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Exploring the acceptability, feasibility and utility of a digital tool for self-reporting perinatal anxiety and depression in urban obstetric and paediatric clinics in India

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Abstract

Background: Common mental disorders, such as anxiety and depression, affect 13% to 55% of women during the perinatal period in India. However, high-volume obstetric clinics often lack resources for routine mental health assessment. Digital tools could address this gap by facilitating maternal mental health screening.

Aim: This study evaluates the feasibility, acceptability and utilization of digital self-reporting for perinatal anxiety and depression in two urban obstetric and paediatric clinics.

Method: A multilingual digital application was developed for self-assessment using the Patient Health Questionnaire-9 (PHQ-9), Generalized Anxiety Disorder-7 (GAD-7) and psychosocial risk factors. A total of 234 participants (101 pregnant and 133 postpartum women) completed the assessment, receiving immediate results and personalized recommendations. Follow-up calls 24 h later gathered feedback on feasibility and acceptability.

Results: Among the 234 participants, the assessment identified mild anxiety in 15.8%, moderate to severe anxiety in 11.1%, mild depression in 31.6% and moderate to severe depression in 14.1%. Over 83% of women reported at least one psychosocial risk factor, and 10.2% had a history of psychiatric illness. Of 138 participants responding to follow-up, 60.4% preferred digital self-assessment alone for its convenience and non-judgmental nature. In contrast, 22.5% preferred consulting with their obstetrician or a mental health professional. Challenges included application navigation confusion and attempts to modify answers for lower scores, prompting refinements for improved user experience and cultural relevance.

Conclusion: Digital self-reporting is a feasible and acceptable approach for early detection of perinatal mental health concerns in high-volume urban clinics. Further testing is needed in rural and diverse healthcare settings to assess its broader applicability.

Keywords

Digital, technology, perinatal anxiety, perinatal depression, self-assessment, self-identification, obstetric, paediatric, mobile application

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Introduction

In India, common mental disorders (CMDs) during the perinatal period have been reported to be around 22%, with risk factors being identified as lack of social support, poor marital relationships, preference for a male child, history of psychiatric illness and financial strain.[1–3] There is

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enough evidence to suggest the negative impact of perinatal anxiety and depression on maternal health and pregnancy outcomes.[4,5] Additionally, it affects mother–infant interactions and can lead to long-term behavioural and emotional issues in children.[6,7]

A systematic review conducted by Chen et al. (2022) underscored support for integrating CMD self-assessments into routine care[8] among pregnant and postpartum women, healthcare professionals and other stakeholders in maternity care. Despite these encouraging findings, the acceptability of assessment can be significantly influenced by factors such as the assessment location, with home settings generally preferred over clinics.[9] Hence, a comprehensive evaluation of acceptability should consider various factors, including the assessment tool used, the setting, the healthcare professional's role and patient demographics.

Accessing perinatal mental health (PMH) care in India poses significant challenges due to limited resources, economic constraints, logistical issues and cultural barriers.[2,10–12] Stigma further complicates matters, as does a lack of awareness regarding PMH disorders among women, their families and healthcare providers.[2] Alternative methods like screenings by Auxiliary Nurse Midwives (ANMs) have demonstrated low rates of reported anxiety and depression.[13] Nevertheless, research indicates that the majority of perinatal women in India embrace the assessment of PMH disorders.[14] Limited health resources, such as time constraints for consultations and prioritization of physical health, hinder adequate PMH care in South Asian countries.[15]

While clinician-rated assessments are considered the gold standard, the app-based approach aims to bridge gaps arising from time and resource constraints, offering a practical solution to address mental health needs. Technology-based assessment and monitoring of perinatal CMDs, requiring minimal healthcare worker involvement, are as effective as traditional approaches like interviews and pen-and-paper assessments.[16,17] Digital interventions, including clinical decision support systems, mobile applications and chatbots, can facilitate the training and assessment of health conditions, enable health monitoring, help bridge the healthcare needs gap, reduce stigma and empower women to manage their mental well-being more effectively.[18–22] Furthermore, the Patient Health Questionnaire 9 (PHQ-9) and Generalized Anxiety Disorder 7 (GAD-7), validated in Hindi and Kannada, are simple and easy-to-understand tools for assessing perinatal depression and anxiety.[23] In a digital format, these tools can save women and healthcare providers valuable time by streamlining the assessment process. While multiple studies have established the acceptability of digital assessments for perinatal CMDs, there is limited literature on their use in low- and middle-income countries (LAMIC).[20,24–26] Although some women may feel uneasy using technology, and access to such tools may be restricted in remote areas of LAMICs, these challenges can be mitigated by designing digital healthcare tools that are more inclusive and user-friendly. Additionally, the gap between academically developed and commercially available applications underscores the need for stronger collaboration between academia and industry to ensure the provision of evidence-based solutions.[18]

Given these challenges and gaps in care provision, the primary objective of this study was to assess the feasibility, acceptability and utility of a digital self-reporting approach for identifying perinatal anxiety and depression as well as women at risk for the same, along with its linked pathways for supporting PMH.

Methodology

A mixed-methods descriptive study design with thematic analysis of qualitative feedback was used.

Sample size

The sample size was determined using a power analysis of ANOVA designs through G*Power: Statistical Power Analyses. Utilizing an effect size (f) of 0.025, an alpha level of 0.05, and a desired power of 0.80 for the prevalence of CMDs in the perinatal period as 15%, the analysis yielded a minimum sample size of 54. An explanatory sequential design, where the quantitative assessment was conducted first, followed by a qualitative assessment via telephone 24 h later. The sequential design was chosen to comprehensively explore the acceptability, feasibility and utility of the digital tool, focusing on identifying barriers, understanding user preferences and gathering contextual insights to guide its refinement and ensure its practical relevance in urban obstetric and paediatric clinics. Data from 234 participants were included in the study and data saturation was achieved.

Study population, setting of assessment

The study population included pregnant women recruited from two perinatal clinics, one in a private hospital and the other in a charitable trust hospital in Bengaluru, India. The postpartum women were recruited from the paediatric clinics of the same two hospitals. Pregnant and postpartum (up to 1 year after delivery) women over 18 years, attending the designated clinics, and who owned an internet-accessible phone were included. Women were included if they could read and write Hindi, Kannada or English languages and were asked to choose the language in which they felt most comfortable. Written informed consent was obtained for inclusion in the study.

Procedure

Approval from institutional ethics committees and participating hospitals was obtained before commencement. HMSC (Health Ministry's Screening Committee) approval was also received as part of the process.

1. Development of the self-assessment digital application

A prototype of the application was developed in collaboration with the Swiss Federal Institute of Technology (ETH4D) at Eidegenossische Technische Hochschule Zurich, Switzerland. HIPPA (Health Insurance Portability and Accountability Act) compliance was ensured. The digital application supported three languages, Hindi, English and Kannada, and had three parts- socio-demographic details, assessment of risk factors and self-report questionnaires.

The socio-demographic and basic obstetric data collected included age, education, marital status, place of residence, occupation, parity and months of pregnancy/age of newborn and breastfeeding. The risk assessment included social support, the quality of the marital relationship, adverse events in the last year, satisfaction with the baby's health and gender, and history of previous psychiatric illness. Clinical details, including past obstetric history, were obtained from obstetric records.

For self-assessment of depression and anxiety, the digital application integrated the PHQ-9 and GAD-7 questionnaires.[27] Both these questionnaires can be used for self-assessment, are easy to understand and time-efficient. PHQ 9 has been validated within diverse low-resource settings, particularly for the assessment of perinatal depression in India.[23,28–30] Participants were categorized based on depression severity into no depression (0–4), mild depression (5–9) and moderate to severe depression (≥10). The GAD-7 is available in Hindi and Kannada and has been utilized in primary healthcare and community settings for assessing perinatal anxiety across India.[23,31–33] Anxiety levels sorted participants into three groups: no anxiety (scores 0–4), mild anxiety (scores 5–9) and moderate to severe anxiety (scores ≥10). Upon completion of the self-assessment, the application immediately calculated and displayed the participants' scores and categorized their condition as no distress, mild, moderate or severe anxiety and/or depression, accompanied by a patient decision aid. Participants reporting self-harm were referred to a Mental Health Professional on the team for further assessment and treatment. They were offered free assistance and care, including follow-up via telephone. In cases where significant anxiety or depression was identified, the relevant obstetrician was promptly notified.

b. Patient-decision aid

Participants received personalized advice tailored to their anxiety and depression scores, displayed on the same page of the tablet-based application as their diagnosis. Those with no anxiety or depression received general self-care advice. Participants with mild anxiety or depression were given specific self-care advice, such as mindfulness and breathing exercises. They were informed about the option to talk to a mental health professional (MHP) if needed. Those with moderate to severe anxiety or depression were advised to speak with an MHP.

2. Self-assessment

Extensive discussions were held with obstetricians and paediatricians to establish optimal application procedures within their clinics. Privacy concerns and the logistics of conducting assessments were addressed through multiple rounds of discussions and internal role-playing exercises by the research team, ultimately creating an efficient assessment process. Research team members approached women in clinic waiting areas. They informed them about the study and the self-assessment tool – those who consented received tablets preloaded with the application and completed self-reports for perinatal anxiety and depression. The application then calculated scores and provided an immediate, personalized patient decision aid. In cases where anxiety or depression was identified, the project coordinator promptly informed the attending physician. All participants were informed that free consultation with the research team was available. Additionally, they were sent videos and reading materials to provide psychoeducation on perinatal anxiety and depression.

3. Assessment of acceptability of digital tool

To evaluate the acceptability of the self-reporting process, consenting participants underwent a telephone interview 24 h after completing the process. Two trained research team members conducted these follow-up interviews comprised of open-ended questions to gather qualitative feedback on the digital self-assessment tool. Topics covered included user experiences, challenges encountered, preferences and suggestions for enhancements. Researchers also documented technical and acceptability issues faced by participants during self-assessment. The interviews were recorded and transcribed for analysis.

4. Assessment of feasibility of digital tool

The tool's feasibility was evaluated through indirect and direct approaches. Direct feedback was obtained through telephone interviews, gathering qualitative insights on user-friendliness, language clarity, assessment length, tablet and app usability, perceived utility and preferences for assessment methods. Indirect measures included tracking assessment duration, assessing the suitability of assessment locations, recording reasons for non-participation and documenting technical challenges.

5. Data assimilation and assessment

All quantitative and qualitative results were entered and analysed in Microsoft Excel. The quantitative data was assessed using the SPSS 20 programme, using descriptive statistics. Thematic analysis was conducted through a systematic approach. First, interviews were transcribed verbatim and thoroughly reviewed to identify initial ideas. Researchers then coded line-by-line, capturing key concepts and experiences from the data. These codes were organized into overarching themes, refined and validated against the dataset for accuracy. Each theme was carefully defined and labelled. A final report was generated, integrating participant quotes to highlight positive experiences and improvement areas.

Table 1. Participants' perspectives on the digital self-assessment tool.

Theme	Description
Unique and positive user experience	Participants expressed comfort in discussing their mental health, noting that they had never encountered such inquiries previously. They appreciated the process, valuing the non-judgmental and private atmosphere provided by tablet-based self-assessment. Some found the proactive and beneficial nature of self-reporting results noteworthy. They advocated for the encouragement of such self-reporting practices across all obstetric and paediatric clinics. '*It was a useful process. I have never been asked such questions before. I hope this is done after delivery as well because there will be a lot of body and mind changes after delivery*'.
Enhanced self-awareness and validation of emotions	Participants reported that the self-assessment deepened their understanding of mental health symptoms during pregnancy and postpartum, raising awareness about depression and anxiety. While societal expectations emphasize happiness during this period, the assessment reassured them that experiencing negative emotions is normal and that they are not alone. '*I felt important and wanted because of the process. It made me feel good and like I have some support*'. '*It feels validating when someone asks these questions in the hospital. It will definitely help a lot of women. I felt very good and got clarity on what was going on with me. It was very helpful*'.
Distress alleviation	Participants expressed increased relaxation and relief following the assessment. Four participants noted an initial discomfort discussing their mental health, which gradually eased as the assessment progressed. '*I have not spoken to the doctor yet because I felt better after the assessment. I felt like my feelings were okay and that I must not be the only one feeling this way*'. '*I felt free and light after answering*'.
Relatability of the questions	Participants appreciated the questions' relatability, feeling supported and cared for as they addressed mental health matters reflecting their own experiences. They also valued the application's availability in multiple languages and its relevance to pregnancy and postpartum-specific concerns. '*The questions were framed very well and were specific to pregnancy, it gave an idea (of) what is going on in a pregnant woman's mind.*' '*This whole survey was helpful, I never felt why they asked this question, because everything was relatable and I did not hesitate to answer and it was very friendly*'.
Convenience of digital self-assessment	Participants preferred digital self-assessment for its flexibility, convenience, and alignment with their schedules, allowing more detailed sharing without waiting for the doctor. One participant noted the autonomy it provided. '*A lot of times even if I want to talk to the doctor about something, they are so busy that I forget to tell them. This self- assessment was easier and I also spoke with my doctor about the result later*'.
Immediate feedback and personalized recommendations	Participants valued the immediate feedback and personalized recommendations provided by the self-assessment tool, which offered results and guidance based on their individual scores. '*It was a nice experience. I liked that I was told what to do (after the self assessment) immediately because I was struggling with depression but I did not want to talk to anyone. But when I read that (personalized recommendations) I talked to my doctor and the psychiatrist too*'.
Fostering open and nonjudgemental communication	Participants appreciated that the self-assessment tool enabled open, honest communication about mental health without fear of judgement, especially regarding feelings of unhappiness during pregnancy or after childbirth – times typically seen as joyous. They felt that this method was less intrusive than direct questioning, encouraging them to share details they might otherwise withhold. Additionally, some noted the tool's potential to promote broader discussions around mental health. '*Self- assessment was helpful to me. It was easier to share my feelings this way without anyone looking at me*'.

Ethical considerations: Encryption protocols were used for secure data storage and transmission, with SSL certificates authenticating server identity and encrypting internet traffic. Personal data was anonymized and accessible only to authorized personnel in compliance with the Personal Data Protection Bill 2019 of the Government of India.[34] Institutional ethics committees of all organizations approved the study, and participants were recruited after informed consent.

Results

Of 326 women who were approached in the clinics for participation, 17 pregnant and 58 postpartum women did not consent; the reasons for refusing consent included scepticism about the necessity of psychiatric assessment, appointment scheduling concerns and husbands' or relative's reluctance for evaluation, having a fussy baby, lack of time and having already undergone a similar assessment during pregnancy and not wanting to repeat it.

Six women did not complete the forms, and 11 forms had a technical malfunction and were not saved. Final data were available for 101 pregnant and 133 postpartum women. In the 24-h follow-up call, while all women had consented to be contacted over the phone, 138 out of the 234 participants answered.

Sociodemographic data

The mean age of the women in years was 30.6 (±4.46). All women were married, and 80.3% ($n = 188$) resided in Bangalore. One hundred and twenty-eight women (54.7%) had an undergraduate degree, with 38.5% ($n = 90$) having a postgraduate qualification. The majority were homemakers (47.4%; $n = 111$), with others being employed outside the home ($n = 93$) or working from home ($n = 30$).

The majority (68.4%; ($n = 160$) were experiencing their first pregnancy. Amongst the pregnant participants, 56.43% were in their third trimester ($n = 57$), 30.69% in their second trimester ($n = 31$) and 12.87% in their first trimester ($n = 13$). Among postpartum women, nearly half ($n = 65$) reported exclusive breastfeeding, while 44.4% ($n = 59$) supplemented breastmilk with additional top feed, and 6.8% ($n = 9$) relied entirely on top feed.

No significant differences were noted across multiple measures when women who responded to the 24-h follow-up call and those who did not were compared. An independent samples t-test indicated that the GAD-7(3.2 vs 3.6) and PHQ-9(6.6 vs 5.5) scores of the two groups were not significantly different ($p = 0.469$) ($p = 0.073$).

Acceptability of the digital PMH self-assessment tool

User acceptability. Themes derived from qualitative analysis of the 24-h follow-up ($n = 138$) interviews revealed participants' perspectives on the digital self-assessment tool.

Almost all participants reported that they liked talking about their mental health and the whole process in general. Participants reported various reasons for the same, which are listed in Table 1.

User concerns regarding digital self-assessment. Six participants questioned the assessment's effectiveness, with three finding it not very helpful. Concerns included the suitability of digital technology for the widespread evaluation due to differences in technological proficiency, honesty in self-reporting and the relevance of mental health questions during perinatal care. Suggestions included adding topics like nutrition, family support and parenting and options to shorten the questionnaire, add space for personal notes and increase font size.

Acceptability of digital self-assessment. When asked about whether they would recommend the application to others and for it to be part of routine care, the majority expressed confidence in its benefits, especially for those experiencing anxiety and depression symptoms. Regarding mental health assessment preferences, 60.1% ($n = 83/138$) preferred digital self-assessment alone, while 9.4% ($n = 13/138$) favoured starting with self-assessment followed by discussions with a professional if needed. Eleven women said they had no preference and found both methods equal. Reasons for preferring digital self-assessment included its non-judgemental nature, privacy, convenience and ease of use. Participants appreciated the opportunity to be honest and felt emotionally supported and cared for through the self-assessment process. One participant particularly felt empowered by the autonomy provided. Of all, 21% ($n = 29/138$) preferred direct engagement with a mental health professional, while only two preferred discussions solely with their obstetrician.

Feasibility of digital self-assessment

Feasibility of the digital application in the obstetric and paediatric clinic. On average, participants completed the assessment at the obstetrician's or paediatrician's clinic, taking 6 to 8 min. Initially, the digital application faced technical issues, affecting 11 assessments due to shutdowns, closure without saving and automatic restarts. However, these were resolved after the first two uses, with no recurrence. All participants ($n = 138$) found the application easy to use, reporting that it was simple. While most found the questionnaire length appropriate, seven women mentioned it was long. Most found the language easy to understand, with only two challenges.

During data collection, researchers observed that some participants ($n = 20$) expressed dissatisfaction when presented with their results on the application, indicating symptoms of anxiety or depression. In response, they revisited their answers, altering them to obtain a more favorable

Table 2. Rates of perinatal depression, anxiety and depression based on self-report.

Self-report results	Prevalence in pregnant participants ($n = 101$)	Prevalence in postpartum participants ($n = 133$)
Mild depressive symptoms (PHQ9 score = 5 to 9)	29.7% (30)	33.1% (44)
Moderate to severe depression (PHQ9 score = 10 and above)	14.8% (15)	13.5% (18)
Mild symptoms of anxiety (GAD7 score = 5 to 9)	16.8% (17)	15% (20)
Moderate to severe anxiety (GAD7 score = 10 and above)	10.9% (11)	11.3% (15)
Past history of psychiatric illness	7.9% (8)	12% (16)
Lack of social support (emotional support/help with domestic chores)	17.8% (18)	25.6% (34)
Poor marital relationship	3.9% (4)	3.7% (5)
Adverse life event in the last one year	20.8% (21)	25.6% (35)
Dissatisfaction with baby's health/weight	-	16.7% (39)
Dissatisfaction with baby's gender	-	2.2% (3)
Past history of abortion	29.7% (30)	13.5% (18)
Previous experience with infertility or past/current pregnancy-related complications	55.4% (56)	29.3% (39)

outcome, denying the presence of such symptoms. Additionally, 18 participants encountered difficulty comprehending the functionality of the 'next' and 'save' buttons, requiring initial prompting but proceeding smoothly with the assessment. Some women ($n = 9$) also voiced apprehensions regarding the duration needed to fill out the form, stemming from anxiety about missing the meeting with their doctor.

Rates of depression, anxiety and risk factors based on self-reporting on the digital tool

The results of digital self-assessment and risk factors can be seen in Table 2.and Figure 1.

At least one risk factor was reported by 83.3% of the women. Adverse life events encompassed a spectrum of experiences, including the loss of a close family member or friend, financial struggles, unemployment, interpersonal disputes and diverse health issues. The abortions reported ranged from one to four occurrences. Sixteen participants had a history of previous infertility. Obstetric complications varied, spanning hypertension, diabetes mellitus, hypothyroidism, ectopic pregnancy, surgical interventions, congenital anomalies in infants, to 1 case of Systemic Lupus erythematosus.

Three pregnant and 19 postpartum participants reported experiencing suicidal ideation, accounting for 9.4% of the sample, all of whom received immediate care from the mental health professionals in the research team. Additionally, half the participants ($n = 117/234$) scored five or above on the PHQ-9 or GAD-7, indicating the presence of any mental health issues. Furthermore, 6.4% ($n = 15$) experienced both moderate to severe anxiety and depression.

Discussion

The current study demonstrated the acceptability and feasibility of digital self-assessment for perinatal anxiety and depression among women in obstetric and paediatric settings. The findings of this study have important implications for PMH care in India, particularly in terms of accessibility, stigma reduction and improving healthcare delivery.

While 71.8% (234 out of 326) of approached women were willing to participate, reasons for non-participation included scepticism about the necessity of psychiatric assessment, appointment scheduling concerns, lack of time, a fussy baby and husbands' or relatives' reluctance for evaluation, the latter highlighting persistent mental

health stigma. Women tended to adjust responses upon receiving assessment reports, suggesting perceived stigma and emphasising the need to limit modifications after submission. Addressing such stigma and improving awareness regarding PMH issues is crucial alongside technical application improvements.[2]

Self-assessment is a useful method for identifying PMH conditions. A previous study at midwifery clinics in the United Kingdom (UK) found that participants valued self-assessment tools for mental health, highlighting their importance and user-friendly pregnancy-related questions.[35] A study in the United States found that postpartum women considered the online postpartum depression (PPD) self-reporting process easy, straightforward and personalized.[36] Participants in our study also reported feeling better emotionally and more self-aware after using the questionnaire, which aligns with the findings of the study from South Africa, where[37] women reported feeling better after depression assessment because it provided an opportunity for openness and seeking support.

Consistency in the acceptability of digital tools within the perinatal population has been evident across various studies from Canada, the United States of America (USA) and the United Kingdom.[16,17,35,36,38–40] However, studies on digital applications in PMH from LAMIC, including India, are lacking. Though not in a perinatal setting, previous research from India has demonstrated their acceptability, feasibility, sensitivity and specificity for other forms of mental health assessment and clinical decision-making.[22,41,42] This gap in research indicates an important area for future exploration, given the growing need for accessible PMH care in LAMICs.

Feasibility results from this study suggest that the average assessment time for completing the PHQ-9 and GAD-7 was between 6 and 8 min, with only two incomplete forms due to appointment interruptions. This indicates that mobile-based assessments are time-efficient and can be seamlessly integrated into clinic settings, such as during waiting times before obstetric and paediatric appointments. This time efficiency is particularly beneficial, as it allows patients to complete assessments without adding substantial time to their appointments, benefiting both patients and healthcare providers. Many participants in this study preferred digital self-assessment over traditional doctor visits, valuing the privacy it offered and the opportunity to communicate openly without fear of judgement. This aligns with findings from studies in Canada and the UK, where pregnant women preferred web-based assessments over paper-based methods due to privacy and reduced time demands.[17,39]

In our study, we observed prevalence rates of antenatal and PPD (PHQ-9 > 10) at 15% and 13.5%, respectively, and antenatal and postpartum anxiety (GAD-7 > 10) at 11% and 11.3%, respectively. These findings are consistent with those from various studies conducted in India and other countries.[33,43–47] Marcano-Belisario et al. (2017) documented an antenatal depression prevalence of 13% through tablet-based assessment in perinatal clinics in the UK. Rickets et al. (2019) observed a 10% antenatal depression rate utilizing an application-based PHQ-8,[16,38] while

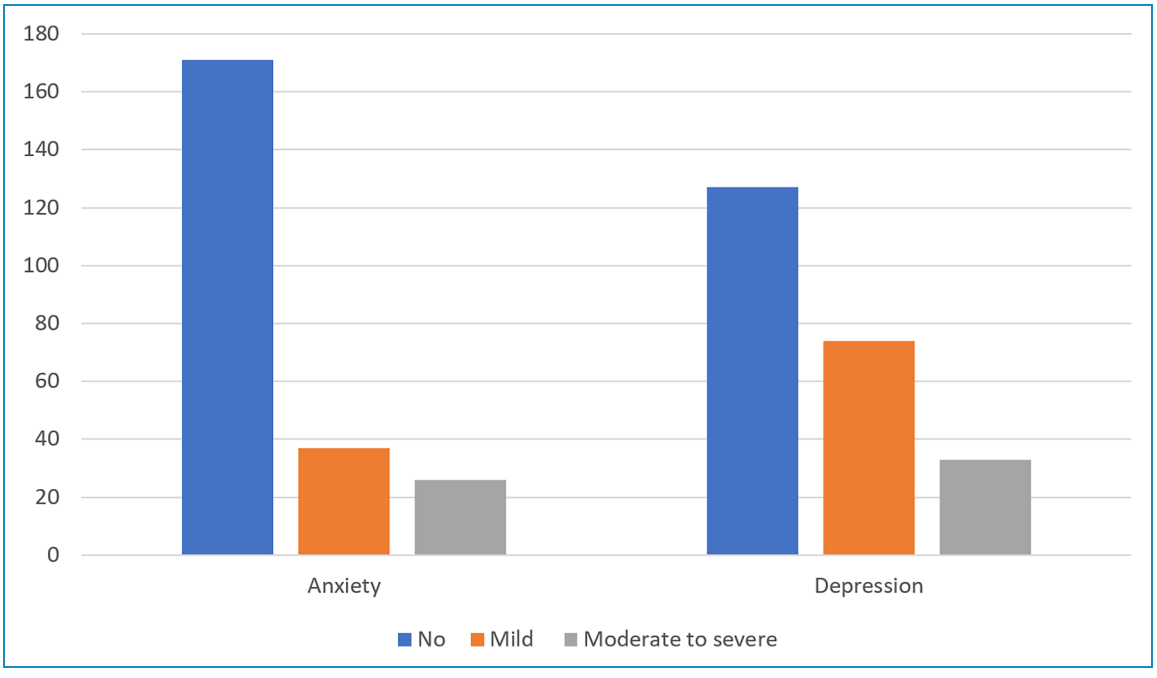

Figure 1. Prevalence of perinatal anxiety and depression in sample population.

studies using online assessments reported PPD rates of 23% (2008) and 16% (2015).[48,49]

Our tablet-based self-assessment approach, conducted during patients' waiting periods for obstetric and paediatric appointments, yields results consistent with documented incidence rates of perinatal anxiety and depression in India, confirming the practicality and feasibility of our methodology across LAMICs.

Digital self-assessment tools present unique scalability, cost-effectiveness and adaptability advantages for remote or underserved regions. Integrating features like an audio-enabled questionnaire enhances accessibility for low-literacy users, while multilingual options ensure broader inclusivity across diverse populations. Offline functionality with daily data synchronisation supports usability in areas with limited Internet access, expanding reach to more rural settings. However, maximizing these tools' potential requires addressing challenges related to user engagement and exploring emerging technologies to improve customization and interactivity.[50,51] Enhancing usability in low-literacy settings may require non-textual interfaces utilizing graphics and multilingual support.[10,22,52]

According to the National Mental Health Survey 2016 of India, a large treatment gap exists for CMDs.[53] The rising prevalence of mobile device ownership and internet accessibility in India offers a significant opportunity to extend mental health care to rural and hard-to-reach regions.[54] The increasing use of mobile phones and the potential of digital interventions can play a critical role in expanding mental health care to underserved populations, where traditional healthcare infrastructure is often lacking or overwhelmed. By leveraging technology to offer accessible mental health screenings and interventions, we can address the mental health needs of perinatal women and promote early identification and support. Partnerships between academia, healthcare providers and the tech industry will ensure the continued development and implementation of evidence-based, culturally appropriate and user-friendly digital mental health solutions.

Strengths and limitations

The strength of this study lies in its pioneering nature within LAMICs, marking a significant advancement in digital self-assessment for PMH. A digital tool in multiple languages ensured inclusivity and accessibility, while collaboration with a technology partner ensured the research methodology's rigour and effectiveness. However, the study has limitations. Its small sample size may restrict the generalizability of findings, and the tool may also need clinical validation. Moreover, including participants with high literacy levels and focusing on non-public health facilities could introduce biases and limit the findings' applicability to broader populations.

Conclusion

This study explored the feasibility and impact of a digital tool for PMH assessment, designed to address challenges such as logistical barriers, stigma and limited resources that can hinder assessment and intervention. Through real-time self-assessment, immediate feedback and personalized recommendations, this tool facilitated greater accessibility to mental health screening for mothers within clinical settings, with implications for scaling in diverse, underserved populations.

To broaden its reach, further adaptations are necessary to ensure accessibility in remote areas without reliable Internet and for users with limited literacy. Incorporating audio-enabled and non-textual interfaces, alongside multilingual support, will enhance usability for rural and low-literacy populations. Expanding connectivity options within the tool, such as peer support networks and direct access to mental health professionals, may also strengthen engagement and reduce stigma. Future research should examine the help-seeking behaviours and long-term acceptance of such digital tools across various perinatal health contexts beyond clinic-based settings, ensuring they address broader populations' specific needs and barriers.

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