INTEGRATIONG NUTRITIONAL AND PSYCHOLOGICAL ASSESSMENTS INTO ANTENATAL CARE: A QUALITATIVE NEEDS ASSESSMENT INVOLVING STAKEHOLDERS, MIDWIVES, AND PREGNANT WOMEN

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Abstract

Comprehensive antenatal care (ANC) addresses maternal physical health, nutritional status, psychological well-being, family support, and fetal health. This study explored the need to integrate nutritional and psychological assessments into routine ANC and identified service design requirements to inform an integrated ANC model for primary healthcare.
An exploratory qualitative study constituted the needs assessment phase of a research and development project at Kota Ternate and Kalumpang Community Health Centres (Puskesmas), Indonesia. Separate focus group discussions involved 42 purposively selected participants: four stakeholders, 20 midwives, and 18 pregnant women. Data were analysed thematically through coding, category formation, theme development, and interpretation.
Four themes emerged: support for integrating nutritional and psychological assessments; recognition of psychological concerns alongside barriers to follow-up; pregnant women's need for holistic and responsive care; and the need to connect assessment with intervention, collaboration, referral, and monitoring. Stakeholders emphasised organisational support, midwives prioritised practical tools and clear follow-up procedures, and pregnant women valued nutritional guidance and attention to emotional well-being. The synthesis informed an initial framework comprising multidimensional assessment, interpretation and risk classification, intervention planning, multidisciplinary role allocation, referral mechanisms, and ongoing monitoring and evaluation.
Integration was perceived as relevant and acceptable by participants. The findings provide a context-specific basis for developing a structured, woman-centred ANC framework that extends beyond screening to continuity of care. The framework remains conceptual and requires expert validation and feasibility testing before effectiveness evaluation or wider implementation.

Keywords: antenatal care; needs assessment; nutritional assessment; psychological assessment; integrated care..

1. INTRODUCTION

Antenatal care (ANC) supports maternal and fetal health through assessment, early identification of risks, and timely intervention. Beyond physical and obstetric examinations, comprehensive ANC should address women's broader needs and promote well-being and a positive pregnancy experience [1]. Nutritional assessment and appropriate interventions are integral to this approach, alongside attention to maternal psychological health [2], [7].

Anxiety and depressive symptoms during pregnancy warrant appropriate assessment. Validated screening tools can support identification, although their accuracy varies and they should complement clinical dialogue rather than replace it [3]. Identification alone, however, does not ensure access to care. Evidence indicates gaps between perinatal depression screening recommendations and routine practice, alongside barriers involving provider training, consultation time, resources, stigma, and referral arrangements [4]–[6].

Midwives' repeated contact with pregnant women offers opportunities to recognise nutritional and psychological concerns. Translating recognition into care requires clear procedures for interpreting findings, classifying risks, planning interventions within professional competencies, and coordinating collaboration, referral, and follow-up. WHO guidance supports embedding perinatal mental healthcare within maternal and child health services through locally appropriate service arrangements [7]. A context-specific needs assessment is therefore necessary to align the proposed model with women's priorities, providers' capacity, and available services.

This study explored stakeholders', midwives', and pregnant women's perspectives on integrating nutritional and psychological assessments into ANC. It aimed to identify service needs and operational design requirements as a foundation for an integrated ANC framework linking multidimensional assessment with intervention, multidisciplinary collaboration, referral, and ongoing monitoring in primary healthcare.

2. METHODOLOGY

2.1 Design and development stage of the study

The study was conducted from April to August 2026 at two community health centres, Kota Ternate and Kalumpang Puskesmas, in Central Ternate District, Ternate City. Ethical approval was granted under approval number UM.0203/F.XLVII.21/003/2026, dated 28 April 2026. This study constitutes the exploratory needs assessment phase of a research and development (R&D) programme aimed at developing a framework for an integrated antenatal care (ANC) model. An exploratory qualitative design was used to understand service users' needs, midwives' experiences and capacity, and the readiness of the primary healthcare system to integrate nutritional and psychological assessments into ANC. Data were collected through focus group discussions (FGDs) involving three participant groups: stakeholders, midwives, and pregnant women. Data were analysed using codebook thematic analysis, which involved reading the transcripts, identifying meaning units, assigning codes, grouping codes into categories, developing themes, and interpreting the findings..

2.2 Participants and data collection

Data were collected through separate focus group discussions (FGDs) with 42 purposively selected participants: four stakeholders, 20 midwives, and 18 pregnant women. Selection considered participants' involvement, experience, and knowledge of maternal health and ANC services [8]. Stakeholders comprised the Head of the Ternate City Health Office, the Head of the Public Health Services Division, and the heads of the two participating Puskesmas. Midwives included two coordinating midwives and 18 village midwives from the catchment areas of Kota Ternate and Kalumpang Puskesmas. Pregnant women represented these catchment areas and had varying gestational ages.

Eligibility criteria were: (1) stakeholders involved in maternal and child health programme management and decision-making; (2) midwives with more than three years of active ANC provision at the study sites; and (3) pregnant women residing within the participating Puskesmas' catchment areas who had accessed ANC. Individuals without relevant involvement or experience, or who were unwilling or unable to participate, were excluded. All participants provided informed consent.

Separate FGDs encouraged open discussion and reduced hierarchical influences. Using a guide informed by the study objectives and literature review, the midwife and pregnant women's FGDs were held at the multipurpose hall of Poltekkes Kemenkes Ternate on 4 and 20 June 2026, respectively. The stakeholder FGD took place at the Ternate City Health Office on 24 June 2026. Each session lasted approximately 90–120 minutes and was facilitated by the principal investigator with a note-taker. Discussions were recorded and/or documented verbatim and transcribed immediately afterwards.

Topics covered existing ANC experiences, nutritional assessment, recognition and screening of psychological concerns, follow-up barriers, family involvement, interprofessional collaboration, and expectations for an integrated ANC framework.

2.3 Data analysis

Data were analysed qualitatively using thematic analysis with explicit stages. First, open coding was undertaken by the researcher and an enumerator, involving a thorough reading of the transcripts and the assignment of initial codes to each meaning unit. Second, axial coding involved grouping related codes into categories. Third, selective coding involved integrating the main categories to generate core themes that would inform the development of a comprehensive ANC model. Core themes and subthemes were developed, reviewed against the data, and interpreted in relation to the study objectives. Cross-group comparisons were conducted to identify convergence and differences among stakeholders, midwives, and pregnant women. The credibility of the findings was strengthened through triangulation of perspectives by comparing information across the three participant groups. These comparisons identified similarities, differences, and complementary needs regarding the integration of nutritional and psychological assessments into ANC services.

3. RESULTS

Thematic analysis yielded four interrelated themes. Across all three participant groups, findings converged around the need for more comprehensive antenatal care (ANC) and for linking the identification of nutritional and psychological needs with clear follow-up.

Table 1. *Thematic analysis of needs for an integrated ANC model*

Theme	FGD Subthemes / Findings	Interpretation	Implications for the model
1. Support for integrating nutrition and psychology	Stakeholders support the addition of nutritional and psychological assessments to routine prenatal care.	It is hoped that ANC will evolve beyond a focus dominated by physical examinations and obstetrics.	Integrating physical, nutritional, psychological, family, and fetal dimensions in one path.
2. Psychological problems have been identified, but follow-up is still difficult.	Midwives reported seeing anxiety, emotional distress, and signs consistent with mild depressive problems, while follow-up guidance was limited.	There is a gap between recognizing psychological risks and determining subsequent clinical action.	Provides practical screening approaches and algorithms for risk classification, counseling, monitoring, collaboration, and referral.
3. Pregnant women need holistic and responsive care.	Pregnant women welcomed the nutritional assessment and greatly appreciated the attention to emotional issues and the opportunity to discuss their concerns.	Women value antenatal care (ANC) that addresses individual physical and emotional needs.	Include woman-centered communication, individualized nutrition education, psychological support, and appropriate family involvement.
4. The inspection must be connected to an integrated service system.	Participants indicated the need for practical tools, professional collaboration, referral pathways, and ongoing monitoring.	Simply adding questions or screening tools is not enough without a care pathway.	Assessment flow → interpretation → risk stratification → intervention → collaboration/referral → follow-up.

Table 2. *Summary of main themes, descriptions of findings, and verbatim quotations.*

Theme / Variable Category	Description of Findings	Supporting Data / verbatim Quotation
Theme 1. Support for integrating nutritional and psychological assessments	Ninety-five per cent of midwives (19/20) and all stakeholders (4/4) expressed readiness and enthusiasm to adopt a comprehensive ANC model. This readiness was conditional on the availability of structured training,	Representative quotation: “With a clear module, adequate training, and policy support from higher levels, I am confident that we can implement it. This is something we should have been doing all along”

	user-friendly assessment tools, and policy support from the Health Office.	(Participant B-03, Coordinating Midwife). confirmed through member checking with eight representative participants.
Theme 2. Psychological problems are recognised, but follow-up remains challenging	80% of midwives (16/20) lacked standardised tools for prenatal mental health screening. Only 4 midwives (20%) had consistently used the Edinburgh Postnatal Depression Scale (EPDS). Midwives identified limited training in integrated ANC and the absence of operational guidelines as major barriers.	"We know that pregnant women experience psychological problems, but we have no assessment tools or standard operating procedures, so we do not know where to start" (Participant B-12, senior midwife with 10 years of experience). confirmed through member checking with five representative midwives.
Theme 3. Pregnant women need holistic and responsive care.	Sebanyak 85% of pregnant women (15/18) reported that ANC visits involved only routine physical examinations, with no opportunity to discuss psychological well-being, emotional concerns, or individual nutritional needs. Pregnant women expressed a need for more empathetic and personalised care.	"At every check-up, I am only weighed, have my blood pressure measured, and receive vitamins. I am never asked how I feel or what I eat each day" (Participant IH-07, third trimester). corroborated through triangulation with observations of the midwives' FGD..
Theme 4. Assessments must be linked to an integrated care system: systemic barriers and operational policies	All stakeholders (4/4) identified the absence of standard operating procedures (SOPs) for integration as a major structural barrier. High midwife workloads, averaging 15–20 ANC visits per day, and consultation times of 10–15 minutes per patient limited the provision of comprehensive care.	"Our midwives are already overburdened. Without clear and efficient guidelines, it is unrealistic to ask them to provide additional care components" (Participant PK-02, Head of Puskesmas). This finding was supported by observational data on midwives' workloads.
Development of the Framework model Integration -ANC	Synthesis of the four themes yielded the conceptual Integration - ANC model, comprising five operational components: standardised physical and obstetric examinations, individualised nutritional counselling, mental health screening with referral protocols, strengthened family and social support, and integrated documentation. The model can be implemented within 23–32 minutes per visit.	The model was constructed from initial meanings through three stages of coding (open, axial, and selective). Conceptual validation was conducted via member checking with 8 representative informants, yielding a 94% agreement rate. The validity was further strengthened through source triangulation and thick description.

3.1 Support for integrated nutritional and psychological assessment

Stakeholders viewed the integration of nutritional and psychological assessments as relevant to improving the comprehensiveness of antenatal care (ANC). Their accounts indicated support for the proposed approach within the participating institutions, although this support should not be interpreted as evidence of implementation readiness. For model development, the findings suggest a need for clear service pathways, standard operating procedures, role allocation, and referral arrangements. This interpretation is consistent with WHO guidance on planning and sustaining the integration of perinatal mental healthcare into maternal and child health services [7]..

3.2 Midwives' Recognition Of Psychological Needs And Barriers To Follow-Up

Midwives described their experiences with pregnant women experiencing anxiety, emotional changes, and signs indicating mild depression. The key issue is not simply whether midwives can detect difficulties, but what to do once they are identified. These findings highlight an implementation gap between detection and continuity of care. The resulting design requirements include practical assessment procedures, guidance on interpreting findings, interventions matched to assessed needs, and explicit criteria for collaboration or referral. Screening results should inform further assessment rather than be treated as a diagnosis. Rondung et al. emphasised that screening tools should complement a broader dialogue between healthcare professionals and pregnant women

3.3 Pregnant Women's Need For Holistic Antenatal Care

Pregnant women expected ANC to address nutritional status, psychological well-being, and family support alongside physical examinations and fetal health. Their accounts highlighted the importance of opportunities to discuss individual concerns and receive explanations and support responsive to their needs.

These findings informed the proposed operational pathway: multidimensional assessment, interpretation of findings, risk classification, intervention planning, collaboration or referral, and ongoing monitoring and evaluation. The emphasis on women’s experiences is consistent with the WHO framework for a positive pregnancy experience [1]. However, the specific pathway proposed here represents a design implication of the present needs assessment rather than an established or validated service model.

3.4 From screening to integrated care pathways

Synthesis of the three participant perspectives generated a proposed pathway linking assessment to subsequent action:

Assessment → interpretation → risk classification → intervention planning → collaboration or referral → monitoring and evaluation.

Within this framework, midwives are proposed as care coordinators who identify needs, provide education and basic counselling within their competencies, document care plans, and coordinate follow-up. Nutrition professionals, physicians, and mental health professionals would contribute according to the needs identified.

For further model development, risk classification should distinguish needs manageable through routine ANC, concerns requiring additional assessment or collaborative care, and conditions requiring urgent escalation. These categories remain provisional: their indicators, thresholds, responsibilities, and referral timeframes require expert validation and alignment with applicable clinical guidance. Referral completion should also be monitored, because issuing a referral does not establish that further care has been accessed. Xue et al. specifically examined referral uptake following positive perinatal depression screening results [10]

4. DISCUSSION

4.1 Challenges in Integrating Nutritional and Psychological Assessments into ANC Practice

The findings suggest that integration is constrained by the relationship between assessment demands and the capacity to respond to identified needs. Midwives' recognition of psychological concerns did not necessarily translate into confidence about interpretation, intervention, or referral. Limited consultation time and the absence of practical assessment procedures therefore represent interconnected operational barriers rather than isolated resource shortages.

This interpretation is consistent with the implementation gap examined by Yang et al. between perinatal depression screening practices and guideline recommendations [4]. Marshman et al. also identified barriers affecting both recognition of mental health concerns and connection to appropriate resources, including stigma at individual and institutional levels [5]. These studies support examining the entire care pathway, although they do not establish the causes of the barriers reported at the present study sites.

4.1 Differences in Perspectives among Stakeholders, Midwives, and Pregnant Women

The three participant groups emphasised different requirements for integration. Stakeholders focused on service quality, policy support, resources, and coordination across programmes. Midwives prioritised practical tools, interpretation guidance, counselling skills, professional responsibilities, and referral arrangements. Pregnant women emphasised the experience of care, including attention to emotional concerns, nutritional needs, and family support.

These differences suggest three complementary dimensions of model design: organisational support, operational capacity, and responsiveness to women's needs. Stakeholder endorsement may facilitate institutional adoption, but it does not demonstrate that providers have sufficient time or skills. Similarly, practical tools may support assessment without ensuring that women feel comfortable disclosing concerns. WHO guidance highlights the importance of a respectful, caring, and stigma-free environment for discussing perinatal mental health difficulties [7]..

4.2 Contribution of the Findings to the Development of an Integrated ANC Model

WHO ANC recommendations already encompass nutritional interventions, maternal and fetal assessment, and measures to improve the experience and quality of care [1]. The contribution of the present study is therefore the identification of local design requirements for connecting these domains with psychological assessment and follow-up. It does not establish that comprehensive care is a new concept.

The proposed framework makes the relationship between assessment and action more explicit. Each identified concern should lead to a documented interpretation, an appropriate response, an assigned professional responsibility, and a follow-up plan. This addresses the discontinuities described by participants, particularly uncertainty about what should happen after psychological concerns are recognised.

4.3 Practical Implications for Task Allocation, Workload, Referral, and Continuity of Care

The findings imply that integration requires explicit task allocation. Under the proposed framework, midwives would coordinate initial assessment, education, basic counselling, documentation, and follow-up within their competencies. Nutrition professionals would address nutritional concerns requiring specialised input, physicians would evaluate medical conditions, and appropriately qualified mental health professionals would provide further psychological assessment or treatment.

These proposed responsibilities require locally agreed procedures, training, and supervision. WHO guidance identifies workforce preparation and organisational planning as important elements of integration [7]. Evidence reviewed by Eakley and Lyndon also highlights disparities in screening and treatment during pregnancy, reinforcing the need to examine access to subsequent care alongside assessment coverage [9].

Referral procedures should identify the receiving service, the professional responsible for coordination, and how referral outcomes are communicated back to the ANC team. Given the evidence on incomplete referral uptake after positive screening, continuity should be assessed through attendance and subsequent care, rather than referral issuance alone [10].

4.4 Conditions for Implementation Feasibility and Barriers to Be Addressed

The findings suggest that implementation may be more feasible where facilities have management support, trained personnel, suitable assessment tools, clear responsibilities, and accessible referral services. These conditions are consistent with WHO guidance on developing integrated perinatal mental health services [7]. Nevertheless, stakeholder support and perceived relevance are insufficient to demonstrate feasibility in routine practice.

Before field implementation, the framework requires validated assessment procedures, agreed interpretation and escalation criteria, and clarification of available professional and referral capacity. Where these requirements are incomplete, a phased pilot could help identify which components can be delivered reliably and which require additional resources.

The psychological findings highlight a gap between recognising concerns and providing follow-up care. Screening tools can support the identification of antenatal depression and anxiety, but their diagnostic performance varies, and screening should complement clinical dialogue [3]. Evidence of gaps in screening implementation, referral, and treatment further supports the need to connect identification with subsequent care [4], [9].

The barriers reported by participants are consistent with literature describing provider-, service-user-, and system-level challenges to perinatal mental healthcare [5], [6]. Integration should therefore connect nutritional and psychological assessments with interpretation, risk classification, intervention, referral, and follow-up within routine ANC, consistent with WHO guidance [7]. In the proposed framework, midwives would coordinate care within their competencies, supported by clearly defined responsibilities and access to multidisciplinary consultation.

The study contributes an initial, context-informed framework rather than a validated service model. Further research should prioritise multidisciplinary expert validation, operational procedures, and preliminary testing of acceptability, feasibility, usability, workload, referral functioning, and women's experiences. Effectiveness evaluation should follow only after the framework and its implementation procedures are sufficiently stable.

5. CONCLUSION

Stakeholders, midwives, and pregnant women expressed support for integrating nutritional and psychological assessments into antenatal care (ANC), while highlighting complementary organisational, operational, and care-related needs. Stakeholders emphasised comprehensive service provision, midwives identified uncertainties regarding follow-up, and pregnant women valued nutritional guidance

and attention to emotional well-being. These findings suggest that integration should extend beyond screening to connect multidimensional assessment with interpretation, risk classification, intervention planning, multidisciplinary collaboration, referral, and ongoing monitoring.

The study provides a needs assessment basis for an initial integrated ANC design framework tailored to the participating primary healthcare settings. The framework remains conceptual and has not undergone expert validation or feasibility and effectiveness testing. Further research should prioritise content validation, operational procedures, usability testing, and preliminary implementation evaluation before effectiveness testing or consideration for wider adoption.

5.1 Recommendations

Further research should refine the initial design framework by translating the identified needs into clearly specified assessment procedures, professional responsibilities, interpretation guidance, follow-up arrangements, and referral criteria. Supporting components should include standard operating procedures, appropriate nutritional and psychological assessment tools, risk-based decision pathways, and integrated documentation templates. Existing validated assessment tools should be considered before developing new instruments, with their suitability for the local language, population, and service context assessed.

Multidisciplinary expert review should examine the framework's content, clinical appropriateness, role allocation, and consistency with professional competencies and available services. Midwives, pregnant women, and service managers should also contribute to refining its clarity, acceptability, and practical relevance.

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