

# BMJ Open Intrapartum care measures and indicators for monitoring the implementation of WHO recommendations for a positive childbirth experience: a scoping review

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## ABSTRACT

**Objective** We aimed to identify all available studies describing measures or indicators used to monitor 41 intrapartum care practices described in the 2018 WHO intrapartum care recommendations, with a view to informing development of standardised measurement of implementing these recommendations.

**Design** Systematic scoping review.

**Methods** We conducted a scoping review to identify studies reporting measures of intrapartum care published between 1 January 2000 and 28 June 2021. Primary and secondary outcome measures included study characteristics (publication year, journal, country and World Bank classification) and intrapartum care measure characteristics (definition, numerator, denominator, measurement level and measurement approach). We searched MEDLINE, EMBASE, CINAHL, Cochrane Library, the Maternity and Infant Care Database, Global Index Medicus and grey literature using structured search terms related to included recommendations, focusing on respectful and supportive care, and clinical practices performed throughout labour and birth. The measures identified were classified by the WHO recommendation and their characteristics reported.

**Results** We identified 150 studies which described 1331 intrapartum care measures. These measures corresponded to 35 of the 41 included WHO recommendations, and represented all domains of the WHO recommendations (care throughout labour and birth, first stage of labour, second stage of labour, third stage of labour). A total of 40.1% (534 of 1331 measures) of measures were related to respectful maternity care. Most studies used a questionnaire or survey measurement approach (522 of 1331 measures, 39.2%).

**Conclusion** This scoping review presents a database of existing intrapartum care measures used to monitor the quality of intrapartum care globally. There is no clear consensus on a core set of measures for evaluating the practice of the WHO's intrapartum care recommendations. This review provides a foundation to support the development of a core set of internationally standardised intrapartum care measures for the WHO intrapartum

## STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ We performed a broad and comprehensive search of multiple scientific databases to identify as many papers as possible, ensuring a large number were eligible for analysis.
- ⇒ To improve accuracy and ensure consistency of individual results, all data were screened in duplicate for eligibility, and random-sample data checking was performed by two independent reviewers.
- ⇒ Using a scoping review methodology resulted in the creation of a database of global intrapartum care measures, which is a critical first step to inform further development of standardised measurement of the WHO intrapartum care recommendations.
- ⇒ We acknowledge that scoping reviews do not assess the quality of individual studies; thus, we cannot speak of the quality of research undertaken in the included papers nor the validity and reliability of the intrapartum care measures we identified.
- ⇒ We also acknowledge that subtle linguistic and measurement differences among the identified measures may have influenced the number of unique measures.

care recommendations, highlighting key areas requiring consensus and validation, and measure development.

## INTRODUCTION

The intrapartum period is a time of particular risk for women, during which life-threatening complications can arise, including obstructed or prolonged labour, postpartum haemorrhage and eclampsia, leading to severe morbidity or maternal death.<sup>1 2</sup> Globally, intrapartum care quality has been described as having two extremes, where adverse maternal outcomes result from either suboptimal, unavailable or withheld intrapartum care, in contrast to overmedicalisation with

ineffective or harmful interventions or inappropriate use of interventions.<sup>3</sup> However, effective implementation of evidence-based intrapartum care practices has been shown to prevent maternal death, specifically through more efficient and prompt detection of complications.<sup>2</sup>

In 2018, the WHO<sup>4</sup> published 56 evidence-based recommendations on intrapartum care practices to promote a positive childbirth experience.<sup>5</sup> The WHO encourages all countries to adopt these recommendations to improve women's childbirth experiences, as well as to optimise the use of intrapartum interventions, use healthcare resources efficiently and ensure quality intrapartum care is routinely available in facilities where women give birth.<sup>5</sup> Notably, the recommendations emphasise respectful maternity care practices to improve experiences of care that are often overlooked or de-prioritised in maternity care settings, including labour companionship, effective communication, pain relief and encouraging women to mobilise and adopt a birth position of choice during labour.<sup>5-12</sup>

Monitoring and evaluation include collecting and regularly assessing data on predefined indicators that can reliably measure the use of selected clinical practices as well as important health, experience and satisfaction outcomes.<sup>13 14</sup> Standardised monitoring of the implementation of clinical guideline recommendations is essential to the delivery of evidence-based care, as monitoring can help to identify areas of strength and areas for improvement. Robust systems for monitoring are therefore critical—they can drive better outcomes for women and newborns through assessment of routine intrapartum care provision and improve recognition of trends in health outcomes.<sup>15 16</sup> The WHO defines indicators as 'identified and measured variables which help to show changes directly and indirectly relevant to goals, objectives and targets',<sup>17</sup> and quality measures as 'criteria for assessing, measuring and monitoring the quality of care' of a quality indicator or statement.<sup>5 18</sup> Historically, two indicators—the proportion of women attending facilities for childbirth and those who were attended by skilled birth personnel during labour<sup>19</sup>—have been used for national reporting and international comparisons.<sup>20</sup> However, as coverage indicators, they provide a restricted view of the impact of intrapartum care provision, as they do not measure quality of clinical care or care context, nor reflect women's experiences or satisfaction with care provided.<sup>14 21</sup> Further, many settings (particularly limited-resource settings) do not have reliable data systems that can routinely collect and report on intrapartum care-related indicators.<sup>22</sup> Despite extensive work to establish evidence-based intrapartum care quality measures, and previous efforts to consolidate international recommendations regarding use of such measures, global maternal and newborn care organisations often use different, non-overlapping measures.<sup>23</sup> Where measures are shared, definitions of similar measures are diverse. The WHO recommendations provide an opportunity to review the measurement landscape of evidence-based intrapartum

care practices, with a view to developing a consensus-based set of measures specific to the WHO recommendations. This would provide a comprehensive and systematic approach to the measurement and monitoring of intrapartum care quality internationally. We performed a scoping review, as this methodology is well suited to create maps of the existing literature in a reproducible and transparent manner.<sup>24</sup>

The aim of this study was to systematically collate available measures used to monitor the provision and quality of care provided to women giving birth in healthcare facilities. We specifically sought to identify any measures related to 41 of the care practices described in the 2018 WHO intrapartum care recommendations.<sup>5</sup>

## METHODS

We developed a scoping review protocol according to the Joanna Briggs Institute (JBI) Methodology for Scoping Reviews which was registered online (<https://osf.io/bd6vc/>).<sup>25</sup> The review findings are reported according to Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR).<sup>25 26</sup>

### Patient and public involvement

There was no patient or public involvement in the co-production of this research.

We included 41 out of the 56 intrapartum care recommendations described in the 2018 WHO guideline in this review. Fifteen recommendations pertaining to the prevention of postpartum haemorrhage, and care of the newborn or woman after birth were not included in order to focus on care practices pertaining to care throughout labour and birth, noting these recommendations were integrated from other WHO guidelines, which already specify measures.<sup>5 27</sup> The 41 WHO intrapartum recommendations considered for this review are organised in four domains: (1) care throughout labour and birth has four recommendations; (2) first stage of labour domain has 28 recommendations, (3) second stage of labour has eight recommendations and (4) third stage of labour has one recommendation (online supplemental file 1 lists the recommendations). For this review, we adopted the WHO definitions of indicators and quality measures.<sup>5 17 18</sup>

### Eligibility criteria

We aimed to systematically identify all studies that reported a measure related to 1 or more of the included 41 included recommendations. Primary research studies, reviews and government publications were potentially eligible. Editorials, conference abstracts, congress papers and protocols (where no primary data were presented) were not eligible.

Studies were eligible if they related to healthy pregnant women or adolescent girls in the intrapartum period, or skilled health personnel providing intrapartum care.<sup>19</sup> The WHO intrapartum care recommendations are

specifically for healthy pregnant women, defined by the WHO as ‘pregnant women and adolescent girls who have no identified risk factors for themselves or their babies, and who otherwise appear to be healthy’.<sup>5</sup> Thus, studies that described measures in the context of a population with a defined disease or risk factor (such as women with gestational diabetes) were not eligible. However, if a paper described the same measures for a distinct group of ‘healthy’ pregnant women, they were eligible. Further, as the WHO explicitly advises the implementation of the WHO recommendations as a package of care in facility-based settings,<sup>5</sup> articles reporting only on births at home or in community settings outside of health facilities were excluded. Studies from all geographical locations and of all languages were eligible. To ensure this review comprehensively mapped the existing literature, studies published from 1 January 2000 to 28 June 2021 were included.

The main outcome of interest was any measure aligned with the clinical or supportive care practices of 1 or more of the included 41 WHO intrapartum care recommendations. We included studies if the measure was clearly defined, a rationale for use was provided, and a description of the methodology for reporting or assessing the measure was specified. Individual studies were not critically appraised, as per the JBI Evidence Synthesis Manual and PRISMA-ScR methodological guidance.<sup>25 26</sup>

### Literature searching, data collection and analysis

Using predefined search strategies (online supplemental file 2), searches of MEDLINE, EMBASE, CINAHL, Cochrane Library, the Maternity and Infant Care Database, and WHO Global Index Medicus were conducted between 28 June 2021 and 2 July 2021. Two reviewers (LHV and AS) independently screened all titles and abstracts, then assessed full-text articles of all potentially eligible studies. Any disagreements during screening were resolved through discussion or consulting a third reviewer (RN or JPV). Covidence software was used for title, abstract and full-text screening.<sup>28</sup>

The search was supplemented by grey literature searching of selected websites: WHO (<https://www.who.int/>), UNICEF’s Multiple Indicator Cluster Surveys (<https://mics.unicef.org/>), the Demographic and Health Survey Program (<https://www.dhsprogram.com/>), US Agency for International Development’s MEASURE Evaluation (<https://www.measureevaluation.org/>), Countdown 2030 (<https://www.countdown2030.org/>) and EURO-PERISTAT Indicators (<https://www.europeristat.com/>). The grey literature search strategy was informed by the Canadian Agency for Drugs and Technologies in Health’s grey literature checklist.<sup>29</sup> These websites were searched for articles, publications or reports discussing intrapartum care, measures and indicators of intrapartum or maternity care, and the maternal experience of care.

A data extraction form (Microsoft Excel) was developed for this review, pilot-tested on five papers and refined. Two reviewers (LHV and RN) charted data from included

studies into the form. Data were extracted by one reviewer for each study, and we randomly sampled 20% of studies that were checked by a second reviewer, which had a high concordance rate. Data extracted included study characteristics (author, year of publication, journal, country of origin and World Bank classification, WHO region, study methodology, sample size) and characteristics of the relevant measure. Characteristics of the measures included the definition, numerator and denominator, application level of the measure (ie, whether it was measuring at woman, provider or policy level), measurement level (individual, population, facility, subnational, national, international) and measurement approach (ie, whether it was collected by questionnaire, direct observation, clinical records or other methods, as described by the authors). Measures were also classified according to the measurement categories described in the Donabedian model of healthcare quality, that is, input, output or outcome measures.<sup>18</sup> Input measures are the components (ie, physical or human resources) that are required to provide effective care, output measures are related to the process and results of delivering care, and outcome measures are the experience or consequences of receiving care.<sup>18</sup>

For each measure, the associated domain (care throughout labour and birth, first stage of labour, second stage of labour, third stage of labour), WHO recommendation number and measurement items (key elements of the recommendations, ie, dignity, privacy, continuous cardiotocography, routine episiotomy) were identified.<sup>5</sup> In a separate spreadsheet, the 41 included WHO recommendations were tabulated alongside those studies that described measures relevant to each recommendation (online supplemental file 3). Thus, for each individual WHO recommendation, we could determine whether and how many corresponding measures were published (table 1).

### RESULTS

Figure 1 depicts the PRISMA flow chart of included studies. A total of 18861 citations were identified from database searching, and a further 19 studies from grey literature searching. A total of 150 unique studies were included, published between 2002 and 2021. More studies were published in the last 10 years (2011–2021, 122 studies) compared with 10–20 years ago (2000–2010, 28 studies) (figure 2). A total of 42 studies (28.0%) were from the African region, mostly from Ethiopia (13 of 42 studies, 31.0%). The European and Americas regions each accounted for 19.3% (29 of 150 studies). Thirteen studies (8.7%) reported data from multiple geographical regions. Almost half of single-country studies (48.2%, 66 of 137 studies) were from low-income and lower middle-income countries.<sup>30</sup>

Across the 150 studies, 1331 different intrapartum care measures were identified. At least one measure was identified for 35 of the 41 included WHO intrapartum recommendations (table 1). In total, 151 (11.3%) were

**Table 1** The WHO intrapartum care recommendations, domain and number of identified measures

WHO intrapartum care recommendation	Number of measures identified N (%)
<b>Domain 1: care throughout labour and birth</b>	693 (52.1)
1. Respectful maternity care	534 (40.1)
2. Effective communication	66 (5.0)
3. Companionship during labour and childbirth	91 (6.8)
4. Continuity of care*	3 (0.2)
<b>Domain 2: first stage of labour</b>	503 (37.7)
5. Definitions of the latent and active first stage	0 (0)
6. Duration of the first stage of labour	5 (0.4)
7. Progress of the first stage of labour—partograph†	67 (5.0)
8. Progress of the first stage of labour—cervical dilatation rate†	3 (0.2)
9. Progress of the first stage of labour—augmentation†	1 (0.1)
10. Labour ward admission policy‡	5 (0.4)
11. Clinical pelvimetry on admission†	0 (0)
12. Routine assessment of fetal well-being on labour admission—routine cardiotocography†	13 (1.0)
13. Routine assessment of fetal well-being on labour admission—Doppler/Pinard auscultation	24 (1.8)
14. Perineal/pubes shaving†	18 (1.4)
15. Enema on admission†	11 (0.8)
16. Digital vaginal examination	41 (3.1)
17. Continuous cardiotocography during labour†	33 (2.5)
18. Intermittent fetal heart rate auscultation during labour	24 (1.8)
19. Epidural analgesia for pain relief	19 (1.4)
20. Opioid analgesia for pain relief	8 (0.6)
21. Relaxation techniques for pain management	26 (2.0)
22. Manual techniques for pain management	67 (5.0)
23. Pain relief for preventing labour delay†	0 (0)
24. Oral fluid and food	45 (3.4)
25. Maternal mobility and position	61 (4.6)
26. Vaginal cleansing†	3 (0.2)
27. Active management of labour†	1 (0.1)
28. Routine amniotomy†	12 (0.9)
29. Early amniotomy and oxytocin†	5 (0.4)
30. Oxytocin for women with epidural analgesia†	1 (0.1)
31. Antispasmodic agents†	0 (0)
32. Intravenous fluids for preventing labour delay†	10 (0.8)

Continued

**Table 1** Continued

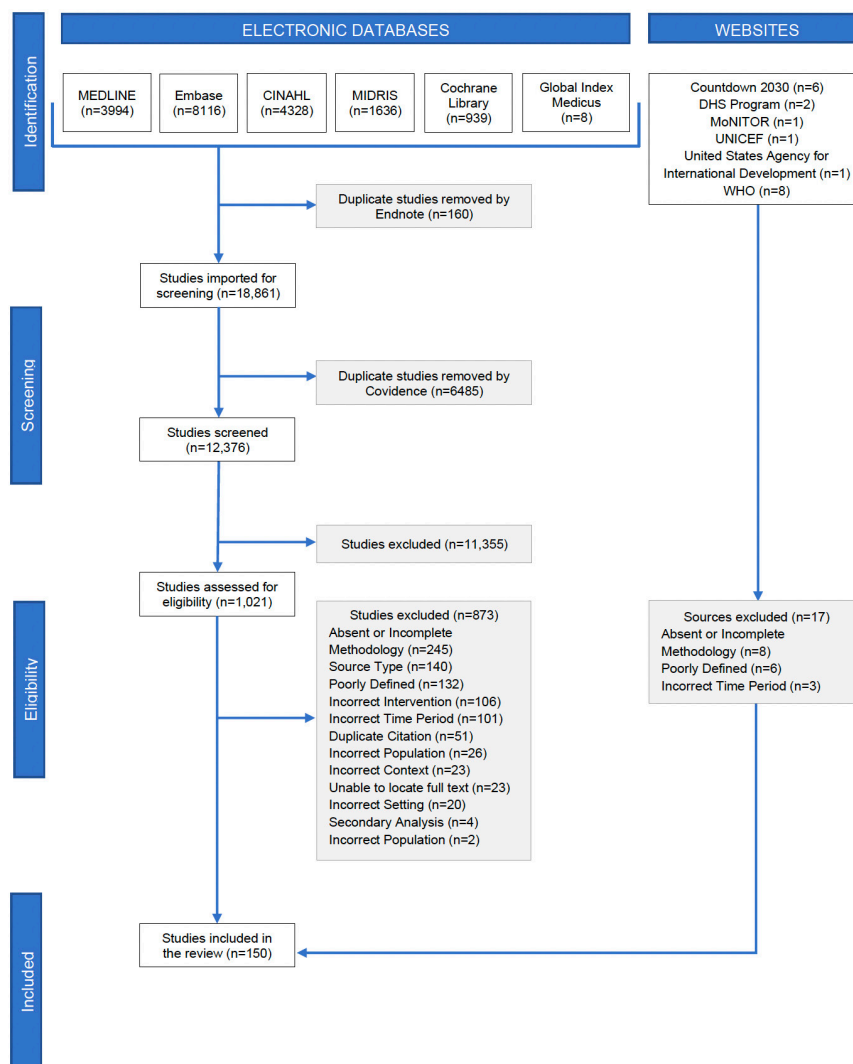
WHO intrapartum care recommendation	Number of measures identified N (%)
<b>Domain 3: second stage of labour</b>	95 (7.3)
33. Definition and duration of second stage of labour	0 (0)
34. Birth position (for women without epidural analgesia)	36 (2.7)
35. Birth position (for women with epidural analgesia)	0 (0)
36. Method of pushing	8 (0.6)
37. Method of pushing (for women with epidural analgesia)*	4 (0.3)
38. Techniques for preventing perineal trauma	11 (0.8)
39. Episiotomy policy†	21 (1.6)
40. Fundal pressure†	15 (1.1)
<b>Domain 4: third stage of labour</b>	39 (2.9)
44. Delayed umbilical cord clamping	39 (2.9)

\*These recommendations are only recommended by the WHO in specific settings or among specific populations.<sup>5</sup>  
†These recommendations are 'not recommended' by the WHO; thus, the recommendation should not be implemented.<sup>5</sup>  
‡This recommendation is only recommended by the WHO if supported by rigorous research.<sup>5</sup>

input measures, 1152 (86.6%) were output measures and 28 (2.1%) were outcome measures (table 2). A total of 763 measures (57.3%) were measured at the woman level, such as whether the woman had a birth companion present or if they were provided with pain relief upon request. A total of 536 measures (40.3%) were measured at the provider level, such as the performance of auscultation or fundal pressure by the care provider during labour. A total of 32 measures (2.4%) were measured at a policy level, which included measures regarding the presence or absence of available hospital policies for common practices, such as maternal position during birth or the timing of umbilical cord clamping.

Most measures were measured at a facility level (795 of 1331 measures, 59.7%). For provider-level measures, direct observation of the clinical care provided during labour and birth was the most common measurement approach (45.7%, 245 of 536 measures). However, for woman-level and policy-level measures, data collection via questionnaire was the most common measurement approach: (woman level: 25.7%, 196 of 763 measures; policy level: 59.4%, 19 of 32 measures).

More than half of the measures identified (693 of 1331 measures, 52.1%) related to the care throughout labour and birth domain, followed by the first stage of labour (37.7%, 503 of 1331 measures), second stage of labour (7.3%, 95 of 1331 measures) and third stage of labour (2.9%, 39 of 1331 measures) (table 1). Respectful maternity care (recommendation 1) had the largest number



**Figure 1** Preferred Reporting Items for Systematic Reviews and Meta-Analyses flow chart of literature screening process.

of measures (534 of 1331 measures, 40.1%) of any single recommendation. The most common measure items were informed choice (9.5%, 127 of 1331 measures), dignity (8.9%, 118 of 1331 measures), and mistreatment or abuse (8.5%, 113 of 1331 measures) (online supplemental file 4). Most studies reporting measures of respectful maternity care were published in the 10 years between 2012 and 2021 (63 of 71 studies, 88.7%), with 35.2% (25 of 71 studies) published after 2018.

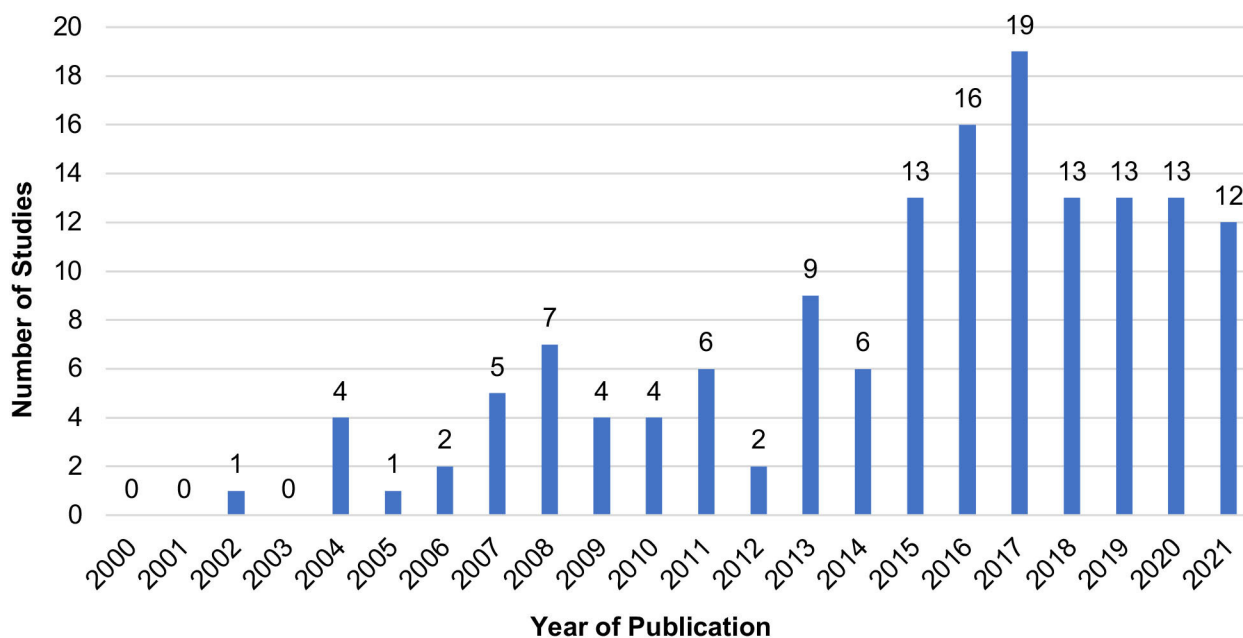
No measures were identified for 6 of the 41 included WHO recommendations. Of these, four were recommendations for the first stage of labour (definitions of the latent and active first stages of labour, clinical pelvimetry on admission, pain relief for preventing labour delay, antispasmodic agents), and two were recommendations for the second stage of labour (definition and duration of the second stage of labour, birth position).

Eighteen of the 41 WHO intrapartum recommendations describe intrapartum care practices that the WHO does not recommend implementing, due to evidence the practice is harmful or has limited benefit. Of these,

15 'not recommended' clinical practices accounted for 19.9% of all measures (265 of 1331 measures). The most frequent related to the cervical dilatation rate (5.0%, 67 of 1331 measures) and continuous cardiotocography during labour (2.5%, 33 of 1331 measures). No measures were identified for the 'not recommended' clinical practices related to clinical pelvimetry on admission (recommendation 11), pain relief for preventing labour delay (recommendation 23) and antispasmodic agents (recommendation 31).

## DISCUSSION

We conducted a scoping review of all measures published between 2000 and 2021 that related to the WHO's 2018 intrapartum care recommendations for a positive child-birth experience. We identified 150 studies using 1331 different measures, corresponding to 35 of the 41 included WHO recommendations. The majority were output measures, and there was considerable variability among



**Figure 2** Number of studies per publication year (2000–2021).

**Table 2** Intrapartum care measures by measurement approach, measurement level and Donabedian classification

	Measurement approach, measurement level or measure classification	Number of measures Identified N (%)
Measurement approach	Questionnaire/survey	522 (39.2)
	Direct observation	368 (27.6)
	Data from medical/clinical records	107 (8.0)
	Patient or care provider interview	76 (5.7)
	Multiple methods*	189 (14.2)
	Not specified	69 (5.2)
Measurement level	Individual	133 (10.0)
	Facility	795 (59.7)
	Subnational	130 (9.8)
	Population	2 (0.15)
	National	61 (4.6)
	International	56 (4.2)
	Multiple levels†	154 (11.6)
Donabedian classification <sup>18</sup>	Input measure	151 (11.3)
	Output measure	1152 (86.6)
	Outcome measure	28 (2.1)
All measures	Total	1331 (100)

\*Measures were measured using two or more of the following methods: direct observation, questionnaire, survey, data from medical/clinical records, patient or care provider interview.  
†Measures were applied at two or more of the following measurement levels: individual, facility, subnational, national.

measures with respect to measurement approaches and at what level they were measured (table 2).

The WHO highlights that the *Standards for improving maternal and newborn care in health facilities* are the appropriate foundation for developing measures corresponding to the WHO recommendations.<sup>18</sup> Currently, there is no clear consensus on a core set of measures for evaluating implementation of the WHO's intrapartum care recommendations. Thus, this database of measures is a critical next step to informing further development of recommendation-specific standardised measures. Further, classification according to the Donabedian model highlighted the uneven distribution of measures across the metric categories. This provides additional direction for measure development, noting that having measures span the metric categories strengthens a measurement framework.<sup>31</sup> Our review revealed that respectful maternity care accounted for 40.1% of all measures, the greatest proportion of any recommendation identified. The substantial growth in the field of respectful maternity care and measuring women's experiences in maternity services is likely to have contributed to this.<sup>8 32</sup> While more attention on these issues is welcomed, the diversity of measures identified for respectful maternity care reflects a lack of consensus regarding the most appropriate measures of, and methods for, measuring respectful maternity care.<sup>32 33</sup> For example, one included study regarded both labour observation and postpartum surveys as accurate and effective approaches to measure the prevalence of mistreatment of women during childbirth.<sup>33 34</sup>

Contrastingly, some recommendations (routine assessment of fetal well-being on labour admission, perineal/public shaving, fundal pressure) were represented by a small number of studies in the scoping review, which

**Table 3** Illustrative example of three measures for each WHO care domain

WHO intrapartum care domain and recommendation	Definition	Numerator	Denominator
Domain 1: care throughout labour and birth Recommendation 3: a companion of choice is recommended for all women throughout labour and childbirth	Percentage of clinical records for normal vaginal births with documentation of a support person being present during labour <sup>39</sup>	Number of clinical records for normal vaginal births noting that a support person was present	Number of clinical records for normal vaginal births
	Percentage of women who had a labour companion present <sup>40</sup>	Number of women with a labour companion present during labour and delivery	Number of women having a spontaneous vaginal birth
	Percentage of women who were refused a birth companion <sup>41</sup>	Number of women who report the staff did not allow them have a companion at birth	Number of women who did not have a birth companion present at birth
Domain 2: first stage of labour Recommendation 24: for women at low risk, oral fluid and food intake during labour are recommended	Percentage of women with restricted oral intake during labour and delivery <sup>42</sup>	Number of women whose oral intake was restricted/prohibited during labour and delivery	Number of women observed during labour and delivery
	Percentage of women who were encouraged from eating and drinking during labour <sup>43</sup>	Number of women who were encouraged by care providers to eat or drink during labour	Number of labours/deliveries observed
	Percentage of women encouraged to eat and drink during delivery <sup>44</sup>	Number of women who were allowed to eat and drink during delivery	Number of women observed during delivery who wanted to eat and drink during labour
Domain 3: second stage of labour Recommendation 40: application of manual fundal pressure to facilitate childbirth during the second stage of labour is not recommended	Percentage of women who received manual pressure during the second stage <sup>45</sup>	Number of women who were received manual pressure (of the uterus) during the second stage	Number of women with intended spontaneous vaginal delivery who gave birth in the maternity unit
	Percentage of women who report they experienced pushing on their abdomen during labour <sup>46</sup>	Number of women who report that their care provider(s) pushed on their abdomen during labour	Number of women who attempted to give birth vaginally at the health facility
	Percentage of care providers who applied manual fundal pressure in order to hasten delivery <sup>43</sup>	Number of providers who applied manual fundal pressure in order to hasten delivery	Number of maternity care providers observed providing delivery care
Domain 4: third stage of labour Recommendation 44: delayed umbilical cord clamping (not earlier than 1 min after birth) is recommended	Percentage of deliveries where clamping of the umbilical cord was performed immediately (0–29s after birth) <sup>47</sup>	Number of deliveries where the umbilical cord was clamped immediately, performed 0–29s after birth	Number of deliveries observed
	Percentage of health facilities where providers did not tie or clamp the umbilical cord immediately <sup>48</sup>	Number of health facilities where providers did not tie or clamp the umbilical cord immediately	Number of health facilities performing intrapartum care observed
	Percentage of newborns who received delayed cord clamping (after 1 min) <sup>49</sup>	Number of newborns observed where the umbilical cord clamping was delayed clamping (>1 min after birth)	Number of women observed who received intrapartum care in a health facility

used one or few measures. A few hypotheses that might explain this include (1) possible consensus on the most useful measures for these recommendations, (2) these are comparatively less complex to measure than women's experiences of respectful care or (3) possible overlooked areas that warrant further research. Further research to converge and validate a reliable set of measures for respectful maternity care, as well as other recommendations with a wide range of measures, including labour companionship and non-pharmacological techniques for pain management, is a logical next step.

A major challenge in this review was accounting for subtle differences in definitions and phrasing of

numerators and denominators between measures. Nuances in language, the use of synonyms, differences in measurement approaches, or slight differences in numerator or denominator populations meant that many measures were similar, but not identical, which limits comparison across studies and contexts. For example, the six output measures related to oral food and fluid intake (recommendation 24) were all measured by direct observation, yet differed in language ('encouraged' vs 'allowed'), alternately described behaviours or practices as 'encouraged' or 'restricted/prohibited', or used different denominator definitions (table 3).



These linguistic and measurement nuances can complicate efforts to harmonise and compare maternal and newborn health indicators.<sup>23</sup> In some instances, measures identified in different studies were derived from the same indices or scoring frameworks. In these cases, the relevant tool (eg, Bologna Score or QoPIIPC Index) was reported alongside the report characteristics. In situations where two or more measures were very similar but would be applied or interpreted differently, we defined them as different measures. As argued by Lattof *et al* in their 2019 scoping review on antenatal care measures, these measures are most useful when they are validated and reliable, but also standardised in terms of definition, method and level of data collection.<sup>35</sup> Achieving such a core set of measures, potentially by adopting an approach similar to core outcome set development performed for clinical trials, would allow comparability of data on intrapartum care practices across facilities, countries and time points, in addition to reducing inconsistencies in measurement and reporting bias.<sup>36</sup> Additionally, this may strengthen global data systems by providing a consensus-based framework for global intrapartum care measurement. Further, this set of measures would serve to identify bottlenecks to improving quality of care, and determine whether new intrapartum care policies are having an effect on maternal and newborn health.

Questionnaires or surveys were the most common measurement approaches used (522 of 1331 measures, 39.2%). This aligns with a 2016 literature review by Tripathi which identified interviews or surveys of facility staff, and data from medical records and databases as the most common measurement approaches for quantitative intrapartum care measures.<sup>37</sup> Further, in their 2020 scoping review, Larson *et al* reported self-administered or interviewer-administered questionnaires as the most common measurement approach for quantitative measures assessing women's experiences of pregnancy and childbirth.<sup>32</sup>

Our scoping review did not identify measures for six recommendations. Of these, two recommendations outline definitions for the first and second stages of labour.<sup>5</sup> The lack of literature reporting measures related to these definitions may be due to a historical lack of consensus about definitions of labour onset and duration.<sup>38</sup> A further three recommendations (clinical pelvimetry on admission, pain relief for preventing labour delay and antispasmodic agents) are for practices not recommended by the WHO—the absence of literature on reporting measures may reflect they are not prioritised in monitoring and evaluation activities. It may nonetheless be relevant to measure these practices, particularly if they can cause avoidable harm.

### Strengths and limitations

Strengths of this review include the use of a prespecified review protocol, a broad and comprehensive search strategy (including grey literature), duplicate eligibility screening and random-sample data checking.

Nonetheless, we acknowledge some limitations. Twenty-three studies could not be located despite extensive searching and contacting authors. While the final results may differ if these studies were included, this difference is likely to be modest given the large number of studies in the review. As previously described, it was difficult to make judgements on the degree of difference between measures that used similar but not identical definitions.

Scoping reviews do not generally assess the quality of individual studies; however, it is possible that lower-quality studies may be poorer in terms of definitions of measures and measurement approaches. We plan to conduct additional analyses of this database to explore possible differences in the validity and reliability of the intrapartum care measures we identified.

### CONCLUSION

The global ambition to deliver woman-centred intrapartum care that optimises the woman's health outcomes and experience of labour and childbirth relies on the effective implementation and measurement of evidence-based intrapartum care. Some recommendations, such as respectful maternity care, have a wide range of measures currently in use, highlighting the need to reach a consensus on what measures and methods should be used to evaluate implementation of supportive care during labour and childbirth. This review provides the evidence base from which a core set of reliable, valid intrapartum care measures can be developed for use internationally.

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