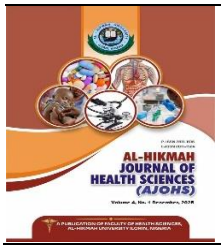
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Original Article

Development and Psychometric Validation of the Postpartum Family Planning Readiness Scale (PPFPRS) Among Women Attending Primary Health Centres in Kwara State, Nigeria: A Mixed-Methods Study

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ABSTRACT

Background: Postpartum family planning (PPFP) reduces maternal and neonatal mortality, yet uptake in Nigeria remains low and no validated tool exists to measure whether a woman is ready to adopt contraception after childbirth.

Objective: This study developed and psychometrically validated the Postpartum Family Planning Readiness Scale (PPFPRS) among women attending primary health centres in Kwara State, Nigeria.

Methodology: A four-phase sequential mixed-methods design was used: qualitative item generation with 25 women and 12 providers, content validation by ten experts, cognitive pilot testing with 30 women, and main validation with 700 women using split-half exploratory and confirmatory factor analyses plus reliability and criterion validity testing. The final 28-item scale has seven dimensions: knowledge, perceived susceptibility, perceived benefits, perceived barriers, self-efficacy, social support, and intention.

Results: Model fit was excellent (CFI = 0.96, RMSEA = 0.051), alpha ranged from 0.80 to 0.88, test-retest ICC was 0.84, and each one-point readiness increase raised the odds of modern method use by 4.2%.

Conclusion: The PPFPRS is a valid, reliable and practical tool for triaging counselling and method initiation in Nigerian primary care.

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Introduction

The first twelve months after childbirth carry a quiet reproductive risk, because ovulation can return as early as four weeks after delivery, often before menstruation resumes and while breastfeeding continues (WHO, 2022). Pregnancies that follow too quickly raise the odds of preterm birth, small for gestational age births and infant death, and the safest interpregnancy interval sits between 18 and 23 months (Ni *et al.*, 2023). Nigeria carries the heaviest burden of any country, with roughly 75,000 maternal deaths in 2023, which is 28.7% of the global total (WHO *et al.*, 2025). Postpartum family planning (PPFP) remains one of the most cost-effective packages for averting these deaths and the unintended pregnancies that precede them (Guttmacher Institute, 2020). Globally, the postpartum year concentrates unmet need that national averages hide (UNFPA, 2024). The science is

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settled, so what remains unsettled is how a busy primary health centre (PHC) decides which woman is prepared to start a method today.

The demand side tells a harder story than the supply side. Only 15% of currently married Nigerian women use a modern method, and 21% want to space or limit births but cannot (FMoHSW, 2024). Fiscal space has collapsed at exactly the wrong moment, because the 2025 federal budget slashed family planning funding by 97%, from 2.225 billion naira to 66.39 million (Nigeria Health Watch, 2025). The withdrawal of USAID commodity support compounded that shock, and stakeholders warn that postpartum services will feel the stockouts first (James, 2025). FP2030's 2024 measurement round puts married women's modern prevalence in the low teens, so the curve isn't moving fast enough to matter for this generation of mothers (FP2030, 2024). Programmes therefore can't afford to counsel every woman identically when only some are ready to initiate a method, because readiness, not access alone, separates an offer of contraception from an actual initiation (Engender Health, 2025). Measuring readiness is, in this climate, a fiscal act as much as a clinical one.

Existing instruments don't help the midwife at the point of care, because most measure knowledge, attitude or intention as separate islands rather than one composite state (Boateng *et al.*, 2021). Behavioural theory argues for the composite: The Health Belief Model and the Theory of Planned Behaviour jointly cover susceptibility, benefits, barriers, self-efficacy, social pressure and intention (Glanz *et al.*, 2021). Pooled intention to use postpartum contraception in sub-Saharan Africa stands at about 62%, yet intention alone has never initiated a method for anyone (Gebeyehu & Tegegne, 2023). African evidence shows these constructs behave differently in patriarchal settings, where a husband's approval can override a woman's personal intention (Iluno *et al.*, 2026). Guided by COSMIN standards for instrument development and validation (Mokkink *et al.*, 2024), the present study built and validated a readiness scale for Nigerian primary care. The specific objectives were to: (i) Explore how postpartum women and providers in Kwara State describe and express readiness for PPFP, and generate a contextually grounded item pool; (ii) Establish content and face validity of the item pool through expert rating and cognitive pilot testing; (iii) Examine the dimensionality of the scale through exploratory and confirmatory factor analyses; (iv) Evaluate internal consistency, test-retest stability, convergent validity, discriminant validity and criterion-related validity; (v) Describe readiness levels in the validation sample and test whether readiness scores predict current modern contraceptive use.

Methodology

A four-phase sequential mixed-methods study was conducted from March 2025 to June 2026 across 15 primary healthcare centres (PHCs) in six local government areas (LGAs) of Kwara State, Nigeria.

Phase I involved item generation through qualitative inquiry with 25 postpartum women and 12 healthcare providers, informed by the literature and existing instruments.

Phase II involved content validation by 10 experts who assessed relevance, clarity, simplicity, and comprehensiveness, followed by calculation of content validity indices and modified kappa statistics and cognitive testing.

Phase III involved administration of the validated instrument to 700 postpartum women recruited through multistage and systematic random sampling across the 15 PHCs, achieving a 95.6% response rate. Eligible participants were women within 12 months of delivery who provided informed consent; sterilised and critically ill women were excluded. The sample was randomly divided into two groups of 350 for exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). The instrument was administered alongside established measures of contraceptive knowledge, self-efficacy, partner support, contraceptive intention, and current modern contraceptive use.

Phase IV assessed criterion, convergent, and discriminant validity and reliability using Cronbach's alpha, McDonald's omega, composite reliability, and test-retest reliability.

Data analysis

Data were analysed using SPSS 29, AMOS 29, and R 4.3, with $p < 0.05$ considered statistically significant.

Ethical considerations

Ethical approval for the study was obtained from the Al-Hikmah University Health Research Ethics Committee, Kwara State, Nigeria (Approval No. AUHREC/2025/CM/001). The study was conducted in accordance with applicable national and international ethical principles for research involving human participants. Written informed consent was obtained from all participants before data collection. Participation was voluntary, and participants were informed of their right to decline participation or withdraw from the study at any time without penalty. Confidentiality and privacy of participants' information were maintained throughout the study.

Results

Qualitative findings showed that postpartum women understood readiness as being prepared, certain, or mentally willing, although knowledge about postpartum family planning was often incomplete.

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Misconceptions, perceived susceptibility, fear of side effects and infertility, partner opposition, religious concerns, and limited social support emerged as major barriers. These findings initially generated 85 items, which were reduced to 72 for expert review.

Expert validation produced a scale-level content validity index of 0.94. Following expert assessment, unclear or culturally inappropriate items were revised or removed. After the iterative item-reduction process, 45 items remained for the main validation.

Among the 700 participants, the mean age was 28.6 years; most were married (91.3%) and breastfeeding (78.3%), while only 42.0% had received postpartum family-planning counselling. Exploratory factor analysis identified seven factors explaining 68.4% of the variance, with KMO = 0.87. Following factor-loading and cross-loading criteria, 28 items were retained.

Confirmatory factor analysis demonstrated excellent model fit (χ^2/df = 1.89, CFI = 0.96, TLI = 0.95, RMSEA = 0.051, SRMR = 0.042). Factor correlations ranged from 0.18 to 0.58, indicating that the dimensions were related but distinct.

Table 1: Validity and reliability indices for PPFPRS subscales (n = 700)

Subscale (items)	Mean and SD	AVE	CR	Alpha	Omega	ICC
Knowledge (4)	14.2 and 3.8	0.58	0.87	0.84	0.86	0.87
Susceptibility (3)	10.8 and 3.2	0.61	0.88	0.85	0.87	0.85
Benefits (4)	15.6 and 3.4	0.55	0.86	0.82	0.84	0.86
Barriers (5)	16.4 and 4.6	0.52	0.85	0.80	0.83	0.82
Self-efficacy (4)	13.9 and 4.1	0.59	0.88	0.85	0.87	0.88
Social support (4)	14.7 and 3.9	0.56	0.87	0.83	0.85	0.84
Intention (4)	12.3 and 4.5	0.63	0.90	0.88	0.89	0.83
Total (28)	**97.9 and 18.2**	**NA**	**NA**	**0.91**	**0.93**	**0.84**

Note. AVE = average variance extracted. CR = composite reliability. ICC = intraclass correlation coefficient from a two-week test-retest in 100 women.

Reliability held across every pre-specified benchmark: alpha from 0.80 to 0.88, omega from 0.83 to 0.89, composite reliability from 0.85 to 0.90, and a two-week intraclass correlation of 0.84 with a 95% confidence interval of 0.76 to 0.90, a profile comparable to recently published readiness instruments (Kim *et al.*, 2024). Convergent validity passed with average variance extracted from 0.52 to 0.71, and discriminant validity held under both Fornell-Larcker and heterotrait-monotrait criteria, with all ratios below 0.85 (Boateng *et al.*, 2021). Criterion validity was the result of greatest practical interest: readiness correlated with contraceptive knowledge at 0.72, self-efficacy at 0.68 and partner support at 0.54, and each one-point rise in total score raised the odds of current modern method use by 4.2% (adjusted OR 1.042, 95% CI: 1.031 to 1.053) after adjusting for age, education, parity and wealth. Users scored 12.8 points higher than non-users, a Cohen's d of 0.71. By tertiles, 34.2% showed low readiness, 41.7% moderate and 24.1% high, a distribution that mirrors the 15% modern prevalence reported nationally (FMoHSW, 2024).

Discussion

Women described readiness as being prepared or mentally willing, while the gap between contraceptive knowledge and perceived personal risk reflected optimistic bias within the Health Belief Model (Glanz *et al.*, 2021). Similar concerns about side effects were reported in Ghana (Guzman *et al.*, 2025), while evidence from Indonesia supports the dyadic nature of readiness, particularly the influence of husband readiness (Feriani *et al.*, 2025).

Content validation demonstrated strong evidence of relevance and clarity, with a scale-level content validity index of 0.94 and modified kappa values above 0.74, satisfying COSMIN standards (Mokkink *et al.*, 2024). Culturally inappropriate items were removed, consistent with evidence of limited peer discussion of contraception in some Nigerian communities (Maaji *et al.*, 2025). Cognitive assessment also identified semantic problems, demonstrating that linguistic translation does not always ensure conceptual equivalence (Boateng *et al.*, 2021). Provider and health-system barriers further indicate that content validation alone cannot address all contextual challenges (Ayamolowo *et al.*, 2026).

The seven-factor structure was supported across both samples. Knowledge was distinct from perceived susceptibility, indicating that factual awareness and personal risk perception represent separate counselling targets, consistent with findings linking ovulation knowledge to contraceptive use independently of education (Anyatonwu *et al.*, 2023). Social support incorporated partner, family, provider, and peer influences, reflecting the relational nature of reproductive decisions and evidence that spousal communication increases contraceptive uptake (Iluno *et al.*, 2026). Barriers included side-effect concerns, religious objections, cost, and distance, dimensions that extend beyond purely cognitive explanations

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(Glanz *et al.*, 2021). The factor structure demonstrated acceptable model fit in accordance with confirmatory factor-analysis standards (Kline, 2023).

The PPFPRS demonstrated strong reliability, with alpha and omega values above 0.80, composite reliability above 0.85, and test-retest reliability of 0.84, meeting recommended standards for reliable measurement (Mokkink *et al.*, 2024). These values are comparable with those reported in digital health readiness research (Kim *et al.*, 2024). Discriminant validity was supported by HTMT ratios below 0.85, addressing concerns about excessive overlap among the seven factors (Boateng *et al.*, 2021). Although the 28-item scale remains manageable, it is not particularly brief.

Criterion validity provided further support: each one-point increase in readiness increased the odds of current modern contraceptive use by 4.2%, independent of age, education, parity, and wealth. Only 24.1% of women demonstrated high readiness, while 34.2% were in the low-readiness group, reflecting persistent unmet need (FMoHSW, 2024). Evidence from Uganda shows low immediate postpartum uptake and substantially higher uptake following antenatal counselling (Nakiwunga *et al.*, 2022), while Ethiopian evidence indicates that antenatal counselling can approximately quadruple postpartum contraceptive uptake (Jima *et al.*, 2023). Similar benefits have been reported across sub-Saharan Africa when counselling is integrated into postnatal care (Mruts *et al.*, 2022). In Southeast Nigeria, unmet need is particularly concentrated among younger and less educated women, corresponding with groups captured by the low-readiness category (Amuzie *et al.*, 2023).

The findings support the PPFPRS as a valid and reliable measure of postpartum family-planning readiness, although interpretation should recognise the study's cross-sectional design, self-reported contraceptive use, restriction to Kwara State, and short two-week retest period.

Conclusion

The PPFPRS is a valid, reliable, and practical instrument for assessing postpartum family-planning readiness among women attending Nigerian PHCs. It goes beyond measuring attitudes by demonstrating an association with actual modern contraceptive use, making it potentially useful for targeting and prioritising counselling.

The instrument can help healthcare providers identify women who are ready for family planning and provide more intensive counselling to those with lower readiness. However, it cannot independently overcome structural barriers such as cost and distance to services. Further research, particularly intervention and longitudinal studies, is needed to determine whether readiness-guided counselling can increase contraceptive uptake at scale.

Recommendations

Five recommendations follow, each tied to an objective, and they are directed at the Kwara State Ministry of Health, the National Primary Health Care Development Agency (NPHCDA) and PHC providers:

1. Adopt the seven readiness themes as the counselling curriculum spine in Kwara PHCs, addressing knowledge, susceptibility, benefits, barriers, self-efficacy, support and intention in that order.
2. Retain expert review and cognitive pretesting in every translation or adaptation of the scale, including Hausa and Igbo versions, before any field use.
3. Use the 28-item structure as the monitoring framework for PHC readiness audits, reporting the seven subscale scores rather than a single total.
4. Publish alpha, omega and test-retest statistics with every adaptation, and validate the planned short form against the full scale before routine deployment.
5. Triage counselling by readiness band: fast-track high-readiness women to method initiation, and schedule repeat couple-inclusive counselling for low-readiness women, tracking uptake as the endpoint.

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