden, and Sagovsky, the 10-item EPDS is a self-report questionnaire designed to screen for postnatal depression.¹⁴ The EPDS has shown high reliability and specificity in identifying depressive symptoms in postpartum women.^{15–17} Although initially created for English-speaking populations, the EPDS has been translated into several languages and validated in numerous cultural contexts, with each version recommending unique cut-off scores. It is essential to fine-tune the tool to local contexts as it was found to have some sociocultural factors related to its application.^{18,19} The variability in cut-off points highlights the need to adapt the original English version to local contexts before use. Therefore, it is recommended to establish the semantic, technical, diagnostic, and conceptual equivalence of the EPDS in screening before adopting the tool for clinical practice or research.²⁰ According to a systematic review assessing perinatal depression in African settings, with the EPDS being the most studied scale, the limited evidence base hinders robust conclusions and effective mental health programming.²¹ The EPDS has yet to be translated or validated in Eritrea. This study aims to fill that gap by translating, validating, and adapting the EPDS for an Eritrean setting.

Methods

Study Design and Setting

This cross-sectional study aimed to evaluate the performance of the EPDS as a screening tool. The study was conducted in four selected health facilities across four subzones of the Maekel Region in Eritrea from January to April 2018. These

facilities were categorized into two groups—rural and urban settings. Tsaeda-Christian Health Center and Seregeka Health Center represented the rural health facilities, while Semenawi Asmara Health Center and Freselam Health Station represented the urban ones. These primary healthcare facilities were chosen because they are typically the first point of contact for postpartum women, who visit for their child's first vaccinations by six weeks postpartum. The diverse socio-economic catchment population ensured a representative sample.

Study Population, Sample Size, and Sampling Technique

The target population included recently delivered mothers within 2 to 14 weeks postpartum. Mothers visiting the selected health facilities during the data collection period and confirmed to be free from known medical and mental illnesses were randomly selected for the study.

The sample size was determined using the single population proportion formula, with a 95% Confidence Interval (CI) and a margin of error set at 5%. Assuming a 50% prevalence rate, the initial sample size was 384, adjusted to 375 using a correction factor for the actual population size (17,369). Including a 5% allowance for non-response, the final sample size was 393. This sample was proportionally allocated to the health facilities based on the number of mothers attending for child immunization. A simple random sampling technique was used to select participants by using the list of mothers in the immunization register as a sampling frame.

Data Collection Instruments

Data was collected using a structured, closed-ended questionnaire that included socio-demographic and maternity-related information. The EPDS and the DSM-5 criteria for Major Depressive Disorder (MDD) were used to assess postpartum depression.

EPDS and DSM-5 Major Depressive Disorder Diagnostic Criteria

The EPDS is a 10-item self-reporting scale assessing various depressive symptoms, with each item scored from 0 to 3, yielding a total score range of 0 to 30.¹⁴ Items cover anhedonia, self-blame, anxiety, fear, coping ability, sleep difficulties, sadness, tearfulness, and self-harm ideas.

The DSM-5², developed by the American Psychiatric Association and WHO, includes criteria for diagnosing MDD. Diagnosis requires five or more symptoms within two weeks, significantly impacting social, occupational, or other areas of functioning, excluding symptoms attributable to other medical conditions. This gold standard tool was used to validate the EPDS in this study.

Translation and Cultural Adaptation of EPDS

The EPDS was translated into Tigrinya by bilingual experts. A back translation was performed, and semantic equivalence was ensured. The Tigrinya version was administered to 20 mothers to assess its understandability, with adjustments made based on their feedback. Data from the pilot study was not included in the final analysis.

Data Collection Procedure

Participants were recruited from the Expanded Program of Immunization (EPI) clinics and interviewed privately in the selected health facilities. Socio-demographic and maternity-related data were collected, followed by a nurse administration of the Tigrinya EPDS. Finally, blinded psychiatric nurses used the DSM-5 MDD to interview mothers for postpartum depression.

Data Analysis

Data were analyzed using SPSS version 23. Descriptive statistics like frequencies and proportions were used to describe the sample characteristics. After checking for the normality of the data, mean and standard deviation or median and interquartile range were used to summarize continuous variables, and a nonparametric independent *t*-test (Mann-Whitney *U*-test) was used to compare mean EPDS scores between depressed and non-depressed groups. The internal consistency or reliability of the scale was assessed using Cronbach's alpha. Content, face, and construct validity were evaluated,

including exploratory factor analysis for structural validity. Criterion validity was determined by correlating EPDS and DSM-5 scores. Qualified professionals in psychiatry and psychology assessed the content validity of the translated EPDS to ensure it adequately reflected postpartum depression. Language experts assessed the instrument's language and semantic validity, and the floor and ceiling effects were determined post-data collection. Face validity was investigated during questionnaire administration, which examines the tool's meaning, intention, and acceptability to mothers. The structural construct validity of the Tigrinya-EPDS was assessed using exploratory factor analysis (EFA) with principal component analysis and Varimax rotation. Following the Kaiser-Guttman criterion, this analysis identified the dimensional structure and the number of factors to be retained based on the screen test and rotated eigenvalues greater than 1.0. Sampling adequacy was tested using the Kaiser-Meyer-Olkin (KMO) measure, and the patterned relationship of the items was confirmed with Bartlett's test of sphericity. Criterion validity was established by calculating the correlation between EPDS scores and DSM-5 MDD criteria using Pearson's correlation coefficient. The sensitivity and specificity of the EPDS were calculated, with ROC analysis determining its screening accuracy.

Results

Sample Characteristics

A total of 380 mothers responded to the Tigrinya version EPDS and the DSM-5 MDD diagnostic interviews, resulting in a response rate of 96.7%. The mean age of the mothers was 27.78 years ($SD \pm 5.26$), and the range was from 16 to 43 years. Table 1 presents the demographic and maternity-related characteristics of the study participants. The majority of women were aged 25–34 (60.8%), married (90.8%), and had secondary education (76.1%). Most were housewives (77.9%) and identified as Orthodox Christians (68.4%). The perceived wealth class was predominantly middle class (66.6%). In terms of maternity history, a significant portion had 2–4 pregnancies (57.4%) and delivered at term (91.8%) in health facilities (95.0%) via normal vaginal delivery (83.9%). Postpartum, the highest proportion of women were interviewed between 2 and 4 weeks (41.3%) after childbirth (Table 1).

Based on the DSM-5 criteria for Major Depressive Disorder (MDD), respondents were classified as either depressed or not depressed, with 28 mothers (7.4%) exhibiting depressive symptoms. The median EPDS score was 6.26 ($SD \pm 4.4$, $CI: 5.82–6.71$), with scores ranging from 0 to 21. For depressed mothers, the median EPDS score was 14 (IQR 4), while

Table 1 Characteristics of the Sample

Variable	Category	Frequency	Percentage
Age Group	16–24	103	27.1
	25–34	231	60.8
	35–43	46	12.1
Marital Status	Single	35	9.2
	Married	345	90.8
Educational Level	Illiterate	6	1.6
	Primary	42	11.1
	Secondary	289	76.1
	Tertiary (College)	43	11.3
Occupation	Unemployed	30	7.9
	Employed	54	14.2
	Housewife	296	77.9

(Continued)

Table 1 (Continued).

Variable	Category	Frequency	Percentage
Religion	Orthodox	260	68.4
	Catholic	15	3.9
	Protestant	18	4.7
	Muslim	87	22.9
Perceived wealth class	Poor	26	6.8
	Middle Class	253	66.6
	Rich	101	26.6
Gravid (number of the last pregnancy)	1 (Primigravida)	114	30.0
	2–4	218	57.4
	5–7	43	11.3
	8–11	5	1.3
Term of the last pregnancy	Preterm	31	8.2
	Term	349	91.8
Mode of delivery	Cesarean Section	61	16.1
	Normal (vaginal)	319	83.9
Place of delivery	Home	19	5.0
	Health facility	361	95.0
Postpartum weeks on Interview	2 to 4 weeks	157	41.3
	8 to 10 weeks	92	24.2
	12 to 14 weeks	131	34.5

for non-depressed mothers, it was 5 (IQR 7). A Mann–Whitney *U*-test revealed a statistically significant difference in median EPDS scores between the two groups ($U = 1246.5$, $z = -6.59$, $p < 0.0001$).

Psychometric Properties of the Eritrean EPDS

Reliability

The translated Tigrinya version of the EPDS demonstrated good internal consistency, with a Cronbach's alpha of 0.712.

Face and Content Validity

The translated EPDS was well received by the mothers, who found it an easily understood and quickly administrable interview tool. The questions were clear and relevant, with participants grasping the intention of the screening tool, thus indicating good face validity. Content validity was assessed by experts in clinical psychology and psychiatry, confirming that the EPDS adequately covered significant depression-specific symptoms. Additionally, the study showed no floor or ceiling effects, as only 7% of respondents scored the lowest possible score and none scored the highest, further supporting good content validity.

Factor Structure (Exploratory Factor Analysis)

Before conducting Exploratory Factor Analysis (EFA), the suitability of the dataset was confirmed. A Determinant score of 0.201 indicated the absence of multicollinearity, well above the threshold of 0.00001. Bartlett's Test of Sphericity (χ^2

= 601.471, $df = 45$, $p < 0.001$) confirmed the patterned relationships necessary for EFA. Sample size adequacy was supported by a KMO measure of 0.769 and the diagonal element of the Anti-Correlation matrix at 0.626, confirming the dataset's suitability for EFA.

The orthogonally rotated values of the EFA revealed three meaningful factors. These factors were extracted using rotated eigenvalues greater than 1 and the scree plot (see Figure 1). While the elbow criterion suggests that the slope of the eigenvalues levels off after the second factor, the Kaiser criterion supports retaining the third factor as its eigenvalue is greater than 1. Given that the third factor still explains meaningful variance and may provide valuable insights aligned with the context and theoretical framework of the data, its inclusion ensures a more comprehensive representation of the underlying constructs. The first factor (F1) included items 6 (inability to cope), 7 (difficulty sleeping), 8 (sadness), 9 (crying), and 10 (thoughts of self-harm), and was named "Depression" due to the specific symptoms of depressive disorders. The second factor (F2) included items 3 (self-blame), 4 (anxiety), and 5 (panic) and was named "Anxiety." The third factor (F3) consisted of items 1 and 2, which assessed the ability to experience pleasure and was named 'Anhedonia.' These factors explained 53.67% of the covariance among the variables. The model had only 3 (6%) nonredundant residuals with absolute values greater than 0.05, indicating a good fit. The factor loadings in the rotated factor matrix were reasonably desirable, with only two complex variables (items 5 and 7).

Criterion Validity

The criterion validity of the Eritrean EPDS, when evaluated against the "gold standard" DSM-5 MDD criteria, demonstrated satisfactory accuracy with a Pearson's r of 0.497 ($p < 0.001$). The area under the Receiver Operating Characteristic (ROC) curve further illustrated the tool's accuracy, which was plotted using the range of EPDS scores and the DSM-5 MDD categories (depressed and not-depressed) as the state variable. The area under the curve (AUC) was found to be 0.87 (Std. Error = 0.048, Asymp. Sig. < 0.001 ; CI: 0.77–0.96), indicating excellent performance in detecting postpartum depression (see Figure 2).

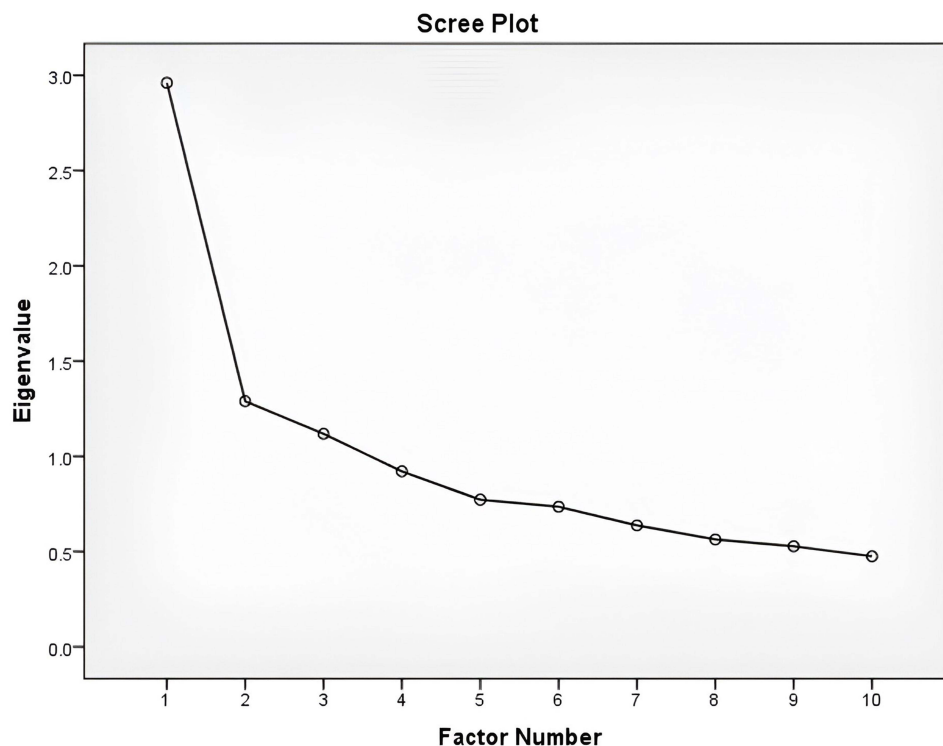
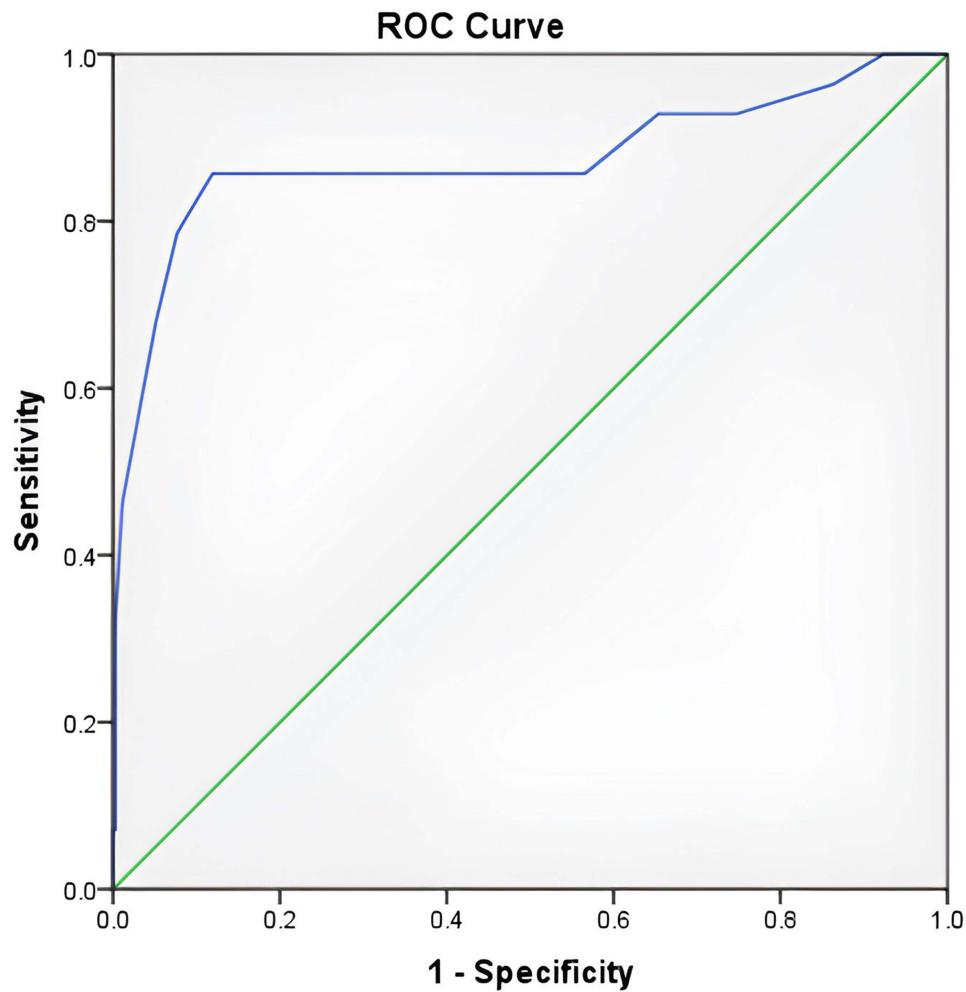


Figure 1 Scree plot.



Diagonal segments are produced by ties.

Figure 2 Receiver Operating Characteristics curve for the performance of EPDS (total score) against DSM-5.

Sensitivity and Specificity

Table 2 displays the range of cut-off scores for positive EPDS screening. The optimal combination of sensitivity and specificity was identified at a score of 10/11. Using this cut-off point (11), the sensitivity was 85.7%, specificity was 88%, positive predictive value (PPV) was 36.3%, and negative predictive value (NPV) was 98.7%, as calculated from Table 3. Applying this cut-off point, 66 (17.4%) of our study participants were identified as having postpartum depression.

Table 2 Sensitivity and Specificity of Eritrean EPDS

Cut-Off Score	Sensitivity	Specificity
4/5	85.714	43.466
5/6	85.714	51.136
6/7	85.714	60.511
7/8	85.714	68.466

(Continued)

Table 2 (Continued).

Cut-Off Score	Sensitivity	Specificity
8/9	85.714	73.295
9/10	85.714	80.398
10/11	85.714	88.068
11/12	78.571	92.330
12/13	67.857	94.886
13/14	57.143	96.875
14/15	46.429	98.864
15/16	32.143	99.716
16/17	21.429	99.716

Table 3 Two-by-Two Table for the EPDS, Cut-off Score 11

Screening with EPDS	Diagnosis with DSM-5 MDD		Total
	Depressed	Non-Depressed	
Depressed	24 (TP)	42 (FP)	66
Non-depressed	4 (FN)	310 (TN)	314
Total	28	352	380

Abbreviations: TP, True Positives; FP, False Positives; TN, True Negatives; FN, False Negatives.

Discussion

The primary aim of this study was to translate the Edinburgh Postnatal Depression Scale (EPDS) into Tigrinya, an Eritrean local language, and to validate it as a screening tool for postpartum depression among mothers in primary healthcare facilities. The sample characteristics indicate a diverse mix of socio-economic, demographic, and maternity-related properties, ensuring a suitable sample for a validation study. Several validation studies have used different criteria as the gold standard to validate EPDS for various reasons. In our study, we used the DSM-5 criteria for major depressive symptoms since it is the diagnostic criterion used to diagnose psychiatric conditions in the study setting.

The EPDS's validity against DSM-5 MDD was satisfactory, as evidenced by Pearson's correlation coefficient. The area under the ROC curve of 0.87 is excellent, indicating the overall diagnostic ability of the translated scale, with the value indicating greater classification accuracy.²² However, the current study's finding was lower than a report in a Danish study where the AUC of EPDS against DSM-5 was found to be 0.96.²³ Similar findings were reported from studies conducted in Nepal (0.98)²⁴ and Uganda (0.84–0.97).²⁵ A lower AUC (0.78) for postpartum was also reported in a study conducted in Portugal.²⁶ The difference in the reported AUC across studies could be related to differences in patient characteristics and depression symptoms spectrum.²⁷

The appropriate cut-off point for this setting was determined to be 10/11 (≥ 11), with a sensitivity of 85.7%, specificity of 88%, PPV of 36.3%, and NPV of 98.7%. This cutoff point was higher than that reported by a study from Ethiopia, where the optimal cutoff point was 6/7.²⁸ A similar study conducted in Sudan recommended a slightly higher cutoff point of ≥ 12 .²⁹ In India, research suggests using a cut-off score of 9/10 to be used as screening depression in antenatal women.³⁰ In line with the current study, in a Kenyan validation study, a cut-off score of ≥ 11 is recommended to identify postpartum depression among Kamba-speaking postnatal women, which has a sensitivity of 81.0% and a specificity of

82.6%.³¹ The different cutoff points recommended in different settings mainly reflect the cultural differences of the study area and the gold standard used to validate the scale since the other studies employed the International Classification of Disease (ICD-10) or Patient Health Questionnaire (PHQ-9). However, as indicated in a systematic review by Brooke Levis et al,¹⁶ a cut-off value of 11 or higher optimized sensitivity and specificity, while a cut-off value of 13 or higher, although less sensitive, provided greater specificity. As recommended,^{32,33} we need to pay due attention to item 10 when evaluating EPDS screening results. It was found that the prevalence of suicidal ideation was 16 times higher in women with postpartum depression than those without.³⁴ Hence, further assessment of women who answered anything other than “no” to item 10, regardless of the total score, would be beneficial.

The internal consistency of the Eritrean EPDS, assessed by Cronbach’s alpha (0.71), was satisfactory and aligned with other validation studies.³⁵ However, lower³⁶ and higher^{37–39} alpha values have been reported elsewhere, likely due to differences in translation methodologies, which are crucial for ensuring precision and validity. In addition, factors like differences in the cultural and linguistic contexts of the populations being studied, variations in sample sizes, and the demographic characteristics of participants, such as age, socioeconomic status, and educational background, might contribute to the difference.

Ensuring the content validity of a translated scale is crucial for accurate and culturally relevant assessment of postpartum depression, leading to reliable screening and effective clinical interventions.⁴⁰ In addition, high content validity allows for valid cross-cultural comparisons, supports clinical decision-making, and enhances the integrity of research findings. The content validity of the translated EPDS is considered excellent and facilitated by experts in psychology, psychiatry, and language. Mothers who participated in this study understood and answered the questions without difficulty, although item 2 required additional explanation. Therefore, the instrument’s scale was proven consistent, and its contents were valid in assessing postpartum depression.

While Cox et al suggested a unidimensional structure for the EPDS,¹⁴ this study identified a multidimensional structure consistent with several other studies.^{41,42} The factor analysis revealed three factors with high loadings categorized as depression, anxiety, and anhedonia. This finding was consistent across similar studies conducted in other settings like Slovak,⁴³ China,⁴⁴ England⁴⁵ and Japan.⁴⁶ An Iranian study showed, similar to the current research, that EPDS includes three factors, but they were categorized as euthymic mood, anxiety, and depression.⁴⁷ These findings reflect the fact that depression, anxiety, and anhedonia are interrelated mental health conditions often observed together, each influencing and exacerbating the others. Research suggests that the co-occurrence of depression and anxiety can intensify anhedonia, creating a cycle where the distress from anxiety fuels depressive symptoms, which in turn enhances anhedonia.⁴⁸

In this study, the factors analysis explained 53.67% of the variance compared to 87.61% in the Indian,³⁸ 64.4% in Japan⁴⁹ and 58% in Qatari⁵⁰ studies. This indicates that the factor model captures a substantial portion of the variability in the dataset, suggesting a robust underlying structure. These results support the validity of the EPDS as a reliable measure for assessing postnatal depression. Consistent with other studies, EPDS was administered verbally, as an interview tool rather than self-administered. This approach is essential to accommodate participants with varying literacy levels. Furthermore, such a technique enables the health worker to note the clinical presentation of the mother while interviewing her, which is essential in interpreting the results. However, the EPDS, whether self-administered or interviewer-administered, is an equally effective screening method for identifying postpartum depression.⁵¹

Limitations

The study focused on translating the EPDS into Tigrinya, the working language of Eritrea, which is the mother tongue of the largest ethnic group. However, this limits the applicability of the translated EPDS to mothers from other ethnicities who cannot speak the language. In addition, it included only mothers who attended health facilities to immunize their children. Furthermore, a self-administered EPDS might have different results since the current study was interviewer-administered.

Conclusion

In conclusion, the Eritrean adaptation of the EPDS has demonstrated both validity and reliability for identifying postpartum depression within clinical environments. A cut-off score of 11 is recommended for effective screening to

ensure reliable sensitivity and specificity. Although the PPV is somewhat low, capturing any number of PPD-affected mothers is significant for both clinical and public health purposes. It is also recommended that special attention be paid to item 10 in EPDS evaluations. It is advised that relevant departments within the Ministry of Health, such as the Family and Community Health Division and the Mental Health Unit, integrate this tool into primary healthcare settings to facilitate early detection and prompt treatment of postpartum depression. Enhancing the screening program's positive predictive value by targeting at-risk mothers during assessment is recommended.

Abbreviations

PPD, postpartum depression; EPDS, Edinburgh Postnatal Depression Scale; DSM-5, Diagnostic and Statistical Manual Fifth Edition; MDD, major depressive disorder; AUC, area under the curve; ROC, Receiver Operating Characteristic.

Data Sharing Statement

The datasets used and/or analyzed during the current study are available from the corresponding author upon reasonable request.

Ethics Approval and Informed Consent

This study received approval from the Research and Ethical Clearance Committees of the School of Public Health and the Asmara College of Health Sciences. The research adhered to ethical principles outlined in the Declaration of Helsinki, ensuring the protection of human subjects in medical research. During data collection, researchers thoroughly explained the study's purpose and scope to each selected mother, obtaining written informed consent from all participants. Only volunteers were included, and participants had the right to withdraw from the study anytime. Data was collected anonymously, ensuring confidentiality by using the information solely for this research.

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Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis, and interpretation, or in all these areas; took part in drafting, revising, or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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Disclosure

The authors declare that they have no competing interests.

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