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Development and Pilot Testing of a Childbirth Readiness Questionnaire (CRQ) for Third-Trimester Pregnant Women in Indonesia

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ABSTRACT

Childbirth readiness is a multidimensional construct encompassing physical, psychological, social, and spiritual preparedness, yet contextually appropriate instruments for Indonesian pregnant women remain limited. This study aimed to develop and pilot test the Childbirth Readiness Questionnaire (CRQ) for third-trimester pregnant women in Indonesia. A methodological pilot design was employed, including expert review (n = 5) and field testing with 110 pregnant women. Content validity was evaluated using the Item Content Validity Index (I-CVI), while preliminary construct performance was examined through descriptive statistics and corrected item–total correlations. Internal consistency reliability was assessed using Cronbach's alpha. All nine items demonstrated acceptable content validity (I-CVI ≥ 0.80) and adequate item–total correlations (r = 0.34–0.61). The overall scale showed satisfactory internal consistency (α = 0.82). Dimension-level descriptive scores supported the conceptual structure of physical–cognitive, psychological–spiritual, and social support readiness. These findings indicate that the CRQ has promising preliminary psychometric properties and is feasible for assessing childbirth readiness among Indonesian third-trimester pregnant women. Further validation with larger and more diverse samples is required to confirm its factorial structure and generalizability.

Keywords: Childbirth Readiness, Perinatal Mental Health, Primary Psychometric Validation, Pregnant Women

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1. INTRODUCTION

Readiness for childbirth is an important aspect of maternal health during the later stages of pregnancy, as it relates to how women perceive their ability to face labor and prepare for childbirth-related demands. During the third trimester, pregnant women are required to interpret bodily changes, anticipate the onset of labor, and make timely decisions regarding care-seeking. Studies from various settings suggest that limited readiness during this period may contribute to delays in accessing appropriate care and suboptimal delivery service use (Limenih et al., 2019; Majhi et al., 2024). In the literature, childbirth readiness has most commonly been approached through the concepts of birth preparedness and complication readiness (BPCR), which emphasize practical and informational aspects of preparation, such as knowledge of danger signs, identification of a delivery place, and arrangements for transportation and support (Kassa, 2018). Although this framework has been widely applied in maternal health research and programs, it primarily captures observable preparatory actions and does not aim to assess women's internal perceptions or subjective sense of readiness (Taheri et al., 2018). Several studies have indicated that women's experiences of readiness for childbirth extend beyond logistical planning. Qualitative evidence highlights that emotional calmness, confidence in facing labor, acceptance of childbirth, and perceived support from family members are frequently mentioned by women when describing their preparedness for delivery (Ely et al., 2020; Maryuni et al., 2024). These dimensions are shaped by individual experiences, cultural values, and family dynamics and may influence how women approach labor and engage with health services.

In Indonesia, childbirth preparation is strongly embedded in the social and cultural contexts. Family involvement, spiritual beliefs, and local norms play an important role in how pregnant women understand and prepare for childbirth, particularly during the third trimester (Maryuni et al., 2024; Herrick, 2024). Although

antenatal care services provide education related to childbirth preparation, existing tools used in routine practice mainly focus on information delivery and checklist-style guidance, with limited attention to women's subjective readiness or internal preparedness (Badan Pusat Statistik [BPS], 2022; Kementerian Kesehatan Republik Indonesia, 2021). At present, there is no brief instrument specifically designed to assess childbirth readiness among third-trimester pregnant women in Indonesia that integrates the physical, psychological, and social aspects of readiness. Most available measures have been developed for program monitoring or research purposes and may be less suitable for capturing the multidimensional and context-dependent nature of readiness experienced by Indonesian women. This gap limits the ability of researchers and healthcare providers to systematically assess readiness in a way that is both meaningful and practical.

Therefore, this study aimed to develop and pilot test a childbirth readiness instrument tailored to third-trimester pregnant women in Indonesia. The instrument was designed to draw on existing evidence while remaining sensitive to local context and practical constraints. Rather than replacing existing approaches to childbirth preparation, this study seeks to complement these by providing a concise tool to capture women's perceived readiness for childbirth in a multidimensional manner.

2. METHOD

Study Design

This study employed a methodological research design that focused on the development and pilot testing of a childbirth readiness instrument (*instrument development and pilot testing*). This design was adopted to ensure construct clarity, content validity, and instrument feasibility prior to the large-scale psychometric evaluations (Boateng et al., 2018).

Study Participants

The study involved two groups of participants, corresponding to the stages of instrument development: an expert panel and end users (pregnant women).

Expert Panel

The expert panel consisted of five members, including midwifery lecturers and senior midwives, as well as clinical psychology experience in maternal health. Experts were selected using purposive sampling and involved in the content validation stage to evaluate the relevance, clarity, and representativeness of the childbirth readiness instrument items.

Pilot Study Respondents

Pilot testing was conducted among 110 third-trimester pregnant women attending antenatal care services at public primary health centers (*Puskesmas*) in Semarang District.

Inclusion criteria were as follows.
(1) Gestational age >28 weeks
(2) Maternal age between 20 and 40
(3) The ability to read and understand Indonesian
(4) willingness to participate in the study.
Exclusion criteria included Pregnant women with severe obstetric complications, medical conditions requiring immediate clinical intervention, or incomplete questionnaire responses were excluded.

Sampling Technique and Recruitment

Purposive sampling was used in this study. Pregnant women were recruited during routine antenatal care visits to public primary health centers under the jurisdiction of the Semarang City Health Office in March 2025. Eligible participants received an explanation of the study objectives and procedures before providing written informed consent.

Conceptual Framework and Instrument Development

Instrument development was guided by a synthesis of the literature on childbirth readiness and factors related to decision-making and access to childbirth services. A literature-based conceptual framework summarizing the key determinants and implications of childbirth readiness is shown in Figure 1. This framework served as a theoretical foundation and was not intended to represent an empirically tested model in this study (World Health Organization, 2006; Kassa, 2018).

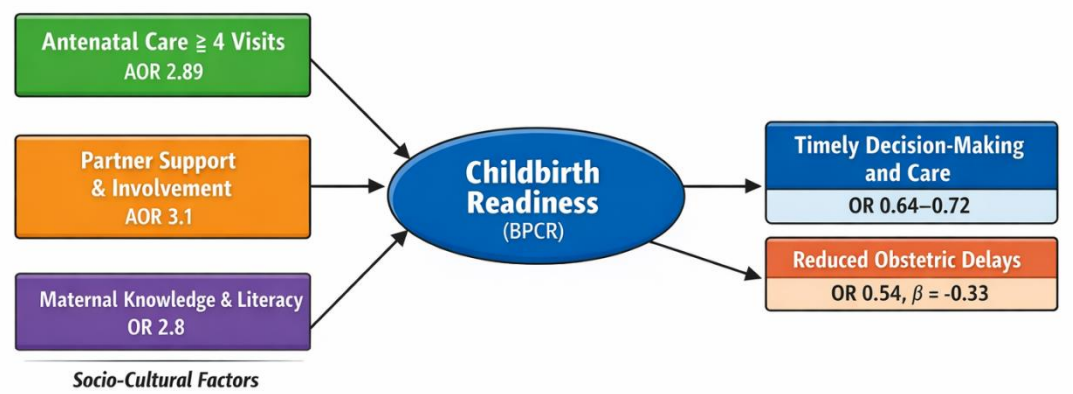
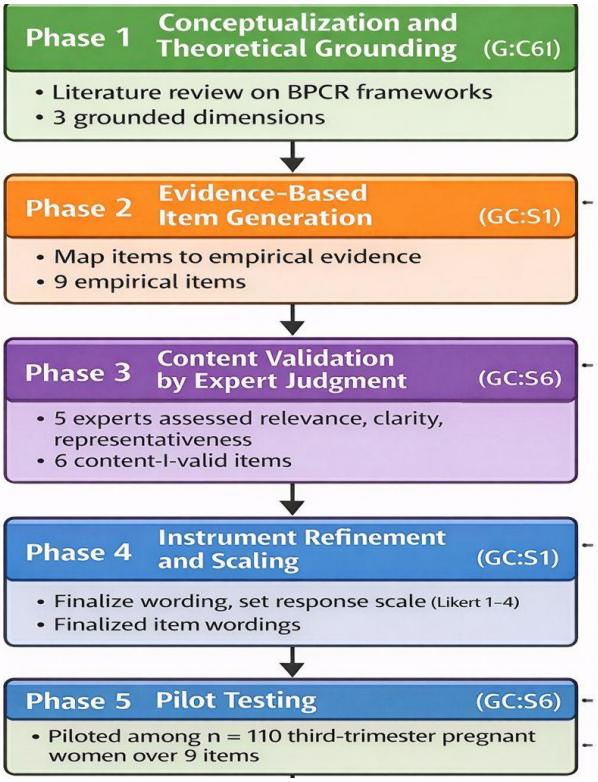


Figure 1. Conceptual framework of childbirth readiness synthesized from prior empirical studies, illustrating key determinants (antenatal care, partner support, maternal knowledge) and expected outcomes (timely decision-making and reduced obstetric delays) (World Health Organization, 2006; Kassa, 2018; Limenih et al., 2017, 2019; Baraki et al., 2019; Moshi et al., 2019; Bekuma et al., 2022; Majhi et al., 2024).

Phases of Instrument Development

The childbirth readiness instrument was developed in the following sequential phases:



Phase 1. Conceptualization

A review of the literature led to the identification of childbirth readiness as a multidimensional construct encompassing physical–cognitive readiness, psychological–spiritual readiness, and social support readiness.

Phase 2.Item Development

Based on the established dimensions, items were formulated to contextually represent the experiences and perceptions of women in the third trimester of pregnancy.

Phase 3. Content Validation

Expert panel review resulted in item refinement through the removal of overlapping or insufficiently specific wording.

Phase 4. Instrument Finalization

The instrument was finalized with refined item wording and a frequency-based response format.

Phase 5. Pilot Testing

A limited pilot test was conducted to assess item readability and the feasibility of instrument use in field settings.

Phase 6. Readiness for Further Validation

The instrument was deemed ready for use in subsequent studies involving larger samples for further psychometric evaluation.

Figure 2. Phases of Instrument Development

Data Collection Procedures

The data collection was conducted in two stages. The first stage involved expert panel review of the instrument for item refinement. The second stage consisted of pilot testing the instrument among pregnant women in their third trimester. Participants completed the questionnaire independently after routine antenatal care services, with minimal assistance from the researcher when needed.

Validity and Reliability Testing of the Instrument

The validity and reliability of the *Childbirth Readiness Questionnaire (CRQ)* were systematically examined to ensure that the instrument met acceptable measurement standards at the early stages of development and pilot implementation. In line with the exploratory nature of this study, the evaluation focused on content validity and internal consistency reliability, which are considered to be appropriate indicators for preliminary instrument testing.

Validity Assessment

Instrument validity was assessed using two complementary approaches: content validity and initial-response-based validity. Content validity was established through an expert review process involving five professionals with expertise in midwifery, maternal health, and health psychology. Each expert independently evaluated the CRQ items in terms of conceptual relevance, clarity of wording, and contextual appropriateness for third-trimester pregnant women in Indonesia. Ratings were provided using a four-point relevance scale and subsequently analyzed using the Item Content Validity Index (I-CVI). For an expert panel of five members, an I-CVI value of 0.80 or higher was considered indicative of adequate content validity. Qualitative feedback from the experts provided minor wording refinements and conceptual clarifications prior to field testing, while no items were removed at this stage. Initial response-based validity was examined during pilot field testing conducted with 110 third-trimester pregnant women who met the study's inclusion criteria. At this stage, the corrected item–total correlations were calculated to evaluate the contribution of each item to the overall construct of childbirth readiness. A correlation coefficient of 0.30 or above was used as the minimum threshold for item adequacy in early-phase instrument development. This analysis aimed to confirm that all items functioned coherently within the scale and meaningfully contributed to the total score.

Reliability Assessment

The internal consistency reliability of the CRQ was assessed using Cronbach's alpha coefficient, which is commonly used in pilot studies to evaluate the degree of interrelatedness among items within a scale. A Cronbach's alpha value of 0.70 or higher was considered acceptable for an instrument at the developmental stage. In addition, the range of corrected item–total correlations was examined to ensure that no individual item undermined the internal coherence of the scale.The reliability analysis was intended to determine whether the CRQ items collectively measured childbirth readiness as a coherent multidimensional construct. Given the pilot nature of this study, further psychometric evaluations, such as confirmatory factor analysis and measurement invariance testing, are planned for subsequent research involving larger and more diverse samples.

Data Analysis

Data were analyzed descriptively to assess the instrument feasibility. Responses were examined to ensure completeness and appropriate distribution across the items. Preliminary internal consistency reliability was estimated using Cronbach's alpha coefficients. Factor analysis was not performed as the study constituted an initial pilot test with a limited sample size.

Ethical Considerations

This study was approved by the Research Ethics Committee of the Health Polytechnic of the Ministry of Health, Semarang. All participants voluntarily participated after receiving a clear explanation of the study objectives and procedures. Confidentiality and anonymity of the data were maintained.

3. RESULTS AND DISCUSSION

RESULTS

Participant Characteristics

Pilot testing of the *Childbirth Readiness Questionnaire (CRQ)* involved 110 women in their third trimester who met predefined inclusion criteria. The participant characteristics are presented in Table 1.

Table 1. Characteristics of Pilot Study Participants (n = 110)

Characteristic	Category	n (%)
Maternal age (years)	20–29	44 (40.0)
	30–40	66 (60.0)
Gestational age (weeks)	28–32	51 (46.4)
	33–36	37 (33.6)
	≥37	22 (20.0)
Education level	Secondary or below	62 (56.4)
	Higher education	48 (43.6)
Parity	Primigravida	48 (43.6)
	Multigravida	62 (56.4)

A total of 110 third-trimester pregnant women participated in the pilot testing of the Childbirth Readiness Questionnaire (CRQ). As shown in Table 1, most participants were aged 30–40 years (60.0%), while 40.0% were between 20 and 29 years. Nearly half of the respondents were in the early third trimester (28–32 weeks; 46.4%), followed by 33–36 weeks of gestation (33.6%), with the remainder at ≥37 weeks (20.0%). Regarding educational background, 56.4% had completed secondary education or lower, whereas 43.6% had attained higher education. Slightly more than half of the participants were multigravidas (56.4%), indicating variation in obstetric experience within the sample.

Table 2. Characteristics of the Expert Panel for Content Validity Assessment (n = 5)

Characteristic	Category	n
Area of expertise	Midwifery	3
	Mental health psychology	2
Professional experience	≥ 10 years	5
Research/instrument experience	Prior involvement in instrument development or validation	5

The content validity of the CRQ was evaluated by an expert panel of five professionals with expertise in maternal health, psychology, and instrument development (Table 2). All experts had more than ten years of professional experience and prior involvement in research or psychometric instrument development. The diversity of disciplinary backgrounds and extensive experience of the panel support the adequacy of the expert review process for assessing the relevance, clarity, and representativeness of CRQ items.

Content Validity (Expert Review)

Content validity was assessed through expert judgment by five subject-matter experts. The experts evaluated each item for relevance, clarity, and cultural appropriateness using a four-point scale. The results are summarized in Table 3.

Table 3. Results of Content Validity Assessment by Expert Panel (n = 110)

Dimension	Item Code	I-CVI	Expert Decision	Remarks
Physical–Cognitive Readiness	FC1	1.00	Retained	Highly relevant
	FC2	0.80	Minor revision	Simplification of wording
	FC3	1.00	Retained	Clear and relevant
Psychological–Spiritual Readiness	PS1	0.80	Minor revision	Clarification of terms
	PS2	1.00	Retained	Reflects confidence
	PS3	1.00	Retained	Contextually appropriate
	PS4	0.80	Minor revision	Reduced overlap
Social Support Readiness	SS1	1.00	Retained	Highly relevant
	SS2	1.00	Retained	Culturally appropriate

Note: All items achieved an I-CVI of ≥ 0.80, meeting the recommended threshold for content validity with panels of five experts. No items were eliminated and revisions were limited to minor wording adjustments.

Response-Based Validity (Pilot Study)

Preliminary construct-related validity was examined using corrected item–total correlations based on pilot data from 30 respondents. Table 4 presents the results.

Table 4. Results of Response-Based Validity Testing (Pilot Study, n = 110)

Dimension	Item Code	Mean	SD	Corrected Item–Total r	Decision
Physical–Cognitive Readiness	FC1	3.10	0.68	0.45	Valid
	FC2	3.23	0.62	0.52	Valid
	FC3	3.05	0.71	0.39	Valid
Psychological–Spiritual Readiness	PS1	2.98	0.74	0.34	Valid
	PS2	3.08	0.69	0.48	Valid
	PS3	3.15	0.63	0.61	Valid
	PS4	3.02	0.70	0.41	Valid
Social Support Readiness	SS1	3.30	0.58	0.56	Valid
	SS2	3.18	0.61	0.49	Valid

All items demonstrated corrected item–total correlations of ≥ 0.30, indicating that each item contributed adequately to the overall construct of childbirth readiness.

Internal Consistency Reliability

The internal consistency reliability of the CRQ was evaluated using Cronbach's alpha. Table 5 presents the results.

Table 5 Internal Consistency Reliability of the CRQ (Pilot Study)

Scale	Number of Items	Cronbach's α	Item–Total Correlation Range
CRQ (total)	9	0.82	0.34–0.61

The reliability coefficient indicated a good internal consistency for the pilot study instrument.

Dimension-Level Descriptive Scores

Descriptive statistics at the dimension level are presented in Table 6 to illustrate the multidimensional structure of the CRQ.

Table 6. Dimension-Level Descriptive Scores of the CRQ

Dimension	Item Codes	Mean	SD
Physical–Cognitive Readiness	FC1–FC3	3.13	0.59
Psychological–Spiritual Readiness	PS1–PS4	3.06	0.62
Social Support Readiness	SS1–SS2	3.24	0.55

Validity and Reliability Findings

Overall, the CRQ demonstrated satisfactory content validity based on expert reviews, and acceptable response-based validity in a pilot sample of pregnant women in their third trimester. All items met he established criteria for early-stage instrument development, and the scale showed good internal consistency and reliability. These findings support the feasibility and preliminary psychometric adequacy of the CRQ for further validation in a larger sample.

DISCUSSION

This study aimed to **develop and pilot test the Childbirth Readiness Questionnaire (CRQ)** for third-trimester pregnant women in Indonesia. In line with this objective, the discussion focuses on (1) the feasibility of the instrument, (2) evidence of preliminary validity and reliability, and (3) the relevance of the CRQ dimensions within the existing theoretical and empirical frameworks of childbirth readiness.

Feasibility of the CRQ for Third-Trimester Pregnant Women

The pilot findings indicate that the CRQ is feasible for use among third-trimester pregnant women with diverse demographic and obstetric characteristics. The participants varied in maternal age, gestational age, educational background, and parity, suggesting that the instrument was understandable and acceptable across different maternal profiles. This aligns with previous research emphasizing the importance of developing childbirth readiness tools that are applicable across heterogeneous maternal populations, particularly in low-income and middle-income settings (Kassa, 2018; Limenih et al., 2019; Bekuma et al., 2022). The absence of missing responses and adequate spread of item responses across the four-point scale further support the practical usability of the CRQ. These findings are consistent with earlier studies reporting that concise, clearly worded readiness instruments are more likely to be successfully administered during routine antenatal care (Taheri et al., 2018; Kementerian Kesehatan Republik Indonesia, 2021).

Content Validity and Conceptual Alignment with Birth Preparedness Literature

An expert review demonstrated that all CRQ items met the recommended threshold for content validity, with I-CVI values of 0.80 or higher. Minor revisions were primarily related to wording clarity and conceptual overlap, rather than substantive content changes. This suggests that the CRQ dimensions of physical, psychological, and social support readiness adequately reflect the conceptual domains of childbirth readiness. These dimensions are consistent with the broader concept of *birth preparedness and complication readiness (BPCR)* proposed by the World Health Organization, which emphasizes both logistical and cognitive preparation, well as psychosocial and relational components (World Health Organization, 2006; Kassa, 2018). Moreover, the inclusion of psychological–spiritual readiness responds to growing evidence highlighting the role of meaning, coping, and emotional preparedness in shaping women's childbirth experiences (Taheri et al., 2018; Maryuni et al., 2024; Herrick, 2024).

Preliminary Response-Based Validity and Internal Consistency

Response-based validity analysis showed that all CRQ items achieved corrected item–total correlations above the minimum criterion for pilot studies. This indicates that each item meaningfully contributed to the overall construct of childbirth readiness. Importantly, none of the items demonstrated a weak performance that would warrant elimination at this early stage. The internal consistency reliability of the CRQ (Cronbach's $\alpha = 0.82$) suggests good coherence among the items, supporting the interpretation of childbirth readiness as a multidimensional yet integrated construct. This level of reliability is comparable to or exceeds that reported in previous pilot and cross-sectional studies of birth-preparedness instruments in similar contexts (Limenih et al., 2017; Klobodu et al., 2020; Opus et al., 2025).

Interpretation of Dimension-Level Findings

At the dimension level, social support readiness demonstrated slightly higher mean scores than the physical, cognitive, and psychological–spiritual dimensions. This pattern is consistent with evidence from Indonesia and other collectivistic societies, where partner and family involvement play a central role in pregnancy-related decision-making and perceived preparedness (Oktaviana & Helda, 2019; Tafasa et al., 2022; Maryuni et al., 2024). The relatively comparable scores across dimensions support the conceptualization of childbirth readiness as a balanced, multidimensional construct rather than a purely biomedical or logistical phenomenon. This finding reinforces

qualitative evidence suggesting that women's sense of readiness encompasses not only knowledge and planning, but also emotional confidence, spiritual meaning, and relational support (Ely et al., 2020; Herrick, 2024).

Implications for Instrument Development and Future Research

Consistent with the study's aim, the present findings provide **preliminary psychometric evidence** supporting the CRQ as a feasible and conceptually grounded instrument for assessing childbirth readiness among third-trimester pregnant women in Indonesia. However, in a pilot study, the results should be interpreted as exploratory rather than confirmatory. Further research is needed to evaluate the factorial structure of the CRQ using larger samples and to examine its predictive validity in relation to childbirth outcomes, care-seeking behaviors, and maternal psychological well-being. Longitudinal and multi-site studies would also strengthen the generalizability of the instrument and allow for cross-cultural comparisons, as recommended in prior BPCR research (Kassa, 2018; Taheri et al., 2018; Majhi et al., 2024).

4. CONCLUSION

This study successfully developed and pilot tested the *Childbirth Readiness Questionnaire (CRQ)* for third-trimester pregnant women in Indonesia. The pilot findings indicate that the CRQ is feasible to administer and demonstrates satisfactory preliminary content validity and internal consistency. Expert evaluation confirmed that the items appropriately represented the key dimensions of childbirth readiness, while response-based analyses showed that all items contributed meaningfully to the overall construct. The multidimensional structure of the CRQ, encompassing physical, psychological, and social support readiness, aligns with the existing theoretical frameworks and empirical evidence on birth preparedness. Although further validation using larger and more diverse samples is required, the CRQ provides a promising foundation for assessing perceived childbirth readiness in the Indonesian context, and may support future research and practice aimed at strengthening antenatal preparation.

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