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Cross-cultural adaptation and psychometric validation of a breastfeeding cessation questionnaire in the Peruvian Amazon

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Abstract

Introduction/Objective:

Reliable inference about determinants of breastfeeding cessation requires instruments that preserve conceptual meaning across culturally and linguistically diverse settings. We aimed to cross-culturally adapt and psychometrically validate a breastfeeding cessation questionnaire for use in the Peruvian Amazon.

Methods

Cross-sectional psychometric study among mothers aged ≥ 18 years with infants aged < 6 months recruited across Loreto, San Martín, Ucayali and Amazonas using quota sampling (n = 240). Adaptation was supported by cognitive interviews (n = 20) and iterative semantic/contextual refinement. Content validity was assessed by five experts using Aiken's V. Internal structure was evaluated using exploratory factor analysis (polychoric correlations, principal axis factoring, oblimin rotation) and confirmatory factor analysis using WLSMV for ordinal indicators. Reliability was assessed using Cronbach's alpha.¿.

Results

The final instrument comprised 24 items across five domains. Overall Aiken's V was 0.80 (range 0.67–0.88) and 83.3% of items met V ≥ 0.75. Exploratory factor analysis supported a five-factor solution explaining 54.54% of total variance. Internal consistency was high for the total scale (α = 0.89) and adequate for most domains (α = 0.75–0.83), with lower reliability for prior experience/perceptions (α = 0.64). Confirmatory factor analysis showed excellent fit (χ^2=278.55, df = 242; CFI = 0.987; TLI = 0.985; RMSEA = 0.025; SRMR = 0.093). Missing item responses were 0%.

Conclusion

This cross-culturally adapted questionnaire showed acceptable content validity, robust internal structure, good internal consistency and high feasibility in a heterogeneous Amazonian sample. Further studies should assess test–retest reliability, predictive validity and measurement invariance across language groups.

1. Introduction

Breastfeeding is positioned as a high-impact public health strategy, and international recommendations emphasize exclusive breastfeeding in early life while encouraging continued breastfeeding into the second year [1, 2]. In Peru, exclusive breastfeeding patterns show measurable socioeconomic gradients and regional heterogeneity, indicating that structural and contextual factors shape how long

breastfeeding is sustained. [3]. Within Peruvian settings, breastfeeding cessation has been described through a socio-cultural lens, where feeding decisions are embedded in household beliefs, caregiving norms, and locally meaningful interpretations of infant illness [4]. Beyond a sindfe cause, mothers' decisions to not initiate or to stop breastfeeding are commonly framed as multi-factorial, spanning perceived milk supply concerns, physical discomfort, psychosocial pressures, and access to timely support [5]. National analyses in Peru further suggest that the duration of exclusive breastfeeding is not uniform, reinforcing that discontinuation and early transition away from exclusive breastfeeding remain plausible and context-dependent outcomes. [6]. Taken together, breastfeeding cessation should be understood as a measurable endpoint shaped by both lived experience and health-system context.

At the health-system level, early breastfeeding practices can vary by facility type in Peru, implying that the care environment may influence early trajectories that later culminate in discontinuation [7]. When breastfeeding-related determinants are studied, the quality of inference depends on whether key constructs are captured with instruments that show evidence of validity and reliability, as illustrated by recent work developing and validating a breastfeeding literacy assessment in obstetric populations [8–10]. This challenge becomes sharper in multilingual or culturally diverse contexts, where translation alone is insufficient and cross-cultural adaptation is required to preserve meaning across languages and settings [11–13]. In the Peruvian Amazon, this concern is amplified by cultural diversity and the risk that "cessation" is interpreted differently across communities.

Measurement choices can also alter conclusions when breastfeeding indicators are defined or operationalized inconsistently, creating avoidable misclassification that limits comparability and weakens programmatic decision-making [14]. To ensure that validation studies are interpretable and reproducible, current guidance emphasizes explicit reporting of measurement property methods and results, rather than relying on implicit or incomplete descriptions [15]. Complementary COSMIN methodology further clarifies the logic of evaluating measurement properties, supporting the structured assessment of reliability and validity for instruments intended for health research use [16]. A culturally adapted, psychometrically defensible cessation questionnaire is therefore a practical prerequisite for generating trustworthy evidence in this region.

Therefore, the objective of the present study was to cross-culturally adapt and psychometrically validate a breastfeeding cessation questionnaire for use in the Peruvian Amazon.

2. Materials and methods

2.1 Study Design and Setting

We conducted a cross-sectional psychometric (instrumental) study to culturally adapt and evaluate the measurement properties of a breastfeeding cessation questionnaire among mothers of infants aged < 6 months in the Peruvian Amazon. Participants were recruited across four Amazon regions Loreto, San Martín, Ucayali, and Amazonas using field-based data collection coordinated locally. Because

recruitment followed predefined regional quotas to support comparability across regions, the regional distributions were not intended to represent population prevalence estimates.

2.2 Participants and sampling

Eligible participants were women aged ≥ 18 years with an infant aged < 6 months who had initiated breastfeeding after delivery and agreed to participate through written informed consent. We excluded women with medical or psychiatric conditions that limited comprehension or reliable questionnaire completion, as well as records/forms with key variables missing or inconsistent. A quota-based, non-probability approach was applied to recruit similar numbers of mothers in each region to ensure territorial and sociocultural diversity. Recruitment procedures intentionally sought linguistic diversity by including mothers with different first languages, and field staff received training and supervision to standardise administration and minimise measurement errors.

Sample size was planned to satisfy common psychometric recommendations for factor analysis, targeting 5–10 participants per item for a 24-item instrument (total n ≈ 240).

2.3 Variables and Definitions

Study outcomes (psychometric properties). The primary outcomes were the instrument's: Content validity, assessed by expert judgement (clarity, relevance and coherence) and quantified using Aiken's V, Internal structure, evaluated through exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) to test whether the proposed multiDomainal structure was supported; and internal consistency assessed using Cronbach's alpha by domain and for the total scale.

Instrument and domains. The final questionnaire comprised 24 items grouped into five domains: (1) psychosocial and emotional (6 items), (2) Clinical and biological (6 items), (3) family/community support (5 items), (4) accessibility and environment (4 items), and (5) prior experience and perceptions (3 items). Items used mixed response formats (eg, 3-point Likert options, dichotomous responses, and structured three-category items for specific constructs).

External variables (for descriptive profiling and exploratory associations). Alongside questionnaire administration, we collected maternal sociodemographic and obstetric/clinical characteristics (eg, maternal age, education, marital status, number of children, infant age, mode of delivery, prenatal care access, and mother tongue) to characterise the sample and to explore the relationship between domain scores and external variables as supportive evidence of interpretability and potential utility in the Amazonian context.

2.4 Cultural adaptation and data collection procedures

Cultural adaptation and cognitive interviewing. Cultural adaptation was supported by cognitive interviews (n = 20) using a think-aloud approach and structured probing to examine comprehension, retrieval, judgement, and response processes. When issues were identified, modifications were limited to semantic refinement or cultural contextualisation intended to reduce ambiguity without changing the

underlying construction. All changes were documented to preserve traceability between the identified issue and the final wording.

Field procedures and data quality. The instrument was administered using a structured form with completeness checks at the time of interview. Interviewers were trained prior to fieldwork, supervision was implemented during data collection, and internal consistency rules were applied before database closure. Data were entered using coded identifiers, stored in a password-protected database, and reviewed with logic/consistency checks to minimise transcription and entry errors.

2.5 Statistical Analysis

Descriptive analysis. Participant characteristics were summarised using frequencies and percentages for categorical variables and appropriate measures of central tendency and dispersion for continuous variables. Item performance was examined through response distributions and descriptive indicators of extreme response (floor/ceiling patterns), given the mixed item formats.

Content validity. A panel of five judges rated each item on clarity, relevance and coherence using a 1–5 scale. We calculated Aiken's V at item level for each criterion and summarised evidence by domain. For editorial decisions, we prioritised the minimum V across criteria and qualitative feedback: items were retained if $\min(V) > 0.75$ across all criteria and revised if $\min(V) \leq 0.75$ for at least one criterion and/or if qualitative feedback suggested improvement.

Internal structure (EFA and CFA). We evaluated the internal structure in two stages. First, EFA was conducted using principal axis factoring, polychoric correlations and oblimin rotation, reporting rotated loadings and communalities; loadings < 0.30 were suppressed for readability. Second, CFA tested the prespecified five-factor model using WLSMV estimation appropriate for ordinal indicators. Model fit was reported using χ^2, degrees of freedom, χ^2/df, CFI, TLI, RMSEA and SRMR. Because EFA and CFA were conducted in the same sample, the factorial findings were interpreted as internal evidence requiring confirmation in independent samples.

Reliability. Internal consistency was evaluated using Cronbach's alpha for each domain and the total scale. Test–retest reliability (ICC) was not estimated because the available microdata did not include a second measurement occasion.

Missing data. Missing item responses were expected to be minimal because the instrument was administered with mandatory completion checks and post-collection consistency rules prior to database closure.

Analyses were conducted using Jamovi for psychometric procedures and Stata v18 for complementary statistical analyses were required. Statistical significance for exploratory analyses was set at two-sided $p < 0.05$.

2.6 Ethical Considerations

This study was conducted in accordance with the principles of the Declaration of Helsinki and relevant national regulations. The protocol (“Adaptación cultural y validación de un instrumento sobre abandono de la lactancia materna en regiones amazónica”, version 01 dated 22/05/2025) was reviewed and approved by the Institutional Committee of Ethics and Scientific Integrity of Universidad Privada Norbert Wiener (CIEIC-UPNW; Exp. No. A0025-2025; approval date 22 May 2025). Participants provided written informed consent prior to data collection and were informed that participation was voluntary and could be discontinued at any time without consequences. No clinical interventions were performed; data collection involved questionnaire administration only, posing minimal risk. Confidentiality was ensured through coded identifiers, secure storage with restricted access, and reporting of findings in aggregate form only. Any protocol amendments were to be submitted to the CIEIC-UPNW for approval prior to implementation, and institutional authorisations for field implementation were managed according to local requirements.

3. Results

Table 1 summarises the characteristics of the 240 mothers of infants aged < 6 months recruited across four Peruvian Amazon regions (Loreto, San Martín, Ucayali and Amazonas) using quota sampling. The sample showed broad sociodemographic heterogeneity, including variation in educational attainment, marital status, occupation, household structure and mother tongue. Linguistic diversity was evident, with Spanish and Indigenous languages represented in the mother tongue categories. Household composition indicators, including family type and number of living children (median 2, IQR 2–3), are also reported in Table 1, supporting the intended regional and sociocultural variability of the sample.

Table 1
Sample characteristics of mothers with infants aged < 6 months (n = 240) and distribution by region (Loreto, San Martín, Ucayali and Amazonas).

Variable	Category	n (%) or mean (SD) / median (IQR)
Region		
	Loreto	64 (26.7)
	San Martín	61 (25.4)
	Ucayali	57 (23.8)
	Amazonas	58 (24.2)
Sociodemographic factors		
Maternal age (years)		33 (26–40)
Educational level		
	None	11 (4.6)
	Primary	90 (37.5)
	Secondary	99 (41.2)
	Higher	40 (16.7)
Marital status		
	Sindfe	72 (30.0)
	Cohabiting	131 (54.6)
	Married	30 (12.5)
	Widowed	7 (2.9)
Occupation		
	Homemaker	175 (72.9)
	Works outside the home	65 (27.1)
Family type		
	Nuclear	122 (50.8)

Note: Data are presented as n (%), median (IQR), or mean (SD), as appropriate. The sample was constructed using quota sampling to ensure regional comparability (observed regional distribution: Loreto n = 64, San Martín n = 61, Ucayali n = 57 and Amazonas n = 58); therefore, regional distributions should not be interpreted as population estimates. Quality control included team training, field supervision and consistency checks before database lock. Linguistic diversity (mother tongue) was sought during recruitment to include participants with different mother tongues; the study was not designed to generate population estimates.

Variable	Category	n (%) or mean (SD) / median (IQR)
	Extended	98 (40.8)
	Sindfe-parent	20 (8.3)
Number of living children		2 (2–3)
Mother tongue		
	Spanish	67 (27.9)
	Quechua	66 (27.5)
	Asháninka	56 (23.3)
	Other	51 (21.2)

Note: Data are presented as n (%), median (IQR), or mean (SD), as appropriate. The sample was constructed using quota sampling to ensure regional comparability (observed regional distribution: Loreto n = 64, San Martín n = 61, Ucayali n = 57 and Amazonas n = 58); therefore, regional distributions should not be interpreted as population estimates. Quality control included team training, field supervision and consistency checks before database lock. Linguistic diversity (mother tongue) was sought during recruitment to include participants with different mother tongues; the study was not designed to generate population estimates.

Cognitive interviews (n = 20) informed the cross-cultural adaptation process. Most items were understood as intended, and modifications were restricted to semantic refinement and contextualisation to improve clarity and cultural relevance while preserving the underlying constructions. Examples included specifying locally meaningful care settings and access-related contexts (eg, community environments, health posts and travel time), consistent with the instrument's focus on breastfeeding cessation determinants in the Amazonian setting.

Evidence of content validity is presented in Table 2, with item-level ratings by criterion (clarity, relevance and coherence) detailed in online supplemental Table S2. Across the 24 items, overall Aiken's V was 0.80 (range 0.67–0.88), and 83.3% of items met the prespecified threshold of V ≥ 0.75 based on the mean item score (Table 2). At domain level, the strongest evidence was observed for the clinical and biological domain (V = 0.82; 100% of items ≥ 0.75), whereas the psychosocial and emotional domain had the lowest proportion of items meeting the threshold (66.7%) (Table 2). Although domain-level indices were acceptable, online supplemental Table S2 shows criterion-specific variability for selected items, which guided minor wording refinement to maximise comprehensibility without changing construct content.

Table 2
Content validity of the instrument: Aiken's V by Domain (five Domains) and proportion of items with Aiken's V ≥ 0.75.

Domain	No. of items	Aiken's V (mean; range)	Items with V ≥ 0.75, n (%)
Accessibility and environment	4	0.76 (0.67–0.80)	3 (75.0)
Family and community support	5	0.81 (0.70–0.87)	4 (80.0)
Clinical and biological	6	0.82 (0.78–0.88)	6 (100.0)
Prior experience and perceptions	3	0.83 (0.82–0.85)	3 (100.0)
Psychosocial and emotional	6	0.78 (0.73–0.85)	4 (66.7)
Total	24	0.80 (0.67–0.88)	20 (83.3)

Note: Aiken's V was calculated with five judges using a 1–5 scale for clarity, relevance and coherence. Domain-level V corresponds to the mean item-level V (mean of clarity, relevance and coherence). The column "Items with V ≥ 0.75" was calculated using the mean V per item. For item-level recommendations (online supplemental table S2), the minimum V across criteria and qualitative feedback from the panel were prioritised when borderline values were observed.

Table 3 summarises the internal structure and reliability of the final 24-item questionnaire across five domains (psychosocial and emotional, clinical and biological, family/community support, accessibility and environment, and prior experience/perceptions). Exploratory factor analysis supported a five-factor solution explaining 54.54% of total variance, with factor contributions ranging from 8.00% to 14.17% (Table 3), and detailed rotated loadings and explained variance are provided in online supplemental Table S4. Internal consistency was adequate for most domains (Cronbach's α = 0.75–0.83), with lower reliability for the prior experience and perceptions domain (α = 0.64); the total scale showed high internal consistency (α = 0.89) (Table 3). Confirmatory factor analysis using WLSMV estimation for ordinal indicators demonstrated excellent dfobal fit (χ^2=278.55, df = 242; CFI = 0.987; TLI = 0.985; RMSEA = 0.025; SRMR = 0.093) (Table 3). Standardised CFA loadings (0.69–0.88) and interfactor correlations (r = 0.525–0.713) are reported in online supplemental Table S5, supporting related but conceptually distinct domains.

Table 3
Factor structure and reliability of the instrument (24 items): EFA and CFA (model fit), internal consistency (Cronbach's α) and test–retest stability (ICC).

Domain	No. of items	EFA loadings (|λ|), range	Cronbach's α	ICC
Psychosocial and emotional	6	0.55–0.74	0.83	—
Clinical and biological	6	0.49–0.71	0.75	—
Family and community support	5	0.54–0.82	0.74	—
Accessibility and environment	4	0.67–0.75	0.74	—
Prior experience and perceptions	3	0.65–0.70	0.64	—
Total (24 items)	24	—	0.89	—

Index	Value
Scaled (robust) χ^2	278
df	242
p	0.057
χ^2/df	1.15
CFI (robust)	0.987
TLI (robust)	0.985
RMSEA (95% CI)	0.025 (0.000–0.037)
SRMR	0.093

Note: Construct validity was assessed using EFA (principal axis factoring, polychoric correlations, oblimin rotation) and CFA using WLSMV/DWLS appropriate for ordinal indicators. Ranges of factor loadings and Cronbach's α are presented by Domain. Test–retest ICC was not calculated because the microdata do not include a second measurement. Fit indices (CFI, TLI, RMSEA, SRMR and χ^2/df) were interpreted using standard criteria. EFA and CFA were conducted in the same sample; therefore, findings should be interpreted as internal evidence of the factorial structure.

Missing item responses were 0%, consistent with structured administration and completeness checks implemented during data collection (Table 3). Test–retest reliability was not assessed because repeat administration was not implemented in this study (Table 3).

4. Discussion

In this study, we adapted and psychometrically validated a 24-item breastfeeding cessation questionnaire for use in the Peruvian Amazon, deliberately grounding the instrument in a socioculturally and linguistically heterogeneous sample recruited across four regions. The cross-cultural adaptation process supported by cognitive interviews showed that most items were understood as intended and

that only minor semantic and contextual refinements were needed to preserve conceptual meaning while improving local clarity (eg, references to community settings, health posts and travel time). Content validity evidence was acceptable overall, with strong domain-level performance in clinical/biological determinants and comparatively weaker item-level agreement within the psychosocial/emotional domain, highlighting where contextual nuance most affects interpretability. Structural validity was supported by a coherent five-domain solution explaining a meaningful proportion of variance and confirmed by excellent WLSMV CFA fit, indicating that the domains are related yet conceptually distinct. Reliability was adequate for most domains and high for the total scale, although the prior experience/perceptions domain showed lower internal consistency, suggesting that this construct may be more heterogeneous or context dependent in this setting. Finally, the absence of missing responses supports feasibility under structured administration, but the lack of test–retest assessment limits inferences about temporal stability and should be addressed in future studies alongside external validation and measurement invariance across language groups.

Our cross-cultural adaptation was conceived as a meaning-testing process rather than a literal translation exercise, aiming to preserve conceptual equivalence across culturally and linguistically diverse Amazonian settings. This approach is consistent with recent breastfeeding measurement adaptation work showing that semantic accuracy alone is insufficient unless semantic, cultural, and practical equivalence are empirically examined in the target population through expert review and cognitive interviews [17]. In line with that logic, our use of iterative cognitive interviewing mirrors structured lactation-related refinement strategies in which participants are guided item-by-item with standard probes to detect threats to comprehension and acceptability that would otherwise undermine validity [18]. Framed through COSMIN expectations, this sequencing is also defensible because content validity and cross-cultural validity are positioned as core measurement properties particularly when language and culture can plausibly change item interpretation [16]. Taken together, these convergent methodological precedents support presenting our adaptation strategy as aligned with contemporary best practice for tools intended to inform breastfeeding-related decision-making in multilingual regions, where measurement error can translate into inequitable program targeting and missed prevention opportunities.

Our expert-based content validity assessment indicated acceptable agreement and supported retaining the instrument's core constructs while refining items that required greater cultural-linguistic precision. This pattern aligns with a recent methodological review of cross-cultural adaptation describing item-level acceptability rules around ~ 0.78 when expert panels are sufficiently sized, while reserving "excellent" interpretations for higher scale-level values [13]. Similarly, breastfeeding-related measurement studies often interpret content validity using CVI-style thresholds, treating values > 0.8 as "good" and > 0.9 as "excellent," and a weaning-readiness validation reported a pre-factor-testing CVI of 0.85 benchmarks that contextualise our global Aiken's V (0.80) and the predominance of items meeting our acceptability cut-offs [19]. Importantly, the need for refinement in psychosocial/experience-oriented content is also consistent with evidence that culturally contingent terms, scenarios, and identity-sensitive wording are more likely to generate comprehension and acceptability issues during cognitive testing [17, 18]. This

comparison reinforces that careful content validation is not a bureaucratic step, but a safeguard for public health inference when instruments are used to inform breastfeeding support policies across diverse communities.

Our EFA-supported five-factor solution suggests that breastfeeding cessation determinants in the Amazonian context are best represented as a multidomain construct rather than a single latent dimension. Across lactation-related instruments, the number of retained factors varies widely, indicating that dimensionality depends on construct breadth and contextual determinants rather than a universal "expected" structure. For example, a readiness-for-weaning scale reported four factors explaining 60.023% of variance, whereas a breastfeeding myths scale supported a single-factor structure explaining 29.43%, and a postpartum breastfeeding behaviour scale identified seven factors explaining 68.852% of variance [19–21]. These contrasts help position our five-domain configuration as methodologically plausible and conceptually coherent: cessation is rarely driven by one pathway, and multilevel influences can cluster into separable dimensions. Our interpretation that the domains map onto clinically anchored drivers, environmental constraints, social support, emotional/psychological experience, and prior feeding experience also resonates with lactation measures that intentionally separate related experiential dimensions while acknowledging their interdependence [21, 22]. From a health-systems perspective, a defensible multidomain structure matters because it supports more targeted interventions (clinical vs social vs contextual), improving scalability and equity of breastfeeding programs across culturally heterogeneous regions.

Our CFA strategy used WLSMV, reflecting an ordinal-appropriate estimation approach commonly applied in lactation psychometrics when items are categorical. A direct precedent is the recent validation of the Maternal Breastfeeding Evaluation Scale, where WLSMV was selected due to categorical items and the model demonstrated excellent fit (CFI ≈ 0.98; RMSEA ≈ 0.04), supporting the methodological legitimacy of our estimation choices [22]. At the same time, the broader literature shows that "acceptable" rather than uniformly "excellent" fit is common in applied breastfeeding instruments for instance, the postpartum breastfeeding behaviour scale reported CFA indices around CFI 0.903, TLI 0.893, and RMSEA 0.061 [21]. This spread provides a useful interpretive anchor: strong fit should be presented as supportive but not sufficient validity evidence, especially in multilingual regions where measurement invariance may not hold by default. COSMIN guidance reinforces this caution by prioritising cumulative evidence linking structural validity to cross-cultural validity and measurement invariance as a next step for instruments used across language groups [16]. This framing strengthens the scientific credibility of our model evaluation while keeping the focus on real-world interpretability for policy-relevant breastfeeding support.

Our internal consistency results suggest strong overall reliability while also reflecting expected heterogeneity across domains, particularly for content that is more context-sensitive or experience-based. Comparable lactation instruments frequently report very high total-scale reliability such as an overall Cronbach's alpha of 0.958 in a postpartum breastfeeding behaviour scale and high coherence even in belief-oriented measures (alpha 0.91) when items are tightly aligned [20, 21]. However, domain-

level reliability commonly varies in multidimensional tools: in MBFES validation, ordinal alpha differed by subscale, with at least one domain around 0.77 while others were higher, illustrating that experiential dimensions can be intrinsically “noisier” [22]. This pattern supports interpreting any lower-alpha domain in our instrument as potentially reflecting (i) fewer items, (ii) genuine heterogeneity in lived experience, and (iii) stronger dependence on linguistic nuance and local framing rather than as a failure of the construct. Situating our findings within this literature allows a balanced conclusion: the tool appears reliable enough for applied use, while domain-level refinement and external testing remain important to avoid misclassification of mothers’ needs. In public health terms, reliable measurement underpins fair allocation of breastfeeding counselling and support across diverse populations.

Our interfactor correlation pattern is consistent with the expectation that breastfeeding cessation determinants are related yet conceptually separable, because real-world pathways often co-occur (e.g., emotional strain alongside reduced support or environmental barriers). In breastfeeding scale development, correlation screening is explicitly used to detect problematic redundancy, commonly flagging item pairs only when correlations exceed 0.8, while still permitting meaningful within-construct associations that reflect the ecology of breastfeeding behaviours [21]. Viewed through this lens, correlated factors in our model can be framed as evidence that domains are connected without being interchangeable supporting interpretability and enabling domain-specific intervention design rather than collapsing determinants into a single undifferentiated score [23]. This distinction is practically important: if domains were redundant, they would add complexity without informational gain; if they are related but distinct, they can guide differentiated counselling (clinical management vs social support mobilisation vs contextual access solutions) [24, 25]. Therefore, the comparison with established psychometric practice supports presenting our factor correlations as an expected and useful feature of modelling a multifactorial behavioural-health construct, strengthening the instrument’s potential value for public health programming aimed at reducing avoidable breastfeeding cessation in diverse settings.

Our complete item response rate indicates strong feasibility and acceptability under field conditions, a key advantage for implementation in resource-limited and linguistically diverse contexts. In published validation work, feasibility is often indirectly reflected by analytic reliance on complete cases for example, MBFES CFA analyses restricted to participants with all items completed highlighting that missingness can constrain psychometric evaluation and practical deployment [22]. Against that backdrop, our 0% missingness strengthens confidence that the tool can be administered reliably in routine settings where attrition and partial completion are common barriers. Nevertheless, the absence of test–retest evidence remains a meaningful gap, particularly because recent lactation-related validations demonstrate that temporal stability is both feasible and increasingly expected, such as ICC 0.90 in a breastfeeding myths scale and retest reliability around 0.753 in a postpartum breastfeeding behaviour scale [20, 21]. Consistent with COSMIN priorities, the next phase should therefore evaluate test–retest reliability, predictive validity against observed cessation outcomes, and cross-cultural validity/measurement invariance across language groups or subregions to support generalisability beyond the initial Amazonian sample [16]. Closing this evidence loop has clear public health relevance:

scalable breastfeeding policies require instruments that are not only acceptable, but stable and equitable across populations.

This study contributes a psychometrically defensible, culturally grounded measure of breastfeeding cessation determinants for a setting where linguistic and contextual diversity can otherwise undermine inference. By moving beyond translation to cognitive, meaning-based refinement and expert review, the work strengthens the measurement foundation needed for comparable research and programme design in the Peruvian Amazon. The instrument's multidomain structure is particularly valuable because it supports domain-specific diagnosis of barriers (clinical, environmental, support-related and experiential) rather than collapsing complex drivers into a single score. Although the quota-based design was not intended to generate population estimates, recruitment across four Amazon regions and multiple mother tongues improves the plausibility that the measure is transferable across heterogeneous Amazonian contexts, while still requiring future work on measurement invariance before claiming equivalence across language groups.

Key strengths include a cross-cultural adaptation strategy supported by cognitive interviews and traceable item refinement, alongside a structured evaluation of content validity, internal structure and internal consistency. The study deliberately recruited a socioculturally and linguistically heterogeneous sample across four regions and used ordinal-appropriate factor-analytic methods, with excellent model fit and complete item responses under field administration, supporting feasibility for supervised use. Limitations include the non-probability, quota-based sampling (limiting population inference), reliance on a single cross-sectional dataset for both EFA and CFA (risking optimistic internal fit), and the absence of test–retest reliability, predictive validity against observed cessation outcomes, and measurement invariance testing across language/subregion groups. In addition, the smallest domain showed lower internal consistency, which may reflect construct heterogeneity and/or limited item count and should guide targeted refinement in subsequent validations.

5. Conclusion

We cross-culturally adapted and psychometrically validated a 24-item breastfeeding cessation questionnaire for use in the Peruvian Amazon, informed by cognitive interviews and expert judgement. The final instrument demonstrated acceptable content validity, a coherent five-domain structure supported by EFA and WLSMV CFA, and high internal consistency at the total-scale level with expected variability across domains. Complete item responses under field administration indicate strong feasibility for structured use in resource-limited settings. This tool can support more reliable research and programme planning on determinants of early breastfeeding cessation in Amazonian populations; however, further studies should evaluate temporal stability, predictive validity and cross-cultural validity/measurement invariance across language groups to strengthen generalisability.

Abbreviations

CFA: Confirmatory factor analysis; CFI: Comparative fit index; COSMIN: COnsensus-based Standards for the selection of health Measurement INstruments; CVI: Content validity index; EFA: Exploratory factor analysis; ICC: Intraclass correlation coefficient; IQR: Interquartile range; RMSEA: Root mean square error of approximation; SD: Standard deviation; SRMR: Standardised root mean square residual; TLI: Tucker–Lewis index; V: Aiken's V; WLSMV: Weighted least squares mean and variance adjusted.

Declarations

Ethics Approval and Consent to Participate

This study was conducted in accordance with the Declaration of Helsinki and relevant national regulations. The protocol ("Adaptación cultural y validación de un instrumento sobre abandono de la lactancia materna en regiones amazónica", version 01, dated 22 May 2025) was approved by the Institutional Committee of Ethics and Scientific Integrity of Universidad Privada Norbert Wiener (CIEIC-UPNW; Exp. No. A0025-2025; approval date 22 May 2025). All participants provided written informed consent prior to data collection and were informed that participation was voluntary and could be discontinued at any time without consequences. No clinical interventions were performed; participation involved questionnaire administration only and was considered minimal risk. Confidentiality was protected through coded identifiers, restricted access, secure storage, and reporting of results in aggregate form.

Human and Animal Rights

This research involved human participants only; no animals were used. No identifying information (eg, names, initials, record numbers, or recognisable images) is included in this manuscript.

Consent for Publication

Not applicable (no individual-level identifiable data, images, or personal information are included).

Availability of Data and Materials

De-identified participant data and analytic code are available from the corresponding author upon reasonable request.

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Conflict of Interest

The authors declare no conflicts of interest.

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Use of AI and AI-Assisted Tools

No generative AI tools were used to design the study, collect data, perform statistical analyses, or interpret results. If language-assistance tools were used after drafting, their use was limited to grammar and style and did not generate scientific content; the authors take full responsibility for the manuscript content.

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