

Measuring quality of maternal care from women's perspectives: development and validation of a participatory-weighted composite index using nationally representative survey data from Burkina Faso

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Abstract

Background

Maternal mortality remains high in sub-Saharan Africa despite rising service coverage, with poor quality of care a leading contributor. Composite indexes built from household surveys are the dominant monitoring tool, but their indicators and weights are set by researchers, not by the women receiving care. Whether women's own definitions can be operationalized within existing survey data is untested.

Methods

This is the quantitative phase of an exploratory sequential mixed methods study. A preceding qualitative phase used fuzzy cognitive mapping with 32 women of reproductive age to identify and weight 19 categories influencing quality of maternal care. Using the 2021 Burkina Faso Demographic and Health Survey (DHS), a joint display analysis quantified DHS coverage of those categories. We built a women's perspective index from the 29 aligned indicators, weighting each category by the product of its participatory influence score and its coverage, and compared it with a conventional equal-weight DHS index. Analyses included 4,771 women with a facility birth and ≥ 1 antenatal visit, accounting for sampling weights and design. Internal consistency, agreement and between-index differences were assessed with Cronbach's alpha, Spearman rank correlations of tertiles, and adjusted linear regression. Sensitivity analyses compared participatory, equal and principal-component weighting.

Results

The 2021 DHS captured only 25% of women-identified dimensions of quality. The women's perspective index (mean 0.74, SD 0.15) and the conventional index (mean 0.75, SD 0.17) had near-identical means but different distributional shapes and only moderate rank agreement ($\rho = 0.69$). The between-index gap was significantly larger among women with no education ($\beta = 0.006$, 95% CI 0.001–0.011) and in the poorest wealth quintile ($\beta = 0.015$, 95% CI 0.004–0.025). Scores were stable across weighting schemes (0.71–0.80).

Conclusion

Women's perspectives can be operationalized within existing DHS data, but current surveys capture only a quarter of what women value. Centring women's definitions leaves national averages nearly unchanged while altering which women are identified as receiving poor-quality care. People-centred monitoring will require revising what surveys collect, not only how indicators are combined.

Plain English summary

Maternal deaths have fallen worldwide over the past two decades, but progress has stalled, and sub-Saharan Africa still carries the heaviest burden. More women now give birth in health facilities than twenty years ago, but this increase in facility births has not been matched by a comparable decline in maternal deaths. The quality of care women receive is an important part of this gap. Poor quality care can directly affect women and their babies and can also affect whether women return for care or use health facilities again. To track whether quality is improving, researchers often combine responses from large national surveys into a single quality score. But these scores are based on questions that researchers have decided are important, rather than on what women say matters.

We asked women in Burkina Faso what quality of maternal care means to them, and how important each part of the puzzle is to quality of maternal care. Together, they described 19 themes of different elements of quality. We then looked at which of these themes are captured in the national health survey. The survey covers seven, often only partially. Once we considered both how important each theme was to women and how completely the survey captured it, only about a quarter of what women described could be measured. Missing themes included how women are received at the facility, whether health workers are skilled, and whether facilities are clean and accessible.

We then developed a quality score using the survey questions, giving more weight to what women said was most important, and compared it with the standard score. Nationally, the two scores were almost the same. But they differed for individual women, especially among the poorest women and those with no schooling. For these women, how quality is measured can change the picture of the care they received.

National averages can hide these differences. If quality scores are used to understand where care needs to improve or where resources should go, it matters what is measured in the first place.

Background

Global maternal mortality has declined over the past two decades, yet progress remains slow and uneven to meet global targets (1). While the global maternal mortality ratio fell from 339 deaths per 100,000 live births in 2000 to 223 in 2020, sub-Saharan Africa continues to have disproportionately high mortality, with an estimated 448 deaths per 100,000 live births in 2023 (1–3). Over the same period, service utilization of maternal health services increased, and coverage of essential interventions expanded. However, these gains have not consistently translated into better maternal survival (4–6). Evidence suggests that poor care quality, rather than low service utilization, is now the main barrier to reducing maternal mortality in numerous settings (7, 8). Measuring quality of care has therefore become important for improving outcomes, yet how quality is defined, measured and by whom remains contested (9, 10).

Several influential frameworks conceptualize quality as multidimensional, encompassing structural conditions, clinical processes and experience of care (9, 11, 12). To operationalize this multidimensional concept, composite indexes are increasingly used to summarize diverse indicators into a single,

interpretable measure that facilitates comparisons across populations and over time, and that highlights inequities in care (13–17). Most existing composite measures rely heavily on large cross-national data platforms such as the Demographic and Health Surveys (DHS), the Service Availability and Readiness Assessment (SARA) or the Harmonized Health Facility Assessments (HHFA), which remain among the most accessible and widely used sources of data in low-and middle-income countries (9, 18, 19). Indicators included in these indexes are typically selected based on established quality frameworks or expert guidance, and weights are assigned either equally or using data-driven approaches such as principal component analysis (15, 16, 20). There are variations in how the indexes are constructed, including in indicator selection, data sources, and weighting strategies (15, 20–23).

Recent guidance emphasizes that quality of care measurement should reflect what matters to people and communities. The Lancet Commission on High Quality Health Systems notes that health systems still fail to measure key dimensions valued by people, such as competent care, user experience, and patient-reported outcomes, with data systems remaining overly focused on inputs and facility audits (9). This sometimes leads to fragmented measures that are misaligned with population needs and offer limited guidance for decision-makers. Empirical studies also show that indicators of structural readiness often diverge from the content and experience of care that women receive during childbirth (24–26). Women’s perspectives on the quality of maternal care have been documented, yet these insights have rarely informed measurement itself (27–29). To our knowledge, no study has directly compared women’s perspectives on the dimensions of quality of maternal care with those emphasized in existing composite quality indexes, nor has attempted to construct a composite measure grounded in women’s perspectives using large- scale survey data.

The persistence of high maternal mortality despite policy reforms and increased service uptake highlights the need for better monitoring of the quality of care women actually receive, consistent with the Lancet Commission’s call for measurement that reflects what matters to people (9). This paper addresses that gap by examining whether and how women’s perspectives on the quality of maternal care can be embedded into composite quality measurement using an existing national survey dataset. An exploratory sequential mixed methods design is used to contextualize a composite index of quality of maternal care with women’s perspectives and to compare this index with a conventionally constructed DHS-based measure. The analysis is conducted in Burkina Faso, where the removal of user fees for maternal and child health services in 2016 increased service utilization but has not resulted in the expected reductions in maternal mortality (30, 31).

Methods

Overview of design and approach

This paper presents the quantitative phase of a broader mixed methods study, with an exploratory sequential design (32, 33). In this phase, a composite index of quality of maternal care was constructed and evaluated using data from the 2021 Burkina Faso Demographic and Health Survey, a nationally

representative cross-sectional household survey, with indicator selection and weighting derived from the preceding qualitative phase (n = 4,771). That qualitative phase engaged women of reproductive age to identify and weigh factors influencing quality of maternal care using fuzzy cognitive mapping (FCM), a technique in which participants construct causal maps that capture diverse perspectives in a structured form (33–35). FCM sessions were conducted with 32 women of reproductive age in Burkina Faso in 2023 (33). Participants identified factors they perceived as influencing care quality and weighted the connections among them to reflect their relative strength. Factors were grouped into thematic categories, and the weights were aggregated within each category and translated into a cumulative net influence score (CNI), representing each category's influence on quality. A full description of FCM with women in Burkina Faso is available elsewhere (33).

This quantitative phase integrates the qualitative results, using women's perceptions of the categories influencing quality, to build a composite measure of quality of maternal care. The measure was constructed following the Organization for Economic Co-operation and Development (OECD) guidelines for composite measures, ensuring the index was developed through a sound, replicable, stepwise process (17). The mixed methods component was introduced through a joint display analysis, integrated within specific steps of that process — namely the conceptual framework, indicator selection, and weighting — to incorporate the women-derived categories and connect them to the DHS data. First, the joint display analysis was used to identify the DHS indicators that matched the categories derived from the qualitative phase. Second, a composite measure was developed using 2021 DHS data, drawing on these identified indicators and weighting them by the women-derived CNI values. Finally, the measure was compared with conventional DHS-based measures of quality of maternal care to examine how the inclusion of women's perspectives may shift the measurement of maternal quality. In a secondary analysis, the contextualization approach was replicated on the 2020 HHFA to examine whether combining the two data sources yields a measure more closely aligned with women's perspectives.

Materials and data

The primary data for this study come from the qualitative FCM phase described above, which provided the categories and weights that guided index construction. The 2021 Burkina Faso DHS serves as the quantitative data source for the index construction and comparative analysis. The DHS is a nationally representative, cross-sectional household survey that collects detailed information on antenatal care (ANC), childbirth care (CBC), and postnatal care (PNC) using standardized questionnaires adapted to each country context. This study uses the 2021 Burkina Faso DHS, the most recent nationally representative dataset, which incorporates the expanded maternal health content introduced in DHS Phase 8 (36).

Conceptual framework

This study was guided by the World Health Organization (WHO) definition of maternal health as “the health of women during pregnancy, childbirth, and the postnatal period, [...] ensuring that both women and their babies reach their full potential for health and well-being” (37). Quality of maternal care is understood to span the continuum of care from antenatal through childbirth and the postnatal period. Newborn-related elements that emerged from the qualitative phase were also embedded within women’s broader understanding of maternal care quality across this continuum and retained as an integral component of the analysis.

Both the qualitative FCM findings and the quantitative construction of the index, used Donabedian’s structure–process–outcome model as its analytical framework, which conceptualizes quality across three domains: structure, process, and outcomes (11). It provided a well-established basis for organizing and interpreting measures of maternal care quality. The process domain can be further subdivided in two distinct subdomains: provision of care, referring to clinical, evidence-based practices, and experience of care, encompassing interpersonal, communicative, and relational aspects of the encounter (12, 38).

Analytical step #1: Matching the DHS indicators and the women-derived categories

Following Creswell’s mixed methods approach for integrating qualitative and quantitative data, we used a joint display table to compare women-derived categories of factors influencing quality of maternal care (previous qualitative phase) with questions and indicators from the 2021 Burkina Faso DHS (32).

First, all questions from the maternal and reproductive health modules of the 2021 Burkina Faso DHS were reviewed. They were cross-referenced against the indicators commonly used to measure quality of maternal care (39). DHS questions that corresponded to those indicators were retained to form the initial list of indicators.

Second, these indicators were aligned with the women-derived categories and factors within a joint display table, organized following Donabedian’s framework (11). Multiple co-authors, including Burkinabe researchers directly involved in the qualitative phase of the study, reviewed and validated the joint display to minimize researcher bias and keep interpretive decisions as close as possible to local knowledge.

Third, the alignment between qualitative (women’s categories influencing quality) and quantitative (DHS indicators) data was quantified to estimate how well the DHS captures women’s perspectives. Each category included a different number of factors; a factor was considered captured when at least one DHS indicator corresponded to it. Each of the 19 categories was assigned a within-category coverage proportion reflecting the share of its underlying factors represented in DHS indicators.

Coverage proportions alone treat all categories as equally important, whereas women identified some categories as substantially more influential than others. Accordingly, to weight each indicator for the final women's perspective index, the within-category coverage proportions were combined with their relative influence attributed by women, calculated by dividing their Cumulative Net Influence (CNI) value by the total CNI across all categories influencing quality of maternal care. Each category's relative influence was then multiplied by its within-category coverage proportion to yield the share of women's full-quality conceptualization captured by DHS indicators within that category.

The same procedures were used in a secondary analysis using the 2020 HHFA Burkina Faso questionnaire to examine whether facility-level data could complement the DHS in capturing women's perspectives. The HHFA is an expanded version of the WHO SARA used to assess facility-level service availability, readiness, and quality of care, making it well-suited to address gaps in household survey data (40).

Analytical step #2: Developing the women's perspective composite index

Building on the joint table analysis findings, a composite index was developed to operationalize the women-derived quality categories and weights using the 2021 Burkina Faso DHS data. Notably, this measure operationalizes women's quality categories and their relative weights, but only across the dimensions that the DHS could capture, thus making it a truncated version of what an actual women's perspective index could be. Categories that women identified as influential but without a corresponding indicator in the DHS did not contribute to the score.

Sample and indicator preparation

The 2021 Burkina Faso DHS sample (n = 6,821 women with at least one pregnancy in the three years preceding the survey) was restricted to those whose most recent live birth occurred in a health facility and who had attended at least one ANC visit. The selected DHS indicators were prepared following DHS recoding conventions (41). Where possible, they were coded as binary, indicating the presence or absence of an intervention. Further information regarding the cut-offs and procedures to form binary indicators is available in **Supplemental Material 2, Table S1**, and was consistent with WHO and DHS guidance (42–44).

Missing data were examined across the selected indicators. Women with missing or "don't know" responses on one or more indicators included in the index were subsequently removed, yielding a final analytic sample of 4,771 women. Sociodemographic characteristics were compared between women retained and those dropped, and no significant differences were observed (**Supplemental Materials 2, Table S2**). The distribution of missing and "don't know" responses across the indicators included in the composite index is presented in **Supplemental Materials 2, Table S3**.

Weighting and aggregation

The women's perspective index of maternal care quality was calculated through a two-stage process: a within-category normalization, followed by a weighted aggregation across categories.

First, within each category, DHS indicators were combined using a simple, equally weighted average, and normalized to a 0–1 scale by dividing the sum of indicator scores by the total number of indicators in that category (Eq. 1).

$$\text{Category score}_i = (\text{Indicator}_a + \text{Indicator}_b + \dots + \text{Indicator}_n) / n \quad (\text{Eq. 1})$$

where a and b are the DHS indicators aligned within category i , and n is the total number of indicators aligned in the category.

Second, category scores were combined into a single composite index using weights that reflected both each category's relative influence on the quality of maternal care and the extent to which the DHS captured it. Following the same approach used in the joint table analysis, each category's CNI was first expressed as its proportion of the total CNI across all 19 categories. This proportion was then multiplied by the category's DHS coverage proportion to obtain its weight:

$$w_i = [(\text{CNI}_i / \text{CNI}_{\text{total}}) \times \text{Coverage}_i] \quad (\text{Eq. 2})$$

Categories with no captured factors received a weight of zero. The composite index for woman (j) was then calculated as the weighted mean of category scores:

$$\text{Index}_j = \sum_i w_i \times \text{Category score}_{ij} \quad (\text{Eq. 3})$$

Where Index_j is the composite quality score for woman (j), $\text{category score}_{ij}$ is woman (j)'s score on category i , and w_i is the weight assigned to category i .

This normalization ensures that the index ranges from 0 to 1. A score of 1 indicates that a woman received care that meets all captured categories of quality, weighted by the relative influence women attributed to each dimension. A score of 0 indicates the absence of these care components across her maternal care continuum.

Analytical step #3: Comparison with the conventional DHS index

There is no gold standard regarding the indicators to include when creating an index of quality of maternal care using DHS data. A previous study that measured quality of maternal care with DHS data was used as a reference, with minor adaptations to consider the new indicators added to the survey since (16, 39, 45, 46). The full list of indicators included in the conventional DHS index is provided in Table 1.

Table 1
List of indicators included in the conventional DHS index of quality of
maternal care

Indicators (n = 27)
Blood pressure measured during ANC
Urine sample taken during ANC
Blood sample taken during ANC
Received full tetanus vaccination before birth
Weight measured during ANC
Uterine height measured during ANC
Vaginal bleeding check during ANC
Newborn's heartbeat listened to during ANC
Early initiation of ANC visit
Education on nutrition during ANC
Education on breastfeeding during ANC
Iron medication taken during ANC
Malaria medication taken during ANC
Parasite medication taken during ANC
Weight examination of newborn at birth
Assisted delivery at childbirth with health worker
Breastfed baby within one hour of birth
Cord examination within 2 days of birth
Temperature examination of newborn within 2 days of birth
Blood pressure examination of woman within 2 days of birth
Vaginal bleeding check within 2 days of birth
Family planning counselling within 2 days of birth
Breastfeeding observed within 2 days of birth
Educated on breastfeeding within 2 days of birth
Education on complication signs for newborn within 2 days of birth
Postnatal check of mother within 2 days of birth

Indicators (n = 27)
Postnatal check of newborn within 2 days of birth

The women’s perspective index was compared against this “conventional” DHS-based composite index by looking at distribution, rank agreement, and linkage to known sociodemographic determinants of quality and described below in the following section.

Statistical analysis

The following statistical procedures address the validation of the composite index and its comparison with the conventional DHS index. Assessment of internal consistency, construct validity and robustness to weighting choices follows established guidance on composite indicator construction (15–17). All statistical analyses accounted for DHS sampling weights and the complex survey design, and were carried out using STATA IC version 16.1 (47).

Before aggregation, Cronbach's alpha was calculated to confirm that the FCM-aligned indicators behaved as a coherent measurement set, with values between 0.70 and 0.95 considered acceptable (48). Construct validity of the women’s perspective index was examined by testing for expected gradients in DHS indicator means across tertiles of the index (16). Sensitivity analyses tested the influence of the participatory weights on the index. Three alternative weighting versions were estimated using the same indicator set : (1) equal weighting across categories, (2) equal weighting across individual indicators, and (3) a principal component analysis (PCA)-based index derived from a linear combination of the first and second principal components weighted by their respective proportions of explained variance.

The distribution of each index was characterized through descriptive statistics. Spearman's rank correlation of tertiles measured agreement between indexes, both across weighting specifications and between the women's perspective and conventional DHS indexes (15, 16, 49). A correlation above 0.90 was treated as indicating that the two indexes were essentially interchangeable. The bilateral associations of the women’s perspective index and the conventional DHS index with well-known determinants of quality of maternal care were tested for statistical significance with a threshold of 0.05 (16, 46, 47).

Finally, the two indices may identify similar patterns across subgroups while still producing different scores for individual women. To examine this, we calculated the absolute difference between the two index scores for each woman. A larger difference indicated greater disagreement between the two measurement approaches. We then used this difference as the outcome in a multivariable linear regression to assess whether the magnitude of disagreement varied according to women’s age, parity, education, place of residence, wealth quintile, and region.

Results

Joint analysis of women- derived quality categories with DHS and HHFA indicators

Table 2 presents a synthesized version of the mixed methods joint display linking the women- derived quality categories and their factors to quantitative DHS indicators, along with interpretive notes and justification for alignment.

Table 2

Mixed methods joint display linking qualitative categories (FCM) to quantitative indicators (DHS) of quality of maternal care

Qualitative category: Aligned factors (FCM weight)	Quantitative variables (DHS, n = 29)	Mixed methods interpretation & rationale
Geographical accessibility of health services: <i>Closeness to the healthcare center</i> (0.06)	Other: Reach healthcare facility in timely manner (< 30 min urban/ <60 min rural)	Women described proximity to healthcare facilities as essential to quality maternal care, particularly for antenatal visits and delivery. This DHS indicator was selected as the closest proxy and adapted to the local context.
Medical procedures: <i>Prescriptions, Examinations, Equipment</i> (0.48)	ANC: Blood pressure measured; Urine sample taken; Blood sample taken; Received full tetanus vaccination before birth; Weight measured; Uterine height measured; Vaginal bleeding checked; Newborn's heartbeat listened; Given bed net during ANC visit. CBC: Weight examination of newborn; PNC (≤ 2 days): Cord examination; Temperature examination of newborn; Blood pressure examination of woman; Vaginal bleeding check; Polio vaccination of newborn; BCG vaccination of newborn.	Women described examinations, tests, equipment received, vaccinations, and prescriptions during ANC, delivery, and PNC as essential to quality maternal care, highlighting their role in monitoring maternal and fetal health and in preventing complications. These DHS indicators were selected as they capture women's receipt of these interventions across the three moments of care.
Appropriate behaviour and communication: <i>Respectful treatment</i> (0.57)	CBC: Treated with respect from healthcare workers at a healthcare center	Women described respectful treatment by healthcare workers as essential to quality maternal care during antenatal care and childbirth, emphasizing the absence of rude speech, yelling, or judgment, as well as confidentiality and empathetic communication. The DHS indicator was selected as a proxy of respect throughout her childbirth stay, though it does not capture the ANC period or the relational dimensions women emphasized.
Appropriate counselling and support:	ANC: Education on nutrition during ANC; Education on breastfeeding during ANC	Women described counselling and support from healthcare workers as essential to quality maternal care, emphasizing
Note. This joint display includes only the FCM categories and factors for which aligned DHS indicators were available. The full alignment of FCM categories and factors with DHS indicators is presented in [Supplemental material 1]. FCM categories and factors without corresponding DHS indicators are discussed in the Results section		

Qualitative category: Aligned factors (FCM weight)	Quantitative variables (DHS, n = 29)	Mixed methods interpretation & rationale
<i>Healthcare worker advice during ANC, Advice on nutrition, Family planning advice from healthcare workers,</i> (0.54)	PNC (≤ 2 days): Family planning counselling	nutrition advice during ANC, family planning counselling, and advice during ANC. The selected DHS indicators capture whether women received education or counselling during ANC and whether women received advice related to family planning.
Availability of human resources: <i>Delivery with a healthcare worker</i> (0.58)	CBC: Assisted delivery at childbirth with health worker	Women described the availability of healthcare workers as essential to quality maternal care, including the presence of health workers during childbirth, sufficient overall staffing, and the presence of providers during emergency referrals. The selected DHS indicator was the closest available proxy, capturing assisted childbirth as defined by DHS Burkina Faso (delivery attended by a doctor, nurse, midwife, health counsellor, health attaché, or birth attendant).
Medical care for pregnant women and newborns before, during, and after childbirth: <i>Early initiation of ANC, Regular ANC follow-up visits, Care for the woman after childbirth, Care for the baby after childbirth</i> (0.93)	ANC: Timely first ANC visit; Minimum 4 ANC visits. PNC (≤ 2 days): Follow up care for woman; Follow up care of newborn.	Women described continuity as essential to quality maternal care, including early and regular ANC visits, immediate postnatal care for mother and newborn, and being followed by the same healthcare provider throughout pregnancy and delivery. The selected DHS indicators capture timing and frequency of ANC, follow-up care within two days of birth, though they do not capture the relational continuity women emphasized.
Note. This joint display includes only the FCM categories and factors for which aligned DHS indicators were available. The full alignment of FCM categories and factors with DHS indicators is presented in [Supplemental material 1]. FCM categories and factors without corresponding DHS indicators are discussed in the Results section		

Qualitative category: <i>Aligned factors</i> (FCM weight)	Quantitative variables (DHS, n = 29)	Mixed methods interpretation & rationale
Responsibility of women related to care: <i>Healthcare advice adhered to, Consistent intake of medication</i> (0.41)	ANC: Consistent iron intake (more than 90 days); Consistent malaria medication intake (3 doses); Parasite medication taken.	Women described their own role and responsibility as essential to quality maternal care, including adherence to medication, healthcare worker advice, personal hygiene, and consistent use of mosquito nets. The selected DHS indicators capture whether women took iron consistently (i.e. over 90 days), malaria consistently (i.e. at least 3 doses), and parasite medication during pregnancy, though they do not capture broader behaviours or consistent mosquito net use.
Note. This joint display includes only the FCM categories and factors for which aligned DHS indicators were available. The full alignment of FCM categories and factors with DHS indicators is presented in [Supplemental material 1]. FCM categories and factors without corresponding DHS indicators are discussed in the Results section		

Seven categories aligned with 29 DHS indicators: *geographical accessibility, medical procedures, appropriate behaviour and communication, appropriate counselling and support, availability of human resources, medical care for pregnant women and newborns, and women's responsibility in care*. Alignment varied: within *medical procedures*, women described examinations and prescriptions as important aspects of care and provided concrete examples such as clinical examinations, diagnostic tests, and prescribed interventions; when these corresponded to DHS indicators, they were considered captured. *Medical procedures* was the most extensively represented category, with 16 aligned indicators across the maternal care continuum.

Other categories showed more limited or specific alignment between women-identified factors and DHS indicators. For example, in *medical care for pregnant women and newborns*, one of the five factors, early initiation of antenatal care, was fully and directly captured by a corresponding DHS indicator. Similarly, one factor within the category, *availability of human resources*, showed direct alignment, as women's preference for delivery with a trained provider was reflected in the indicator of delivery attended by a healthcare worker. *Appropriate behaviour and communication*, by contrast, showed partial alignment. Although women described respectful treatment as important across the entire maternal care continuum, the DHS captured this dimension only at childbirth, reflecting a narrower operationalization than what emerged in the qualitative data.

Table 3 presents the proportion of qualitative categories covered by the 2021 Burkina Faso DHS, alongside their cumulative net influence on perceived quality of maternal care and their classification within the Donabedian framework. The captured categories were primarily process-related, with two structural exceptions: *geographic accessibility* and *availability of human resources*. Among the categories with the highest cumulative influence in the FCM, *medical care before, during, and after childbirth* (CNI =

0.93) and *availability of human resources* (CNI = 0.58) were both captured in the DHS, but with partial coverage. *Medical care before, during and after childbirth* had a coverage of 80%, while *availability of human resources* only had 20%.

Table 3
Coverage of women-derived quality categories by the 2021 Burkina Faso DHS

Quality category (n of factors)	Donabedian domain	Influence on quality of maternal care (CNI)	Share of total influence (%)	DHS 2021	
				Within-category coverage* (%)	Share of total quality concept captured [§] (%)
1. Accessibility of infrastructure and services for people with specific needs (n = 4)	Structure	0.16	2.1		0
2. Geographic accessibility of services (n = 2)	Structure	0.06	0.8	50	0.4
3. Medical procedures (n = 4)	Provision of care	0.48	6.3	75	4.7
4. Crowding and waiting times (n = 2)	Structure	0.29	3.8		0
5. Appropriate behavior and communication of healthcare providers (n = 4)	Experience of care	0.57	7.4	25	1.8
6. Appropriate counselling and support (n = 4)	Provision of care	0.54	7.0	75	5.3
7. Availability of human resources (n = 5)	Structure	0.58	7.6	20	1.5
8. Management of medicine stocks (n = 1)	Structure	0.07	0.9		0
9. Availability of necessary medical equipment and materials (n = 9)	Structure	1.00*	13		0
10. Adequacy of healthcare infrastructure (n = 5)	Structure	0.52	6.8		0
11. Medical care before, during and after childbirth (n = 5)	Provision of care	0.93	12.1	80	9.7

Quality category (n of factors)	Donabedian domain	Influence on quality of maternal care (CNI)	Share of total influence (%)	DHS 2021	
				Within-category coverage* (%)	Share of total quality concept captured [‡] (%)
12. Rigor and skills of healthcare providers (n = 9)	Provision of care/ Experience of care	0.24	3.1		0
13. Hygiene and health standards in an establishment (n = 4)	Structure	0.81	10.5		0
14. Financial barriers (n = 3)	Structure	0.25	3.3		0
15. Quality of reception at healthcare center (n = 1)	Experience of care	0.38	4.9		0
16. Quality of work life for healthcare providers (n = 2)	Structure	0.14	1.8		0
17. Responsiveness of emergency health services (n = 2)	Provision of care	0.10	1.3		0
18. Responsibility of women related to care (n = 5)	Experience of care	0.41	5.3	40	2.1
19. Support from healthcare workers for involvement of partners (n = 2)	Experience of care	0.15	2.0		0%
Sum		7.68	100%	---	25.5%
The green, yellow, and red boxes indicate, respectively, that the proportion of factors in the category is total, partial, or zero FCM Fuzzy cognitive mapping; DHS Demographic and Health Survey; * The percentage reflects the proportion of factors within each quality category that could be captured by at least one indicator in the respective survey tool. [‡] The percentage represented is calculated by multiplying the Share of total influence by the Within-category coverage.					

In the secondary analysis, coverage was also assessed using the 2020 Burkina Faso HHFA, which captured nine of the 19 categories, representing approximately 42% coverage, higher than the 2021 Burkina Faso DHS. Coverage was highest for *medical procedures* and *responsiveness of emergency health services*. The HHFA also captured several structurally oriented and highly influential categories identified by women, including *medical care before, during, and after childbirth*, *adequacy of healthcare infrastructure*, *availability of equipment and materials*, *availability of human resources*, *appropriate counselling*, and *hygiene and health standards*. Further details are provided in **Supplementary Materials 1 (Table S2 & Table S3)**.

Seven FCM categories were not captured by either the DHS or HHFA. While these categories had lower CNI, two of them, *rigor and skills of healthcare workers* and *quality of reception at healthcare center*, appeared consistently across FCM sessions.

Construction of a women's perspective composite index of quality of maternal care using DHS indicators

The women's perspective index of quality of maternal care combined 29 indicators related to seven women-derived quality categories. Table 4 presents the mean category score across all women for each category together with the corresponding FCM-derived weight used to construct the composite index. Frequencies of the individual DHS indicators contributing to each category score are presented in **Supplementary Materials 2 (Table S4)**. The selected indicators demonstrated good internal consistency (Cronbach's $\alpha = 0.80$).

Table 4

Mean category scores and FCM-derived weights used to construct the women's perspective index of quality of maternal care, Burkina Faso DHS 2021 (n = 4771)

Category sub-index scores	No. of indicators	Index relative weight (%)	Mean (SD)
Geographical accessibility	1	0.4	0.84 (0.37)
Medical procedures	16	4.7	0.68 (0.15)
Appropriate behaviour during childbirth	1	1.8	0.87 (0.33)
Appropriate counselling	3	5.3	0.60 (0.34)
Availability of human resources during childbirth	1	1.5	0.96 (0.19)
Medical care before, during, and after childbirth	4	9.7	0.76 (0.24)
Responsibility of women for medication intake	3	2.1	0.63 (0.30)
Overall un-normalized women's perspective weighted score	-	-	0.19 (0.04)
Overall normalized women's perspective weighted score*	-	-	0.74 (0.15)
*Reflects dividing the un-normalized score by the maximum total score attainable which is 0.25			
SD= standard deviation			

The relative weight assigned to each sub-index reflects two components: the cumulative net influence (CNI) derived from the women's perceived influence of the category on quality of maternal care, ranging from 0.06 to 0.93 across the seven aligned categories, and the proportion of factors within each category captured by available DHS indicators, ranging from 20% to 80%. The product of these two components produced the index weights shown in Table 4. The dominance of *medical care before, during, and after childbirth* in the final weighting reflects the combination of the highest CNI value (0.93) and high category DHS coverage (80%), while the relatively modest weights on *geographical accessibility*, *appropriate behaviour during childbirth*, and *availability of human resources* during childbirth reflect either lower CNI values or lower category DHS coverage.

The seven sub-indexes contributed unequally to the overall index, with weights ranging from 0.4% (*Geographical accessibility*) to 9.7% (*Medical care before, during, and after childbirth*) for a total weight of 25.5%. The un-normalized FCM-weighted index had a mean of 0.19 (SD 0.04) out of a maximum attainable score of 0.255, where the maximum reflects the sum of weights across the seven captured

categories, in other words, the portion of women's full quality conceptualization that existing DHS data can measure. After normalizing this score by dividing it by the total weight of the captured categories, the women's perspective index had a mean of 0.74 (SD 0.15). Because only these seven categories could be captured, this index remains a truncated version of women's full perspective on quality. This means that women received, on average, just under three-quarters of the perspective-weighted care components that the DHS allows us to measure, where each component is weighted by the relative influence women attributed to it. A woman could therefore score lower because she received fewer care components overall, because she missed dimensions that women rated as most influential to quality, or both.

Robustness and validity of the index

To assess the robustness of the women's perspective index to alternative weighting decisions, we compared the participatory (FCM-derived) specification with three commonly used approaches: (1) equal weighting across domains, (2) equal weighting across individual indicators, and (3) a data-driven PCA-based weighting scheme. The women's perspective index produced a similar mean score compared to the three other weighting specifications, with means ranging narrowly from 0.71 to 0.80 (**Supplemental Materials 2 Table S5**). Agreement in classification was assessed using Spearman rank correlations of tertile assignments. Moderate concordance was observed across all comparisons: $\rho = 0.75$ for equal weighting across categories, $\rho = 0.78$ for equal weighting across indicators, and $\rho = 0.73$ for the PCA-weighted index (**Supplemental Materials 2 Table S6**). These values fall below the 0.90 threshold commonly considered indicative of interchangeability. Taken together, these findings suggest that the overall level of quality is relatively stable across weighting choices, while the moderate rank correlations point to possible differences in how women are classified. This is not conclusive, but it may indicate that the participatory weights capture somewhat distinct information.

Construct validity of the women's perspective index was supported by consistent gradients in component indicators across index tertiles, with women in higher tertiles reporting better performance on the underlying indicators (**Supplemental Materials 2, Table S7**).

Comparison of the women's perspective index and the conventional DHS index

Using the 2021 Burkina Faso DHS data, Fig. 1 compares the distribution of quality of maternal care scores derived from the women's perspective index approach with that of the conventional DHS approach. At the aggregate level, both approaches yield very similar statistics, with nearly identical means and standard deviations (conventional = 0.75, SD = 0.17; women's perspective = 0.74, SD = 0.15), suggesting overall comparable average levels of reported quality of maternal care. However, the two indexes differ in their distributional shapes. As shown in Fig. 1, the conventional DHS exhibits a bimodal distribution. In contrast, the women's perspective index displays a smoother distribution, with fewer pronounced extremes. Consistent with this pattern, concordance in relative ranking is moderate, with a

Spearman’s rank correlation of $\rho = 0.69$ between tertile classifications. This could indicate that depending on the measurement approach women could be classified into different levels of quality.

Table 5 compares the indexes across sociodemographic characteristics, presenting median scores alongside the adjusted absolute differences between them. Both indexes show significant gradients across age, education, place of residence, wealth, and region (all $p \leq 0.0028$), indicating that they capture similar broad patterns of inequity in maternal care quality. However, adjusted regression analyses indicate that differences between the two indices are not uniform across groups. The difference in scores between the women’s perspective and DHS indexes is significantly larger among women with no education ($\beta = 0.006$, 95% CI 0.001–0.011) and women in the poorest wealth quintile ($\beta = 0.015$, 95% CI 0.004–0.025). Several regions also showed a significantly smaller difference in scores than the Centre region, while age, parity, and urban–rural residence were not associated with the magnitude of the difference. This indicates that the choice of measurement approach may affect how disadvantaged women in particular are classified.

Table 5

Sociodemographic characteristics, women's perspective and conventional DHS index scores, and adjusted absolute difference between scores, 2021 Burkina Faso DHS

All women	Women's perspective index, median (IQR)	Conventional DHS index, median (IQR)	Adjusted absolute difference between scores (β, 95% CI)
	0.75 (0.64, 0.85)	0.74 (0.63, 0.93)	
Age (years old)			
15–24	0.74 (0.62, 0.84)	0.70 (0.59, 0.92)	0.003 (-0.005, 0.012)
25–34	0.76 (0.64, 0.85)	0.74 (0.63, 0.93)	-0.0001 (-0.006, 0.058)
35–49	0.76 (0.65, 0.86)	0.74 (0.63, 0.93)	Reference
<i>p-value</i>	0.0001	0.04	
Education			
No education	0.75 (0.64, 0.85)	0.70 (0.59, 0.93)	0.006 (0.001, 0.011)*
Any education	0.77 (0.64, 0.86)	0.74 (0.63, 0.93)	Reference
<i>p-value</i>	0.0016	0.0037	
Parity			
1	0.75 (0.63, 0.85)	0.74 (0.63, 0.89)	Reference
2–4	0.76 (0.64, 0.85)	0.74 (0.63, 0.93)	-0.001 (-0.007, 0.005)
5 and over	0.75 (0.64, 0.85)	0.74 (0.59, 0.93)	-0.0001 (-0.009, 0.009)
<i>p-value</i>	0.7406	0.5786	
Residence			
Rural	0.75 [0.63, 0.85]	0.74 [0.59, 0.93]	-0.004 (-0.011, 0.002)
Urban	0.77 [0.66, 0.85]	0.74 [0.63, 0.93]	Reference
<i>p-value</i>	0.0028	0.0057	
Wealth index			
Q1 (poorest)	0.73 (0.61, 0.83)	0.67 (0.59, 0.89)	0.015 (0.004, 0.025)**
Q2	0.74 (0.62, 0.84)	0.70 (0.59, 0.93)	0.009 (-0.0003, 0.018)
Q3	0.75 (0.63, 0.85)	0.74 (0.63, 0.93)	0.011 (0.002, 0.020)*
Q4	0.76 (0.65, 0.86)	0.78 (0.63, 0.93)	0.005 (-0.002, 0.013)

All women	Women's perspective index, median (IQR)	Conventional DHS index, median (IQR)	Adjusted absolute difference between scores (β, 95% CI)
	0.75 (0.64, 0.85)	0.74 (0.63, 0.93)	
Q5 (richest)	0.79 (0.68, 0.87)	0.78 (0.63, 0.93)	reference
<i>p-value</i>	0.0001	0.0001	
Region			
Boucle	0.73 (0.61, 0.82)	0.63 (0.59, 0.74)	-0.012 (-0.024, -0.001)*
Cascade	0.80 (0.71, 0.89)	0.81 (0.67, 0.96)	-0.011 (-0.024, 0.001)
Centre	0.75 (0.64, 0.84)	0.78 (0.63, 0.89)	Reference
Centre East	0.77 (0.67, 0.86)	0.83 (0.70, 0.93)	-0.025 (-0.035, -0.016)**
Centre Nord	0.81 (0.68, 0.87)	0.70 (0.63, 0.93)	-0.016 (-0.030, -0.002)*
Centre West	0.72 (0.58, 0.85)	0.70 (0.59, 0.93)	-0.005 (-0.017, 0.007)
Centre South	0.69 (0.57, 0.78)	0.59 (0.52, 0.70)	-0.014 (-0.023, -0.004)**
East	0.68 (0.54, 0.77)	0.59 (0.52, 0.67)	-0.023 (-0.036, -0.010)**
Haut Bassin	0.75 (0.63, 0.86)	0.78 (0.63, 0.89)	-0.019 (-0.029, -0.009)**
North	0.80 (0.67, 0.86)	0.70 (0.63, 0.93)	-0.011 (-0.022, 0.0003)
Plateau	0.82 (0.72, 0.91)	0.89 (0.68, 0.96)	-0.023 (-0.033, -0.013)**
Sahel	0.70 (0.60, 0.78)	0.63 (0.59, 0.78)	-0.009 (-0.022, 0.003)
South West	0.78 (0.69, 0.86)	0.89 (0.70, 0.96)	0.001 (-0.011, 0.014)
<i>p-value</i>	0.0001	0.0001	
Bivariate analyses between scores and sociodemographic variables used Kruskal-Wallis test for categorical variables and Wilcoxon rank-sum test for binary variables. The adjusted absolute difference column reports regression coefficients (β) and 95% CIs from a multivariable linear regression of [women's perspective – conventional DHS] on all sociodemographic characteristics simultaneously. *$p < 0.05$; **$p < 0.01$			

Discussion

This study aimed to incorporate women's perceptions into quality of maternal care measurement, aligning with longstanding recommendations that measurement should reflect the needs and views of the populations served (7, 9, 12). Instead of creating a new data collection method, the research leveraged an existing data system, the DHS, which is known to gather information on quality

measurement in low-and-middle-income countries (9, 16). Using a mixed methods approach, women's perceptions informed the indicator selection and weighting (15, 16, 20, 22). Our results showed that a composite index grounded in women's understandings of quality, using participatory weights, can be reliably constructed and exhibits construct validity. However, the joint display analysis revealed that current data infrastructure cannot fully capture what women value (9, 50).

Our findings sit within a body of literature that have rarely involved women in deciding what gets measured (39). A systematic scoping review of composite measures of maternal care quality in sub-Saharan Africa identified 111 studies published between 2007 and 2023, spanning 40 of the region's 47 countries, from which 134 indexes were constructed using data provided by women of reproductive age (39). Only six of those studies set out to develop or refine a measure of quality, and only two engaged women in shaping the instrument itself: one used cognitive interviews with women in Kenya and India to refine a person-centred maternity care scale, and the other drew on the accounts of women who had experienced abortion care to refine an item pool (51, 52). No study in that review derived weights from women's perspectives. Women were, in other words, almost always the source of the data and almost never a party to deciding what the data should be about. The present study addresses that gap directly, deriving both the indicator set and the weights from women's own accounts of what makes care good.

Integrating women's views of quality when constructing an index based on the large (currently) available datasets is challenging. Our central finding is that the DHS captures only 25% of the dimensions women identified as influential to quality of maternal care. Even when combined with the HHFA, coverage of measuring women's conceptualization of quality of maternal care could only increase to 59%. As a facility assessment, the HHFA captured more structural dimensions than the DHS. Any quality of maternal care assessment drawing on facility-level data will, by design, primarily capture structural dimensions. While the HHFA performed better than the DHS in capturing structural categories, existing assessments in Burkina Faso tend to focus narrowly on the availability and readiness of equipment for specific maternal care tasks (9, 53, 54). This leaves unaddressed broader structural dimensions that women identified as important, such as the adequacy of infrastructure, hygiene standards, and the physical accessibility of facilities. Together, the two tools currently used in Burkina Faso still leave most of women's conceptualization unmeasured.

The DHS indicators aligned mainly with women's provision of care dimensions, an unsurprising pattern given the survey's historical orientation (7, 9). The DHS improved from Phase 6 to Phase 8, adding more questions related to quality of maternal care measurement, including eight new postnatal care questions, and these additions have been used in other studies measuring quality of maternal care with the DHS (45, 46). These additions remain heavily oriented toward biomedical questions, such as whether a provider checked for vaginal bleeding or assessed the newborn's heartbeat. This orientation is evident in the concentration of most aligned indicators (17 of 29) within a single women-derived category, medical procedures. This focus under-captures process dimensions that women emphasized as essential, including respectful treatment, clear communication, and reception at facilities. The orientation reflects a longstanding critique in global health, where care is approached through a

biomedical lens that prioritizes technical, easily quantifiable, and cost-effective interventions, and where disease-specific metrics overshadow system competence, user experience, and trust (9, 50, 55, 56). This raises a central question: does recording the delivery of distinct clinical tasks adequately represent quality as women themselves understand it?

The women's perspective index includes dimensions typically absent from conventional DHS-based measures of quality of maternal care, such as geographic accessibility, continuity of ANC visits, and respectful treatment at childbirth. Past efforts to measure quality of maternal care have typically been limited to medical procedure indicators, corresponding to the provision of care dimension in standard quality of care frameworks. Our study shows that an index or conceptualization of quality should also incorporate accessibility, behaviour, and service utilization, which have historically been excluded from measurement frameworks (9, 11, 12). The measure developed in this study aligns with emerging frameworks, such as the High-Quality Health Systems framework, that explicitly incorporate accessibility and service utilization as core dimensions of quality (9). In this view, access to and service utilization of services are not external preconditions of quality but dimensions of it, based on what women themselves identified as important (38–40). A further point of alignment was the 2021 Burkina Faso DHS's introduction of a country-specific indicator on respectful treatment at childbirth, which maps directly onto the experience of care dimension women described as encompassing respect, the absence of verbal abuse, and a good provider–patient relationship. Although this indicator has not been incorporated into conventional DHS-based measures of quality of maternal care, its presence in the 2021 survey, and the alignment with what women prioritize in this study, reinforces the value of this country-specific addition, both to the survey itself and as an indicator to include in measures of quality of maternal care. Its inclusion reflects growing calls to measure this neglected dimension, driven by its high prevalence (44% in sub-Saharan Africa) and the need for more measures of experiential dimensions of such as communication, dignity, and emotional support (57, 58).

Although the DHS includes indicators on postnatal breastfeeding counselling and neonatal complication education used in previous indexes, these were not incorporated because participants did not spontaneously identify them during the qualitative phase (45, 46). This may reflect the extent of women's contact with the health system along the continuum of care: ANC involves repeated visits over months, whereas postnatal care is typically a single brief contact with high dropout (46, 59). Their exclusion does not diminish their public health importance, particularly given suboptimal breastfeeding coverage in Burkina Faso (36, 60). These contrasts illustrate a broader principle of composite measurement: an indicator's importance from a public health standpoint does not automatically make it a valid indicator of quality of care. The two rationales are distinct and conflating them risks populating a quality index with components selected for their public health relevance rather than for what they reveal about quality as women experience it. Indicator selection must be grounded in a clearly defined conceptual and quality framework to avoid misalignment with the construct an index aims to measure (13). Current guidance on quality measurement likewise underscores the need for composite indicators that reflect what communities value rather than what is easiest to quantify (9). Grounding indicator selection in what

women themselves value is therefore not only a question of local relevance, but as well a way to ensure that the measure reflects the construct it is meant to capture.

A key methodological objective of this study was to test whether participatory weighting could be integrated into a composite index. Participatory weighting is rarely attempted in practice, with researchers typically relying on equal weighting or statistical approaches such as PCA, despite recommendations in the composite index literature to engage stakeholders in the process (13, 14, 17). FCM had not previously been applied for this purpose. Rather than asking women to rank predefined categories, FCM allows participants to construct causal maps that reflect how they understand relationships between dimensions of care based on their experiential knowledge, producing weights that emerge from their own conceptual frameworks rather than those imposed externally (35, 61). Sensitivity analyses comparing FCM-derived weights against equal weighting and PCA produced only moderately different median scores, which could suggest that neither the choice of weighting approach nor the indicator set meaningfully changes the resulting score, consistent with a body of literature reporting that weighting has limited influence on composite index values (15, 62, 63). However, Spearman rank correlations across both the sensitivity analyses and the comparison with the conventional index fell below the threshold for interchangeability, suggesting that the indexes did not rank women identically. These are two contradictory results which could indicate that weighting and indicator selection may matter more than the median scores alone imply. Whether participatory weighting through FCM would meaningfully reshape the measure therefore remains an open question, constrained less by the method than by existing data that cannot yet capture enough of what women value to put it to a fair test.

Limitations

We acknowledge that this study has several limitations. Numerous FCM categories could not be captured by the available DHS indicators, limiting the potential of a new index based on DHS data. The HHFA data could not be used because it was not accessible, although it likely would have improved the formulation of the index. Also, the index relied on women's experiential knowledge and spontaneous perceptions of care quality. However, when prompted with conventional indicators, women did identify additional dimensions as important. Our women's perspective index may therefore underrepresent dimensions that women would endorse but did not raise independently (33). Another limitation refers to the level of specificity of FCM categories. Some referred to dimensions of care across the full maternal care continuum, such as medical procedures, while others referred to a particular phase (e.g. counselling in antenatal care). This variability made it difficult to interpret indicator assignments consistently across the phases, and future work should consider whether categories can be refined to better reflect the specificity of care at each phase. The creation of a composite score spanning from pregnancy to the postnatal period may have overlooked some nuances along the continuum of care (8, 64). In addition, the alignment exercise required researcher interpretation and was maybe biased by our own framing of the FCM categories. To limit this risk, the entire process was validated through ongoing discussion with Burkinabe researchers and frequent references to the original qualitative transcripts. We acknowledge that results do not pretend to be representative of all contexts of Burkina Faso. The two sites were

purposively selected to ensure some diversity in setting type (urban vs. rural), but regions in Burkina Faso are highly heterogeneous, and it was not possible to explore this heterogeneity in depth in the study. A limitation of this analysis is that the absolute difference between the two index scores may be less reliable than the individual index scores, particularly when the two measures are correlated. The analysis should therefore be interpreted as a conservative test of whether the magnitude of disagreement between the two indices varied across women. Finally, by excluding women who did not deliver in a facility or who did not attend ANC visits, the index may reflect access to services. This raises important methodological questions about whether quality should be measured across all women, only among users, or in relation to service availability.

Future policy and practice directions

The index developed in this study provides a practical tool for monitoring the quality of maternal care over time and identifying inequities within the country. Although the index reflects only the portion of women's quality conceptualization captured by the DHS, a priority next step would be to examine whether indicators grounded in women's perceptions are associated with the service utilization of maternal healthcare services and with maternal and neonatal health outcomes. Such analyses could help distinguish the direct effect of perceived quality on health outcomes from its indirect effect mediated by increased service utilization, and assess whether these associations differ between rural and urban areas. Linking DHS and HHFA data would further strengthen this work, enabling future studies to assess whether women have access to and experience the dimensions of quality they value most (65).

Upcoming national surveys in Burkina Faso offer an opportunity to strengthen measurement by adding indicators that better reflect what women value, such as quality of reception at facilities and partner involvement, which are feasible to collect in other DHS contexts while maintaining cross-country comparability (66, 67). Integrating such country-specific indicators would allow Burkina Faso to refine its measure of maternal care quality. With continued support to the DHS program from the Gates Foundation, there is an opportunity to expand country ownership, promote locally led survey design, and develop more relevant question modules. Sustaining this progress will require long-term investment in country survey capacity and complementary platforms such as UNICEF MICS (66, 67).

Conclusion

This study responds to the need for people-centred measurement of quality of maternal care by developing a composite index grounded in what women identified as essential across the maternal care continuum in Burkina Faso. Building on a qualitative phase, the objective was to identify how women conceptualize quality of maternal care and operationalize this into an index using DHS data. By comparing this women's perspective index with conventional approaches, the study clarifies both the methodological implications of centring women's own definitions of quality and the persistent gaps in what current surveys capture. Our findings show that the DHS, even with Burkina Faso's Module 8, cannot adequately capture perceived quality of maternal care: many of the dimensions women

considered essential are absent from or only partially reflected in the available indicators. Genuinely integrating the perspective of women who use these services will therefore require revisiting the indicators collected in the DHS itself, not only how existing ones are combined. This work contributes a practical tool and opens pathways for strengthening how quality of maternal care is measured, ensuring that future monitoring efforts better reflect the realities and expectations of the women who use these services.

Abbreviations

DHS Demographic and Health Surveys

SARA Service Availability and Readiness Assessment

HHFA Harmonized Health Facility Assessment

FCM Fuzzy cognitive mapping

CNI Cumulative net influence

OECD Organization for Economic Co-operation and Development

ANC Antenatal care

CBC Childbirth care

PNC Postnatal care

WHO World Health Organization

PCA Principal component analysis

SD Standard deviation

CI Confidence interval

IQR Interquartile range

Declarations

Ethics approval and consent to participate

Ethical approval was obtained from the Comité d'éthique de la recherche en sciences de la santé at the University of Montreal (Certificate #CERSES 2022 – 1809) and the Comité d'éthique pour la Recherche en Santé in Burkina Faso (Deliberation #2023-03-051).

Consent for publication

All participants who consented to participate also consented to the publication of the study findings. This stipulation is included in the consent form approved by both ethics boards.

Competing interests

The authors declare no competing interests.

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Author Contribution

SC conceptualized and designed the work. TD supported and gave guidance on the design of the work. AB and FB collected the qualitative data. SC cleaned and analyzed the data. FF gave technical guidance on cleaning of data. IS and MCGD gave technical guidance on the analysis of data. SC, TD, MCGD, FF, IS, AB, KK, FB, DB helped interpret the results and validated the results. BV provided subject matter expertise informed by their knowledge of the local context. SC drafted the manuscript. All authors contributed to the revision of the manuscript.

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Data Availability

The 2021 DHS dataset is publicly available online upon request through the following website: www.dhsprogram.com. The qualitative data analysed during the current study are not publicly available because they contain sensitive information. However, they are available from the corresponding author upon reasonable request.

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Figures

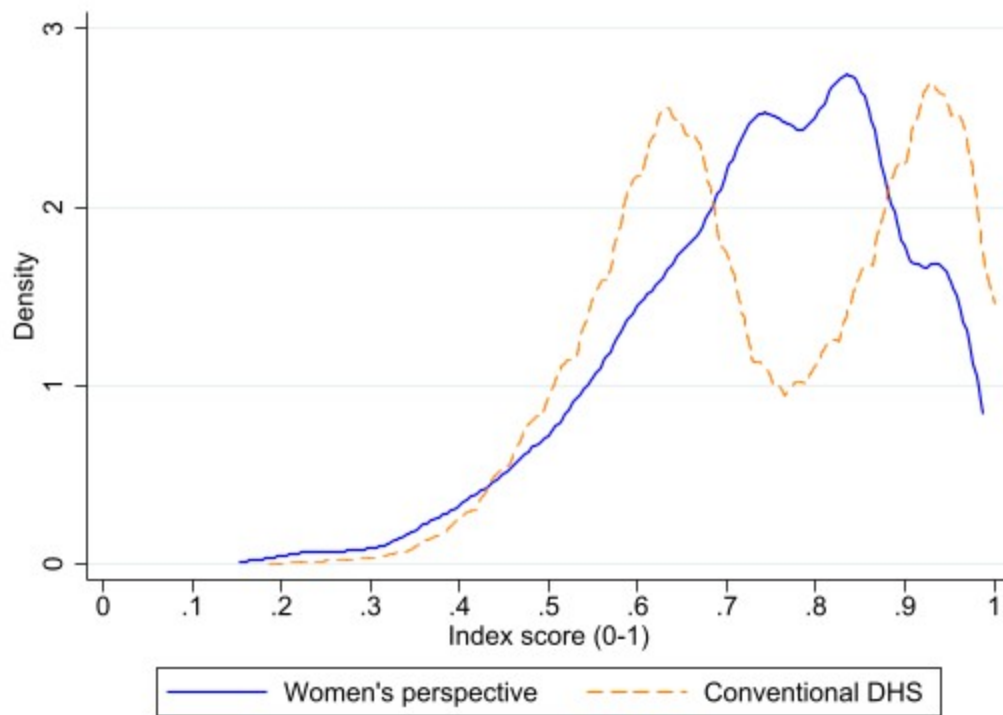


Figure 1

Distribution of maternal care quality scores: women's perspective index versus conventional DHS index

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