Supplementary Material 1. Methodological Basis for the Construction of Knowledge Indices

1. Prenatal Care Index (based on C11)

Question: "Why is it important to attend prenatal care?" (multiple response). Correct options: (a) To check my health, (b) To check my baby's health, (c) To receive medications/vitamins, (d) To receive counseling/guidance. Range: 0–4 correct answers.

Categorization: No knowledge (0 correct)=0; Low (1 correct)=1; Partial (2–3 correct)=2; High (4 correct)=3.

2. Early Initiation Index (based on C12)

Question: "Do you think it is important to attend prenatal check-ups during the first 3 months of pregnancy?" (single response). Criterion: Yes=1 (adequate); No/Does not know=0.

Note: this item captures endorsement of the norm of early initiation rather than factual knowledge of the recommended timing, and overlaps conceptually with attitude item C31.

Categorization: Binary. Adequate (Yes)=1; Inadequate (No/Does not know)=0.

3. Prenatal Tests Index (based on C16)

Question: "What tests are important during pregnancy?" (multiple response). Correct options: (a) Blood glucose test, (b) Blood test for infections (serology), (c) Blood pressure monitoring, (d) Blood type (typing). Range: 0–4 tests identified.

Categorization: No knowledge (0 tests)=0; Low (1 test)=1; Partial (2–3 tests)=2; High (4 tests)=3. Note: Identification of blood pressure monitoring receives special attention given its role in the detection of preeclampsia, the leading cause of maternal death in the region.

4. Iron and Folic Acid Index (based on C19)

Question: "Why is it important to take iron and folic acid during pregnancy?" (single response). Correct reasons: (a) For the baby to grow healthy (fetal development), (b) To prevent anemia or weakness (maternal health). Range: 0–1 (weighted).

Categorization: No knowledge (does not know)=0; Partial (identifies only 1 reason)=0.5; High (identifies both reasons)=1.0. The response "both" receives a full score because it reflects comprehensive understanding of the dual function of the supplement.

5. Safe Place of Delivery Index (based on C20)

Question: "What is the safest place to give birth?" (single response). Criterion: Hospital or clinic=1 (adequate); Home/Other/Does not know=0.

Categorization: Binary. Adequate (Hospital/clinic)=1; Inadequate (other)=0.

6. Contraception Index (based on C27)

Question: "What contraceptive methods do you know?" (multiple response). Options: (a) Injection, (b) Oral contraceptive pills, (c) Subdermal implant, (d) Condom, (e) IUD, (f) Sterilization, (g) Natural methods. Range: 0–7 methods identified.

Categorization: No knowledge (0 methods)=0; Low (1–2 methods)=1; Partial (3–4 methods)=2; High (5+ methods)=3.

7. Tetanus Vaccine Purpose Variable (based on C14)

Question: "Why do you think the tetanus vaccine is given during pregnancy?" (single response). Response options: (a) To protect the baby against tetanus, (b) To protect the mother against tetanus, (c) To protect both mother and baby against tetanus, (d) Does not know.

Note: options (a), (b) and (c) all identify a protective purpose of the vaccine and were therefore treated as equivalent for the gap analysis, the aim of which was to distinguish women with any notion of the vaccine's purpose from those with none. This item was not scored cumulatively and does not constitute an index.

Categorization: Binary. Knows purpose (options a, b or c)=1; Does not know (option d)=0.

Observed distribution (n=304): to protect the baby, n=49 (16.1%); to protect the mother, n=28 (9.2%); to protect both, n=129 (42.4%); does not know, n=98 (32.2%). Knows purpose, n=206 (67.8%); does not know, n = 98 (32.2%). No missing values.

8. Tetanus Dose Schedule Variable (based on C15)

Question: "How many doses of tetanus vaccine do you think a pregnant woman should receive?" (single response). Response options: (a) One, (b) Two, (c) Three or more, (d) Does not know.

Note: this item assesses knowledge of the recommended immunisation schedule, whereas C14 assesses knowledge of the vaccine's purpose. The two are reported separately in Table 2 (Panels C and D) because they yielded markedly different associations with vaccination status. The response categories are ordered for the three options in which a number is stated, allowing a test for linear trend; "does not know" is not ordered

with respect to them and is reported as a separate category.

Categorization: Four categories, retained as recorded. For the dichotomous analysis reported in the text, correct knowledge of the schedule (two or more doses; options b or c)=1; otherwise (one dose or does not know)=0.

Observed distribution (n=304): one dose, n=108 (35.5%); two doses, n=70 (23.0%); three or more, n=37 (12.2%); does not know, n=89 (29.3%). Correct knowledge of the schedule, n=107 (35.2%). No missing values.

Rationale for Categorization

Categorization thresholds were established based on: (a) WHO and MINSAL clinical standards for minimum competencies in maternal health; (b) a literature review of validated KAP instruments in LMIC contexts [Bashir et al. 2023; Gebremariam et al. 2023]; and (c) research team consensus following technical review by MINSAL experts. The cut-off points aim to distinguish between: complete absence of knowledge, minimal/fragmented knowledge, partial understanding requiring reinforcement, and comprehensive mastery of the topic.

For the two tetanus variables (C14 and C15), no cumulative scoring was applied, as both are single-response items. C14 was dichotomised to separate women identifying any protective purpose from those reporting no knowledge, in line with the aim of the gap analysis. C15 was retained in its four original categories in Table 2, since the proportion vaccinated varied monotonically across the three categories in which a number was stated; a dichotomous version distinguishing correct knowledge of the schedule is additionally reported in the text.

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