Research Article

WHO Labour Care Guide versus WHO Modified Partograph: A Narrative Review of Evidence, Clinical Utility, and Implementation Challenges

Dr. Seetesh Ghose[1], Dr. Nidhi Chaudhary[2], Dr. Inlo Miuli[3], Dr. Pallavee P[4]

[1]Professor, O&G Department of Obstetrics and Gynaecology, Mahatma Gandhi Medical College and Research Institute, Sri Balaji Vidyapeeth, Puducherry, 607402, MGMCRI, Pilliyarkuppam, Puducherry – 607402, Email: seetesh@mgmcri.ac.in, Phone No: 944432 44630, ORCID-0000-0002-2465-555X
[2]Junior resident, Department of Obstetrics and Gynaecology, Mahatma Gandhi Medical College and Research Institute, Sri Balaji Vidyapeeth, Puducherry, 607402
[3]Assistant Professor, Department of Obstetrics and Gynaecology, Mahatma Gandhi Medical College and Research Institute, Sri Balaji Vidyapeeth, Puducherry, 607402
[4]Professor , Department of Obstetrics and Gynaecology, Mahatma Gandhi Medical College and Research Institute, Sri Balaji Vidyapeeth, Puducherry, 607402

Abstract

Background: Effective intrapartum monitoring is vital for identifying abnormal labour and enabling timely interventions to reduce maternal and perinatal morbidity. The WHO Modified Partograph has been widely used for decades. The WHO Labour Care Guide (LCG), released after WHO's 2018 intrapartum care recommendations, was developed to address limitations of earlier tools and to promote respectful, individualized care. Comparative evidence on clinical outcomes, usability, and implementation is growing but remains limited.

Objective: To synthesize and appraise published evidence comparing the WHO LCG with the WHO Modified Partograph, focusing on clinical utility, detection performance (e.g., prolonged/obstructed labour), user experience, and implementation challenges—particularly in low-resource settings.

Methods: A narrative review searched major databases, WHO and NGO guidance sites, and grey literature using terms such as "Labour Care Guide," "WHO LCG," "modified partograph," "intrapartum monitoring," and "labour outcomes." Eligible reports comprised randomized and non-randomized studies, systematic reviews, implementation evaluations, and guideline documents assessing performance, outcomes, or implementation of either tool.

Results: Both tools monitor labour progress and maternal–fetal well-being but differ structurally and operationally: the LCG defines active labour from 5 cm, omits traditional alert/action lines, explicitly documents second-stage monitoring, and emphasizes respectful, individualized care; the Modified Partograph typically starts at 4 cm and uses alert/action lines. Some studies report higher detection rates of prolonged/obstructed labour with the LCG, while earlier studies and programmatic reports associate correct partograph use with reduced prolonged labour and fewer operative births. Systematic reviews underscore limited high-quality evidence and variable effects dependent on fidelity of use. Common implementation barriers include insufficient training, perceived documentation burden, interpretation challenges, and resource constraints. Comparative randomized trials and robust implementation research are scarce.

Conclusions: The LCG introduces meaningful conceptual and practical changes that may enhance detection of abnormal labour and patient experience, but current evidence does not conclusively show superior maternal or neonatal outcomes over the Modified Partograph. Priorities are rigorous comparative trials, pragmatic implementation research, focused training and user supports, and context-adaptation guidance.

Keywords: Intrapartum monitoring, partograph, WHO, maternal outcomes, respectful maternity care.

1. Introduction

Globally, maternal mortality continues to represent a profound public health challenge: an estimated 287,000 women died in 2020, and approximately 260,000 in 2023, as a result of complications that occurred during pregnancy, childbirth, or in the postpartum period (1). A substantial proportion of these deaths are considered avoidable, often preventable when women receive timely, appropriate intrapartum care that can identify and address complications as they arise (2). In the Indian context, national estimates show an encouraging downward trend in the maternal mortality ratio—declining from 130 maternal deaths per 100,000 live births in 2014–2016 to 97 per 100,000 live births in 2018–2020—yet maternal mortality remains a pressing concern, particularly in rural, remote, and otherwise underserved communities where access to quality care is uneven (3,4).

These persistent burdens highlight specific shortcomings in the provision of intrapartum care. Gaps such as delayed recognition of abnormal labour patterns, insufficiently individualized clinical management, inconsistent monitoring practices, and variability in the timeliness of interventions contribute to suboptimal outcomes for

mothers and newborns. Such deficiencies underscore the need for reliable, user-friendly monitoring tools and structured approaches that support frontline staff in early identification of problems and in making appropriate, timely clinical decisions. Intrapartum care—defined as the care given to women while they are in labour and during childbirth—therefore occupies a pivotal role in safeguarding the health and well-being of both mother and infant. High-quality intrapartum care encompasses systematic and timely monitoring of labour progress and maternal–fetal well-being, the availability and application of appropriate clinical interventions when indicated, and the provision of respectful, person-centred maternity care that maintains dignity and supports women's preferences and needs (5).

Historically, labour monitoring across many settings has relied on instruments such as the World Health Organization's modified partograph, which was designed to provide a visual record of labour progress and to alert providers to deviations from expected patterns. Over time, however, evolving evidence and guidance on intrapartum management prompted the development of updated tools aimed at overcoming recognized limitations of the partograph. In response to those concerns, the WHO introduced the Labour Care Guide (LCG), a re-envisioned labour-monitoring instrument intended to address weaknesses in the older tool and to place greater emphasis on woman-centred care during labour (6).

Despite international efforts to disseminate and implement evidence-based intrapartum monitoring strategies, important inequities remain in the quality, consistency, and outcomes of care delivered across different health systems and facility types. These disparities reflect differences in training, staffing levels, resource availability, and the practical usability of monitoring instruments in real-world clinical settings (7). The WHO Modified Partograph, while long established and familiar in many places, has shown uneven utilization and, in some environments, a limited impact on improving clinical outcomes; practitioners have reported challenges with its interpretation, difficulties integrating it into routine workflows, and variability in how it is completed and acted upon (8). The Labour Care Guide was therefore developed not only to standardize clinical monitoring more effectively but also to improve the childbirth experience by emphasizing respectful, woman-centred practices alongside clinical decision support (9).

Early, preliminary studies and observational reports suggest that using the LCG may be associated with better maternal satisfaction and more timely clinical interventions in certain contexts; however, the evidence base remains limited. Rigorous, high-quality randomized comparative trials that directly evaluate the effectiveness of the LCG against the WHO Modified Partograph are scarce, and this lack of robust comparative data is particularly apparent within the Indian setting, where local health system factors may influence both implementation and outcomes (6,10). Given these evidence gaps and the changing landscape of intrapartum care guidance, there is a clear need for methodologically sound research to compare these tools. The present review therefore seeks to find out the current evidence related to clinical utility, and implementation challenges using the WHO Labour Care Guide versus the WHO Modified Partograph. This can inform practice, training, and policy decisions (11).

Methods

We conducted an extensive and systematic literature search across several major bibliographic databases—PubMed, Embase, the Cochrane Library, Web of Science, and Google Scholar—to maximize retrieval of relevant studies on intrapartum care tools and their implementation. To further ensure comprehensive coverage, we performed supplementary hand-searching of the reference lists of all articles that met our inclusion criteria, capturing additional evaluations or related reports that might not have been indexed in the primary databases. The electronic search strategy combined key concept terms for labour management tools with outcome and implementation-related terms and with terms describing the intrapartum period. Specifically, the search string incorporated synonyms and variations such as ("Labour Care Guide" OR "WHO LCG" OR "LCG") OR ("modified partograph" OR "WHO modified partograph" OR partograph OR "paperless partograph"), and these were combined with outcome/implementation descriptors and with intrapartum-related terms (intrapartum OR labour

OR labor OR "labour monitoring" OR "intrapartum monitoring" OR "labour progress") to identify studies addressing either the effectiveness or the practical application of these monitoring tools.

The timeframe for study inclusion spanned publications from January 2005 through December 2025, establishing a defined and contemporary window for the literature reviewed. We restricted our selection to peer-reviewed material that provided primary data or systematic synthesis: original research articles, randomized and non-randomized clinical trials, systematic reviews, and meta-analyses that focused on labour management and reported outcomes or implementation experiences related to the tools of interest. To maintain clarity and consistency for the review team, we included only studies published in English. We excluded editorials and commentaries that did not present primary data, conference abstracts without available full-text reports (unless adequate data were publicly accessible), and any studies that did not report outcomes pertinent to the Labour Care Guide or the modified partograph.

Following screening and application of these criteria, thirty pieces of literature were identified as meeting the inclusion requirements and were included in the review. For each included study, we used a standardized data extraction form created specifically for this review to systematically collect relevant information. Fields on the template captured study design, setting, population characteristics, details of the monitoring tool evaluated, measured outcomes (clinical, process, or experiential), implementation or training components, and key findings or conclusions. Use of a consistent extraction instrument helped ensure comparability across studies and reduced the risk of omission or bias in capturing study details.

Extracted information was synthesized using a narrative approach. This descriptive synthesis emphasized identifying recurring patterns across studies, highlighting gaps in the existing evidence base, and drawing out emerging themes related to the practicality, acceptability, and reported impacts of the different labour monitoring tools. Given the heterogeneity of study designs, outcome measures, and contexts represented in the included literature, we did not undertake quantitative meta-analysis or statistical pooling; instead, the review was intentionally positioned as a qualitative, descriptive synthesis aimed at mapping the state of evidence rather than producing aggregated quantitative estimates.

Evolution of partograph:

Friedman's Cervicograph:

In 1954 Friedmann devised a cervicograph that plotted cervical dilatation (cm) against time (hours) (Fig. 1). This graph divided labour into a latent phase (up to 3 cm dilatation), an active/acceleration phase marked by the steepest slope (from 3 cm to full dilatation), and a deceleration phase (12). A drawback of this cervicograph was that it did not incorporate fetal or other maternal factors. In 1969 Hendricks et al. reported the absence of a deceleration phase in many labours and argued that labour progression is highly individualized; they recommended assessing cervical dilatation together with fetal station rather than relying on time alone to guide interventions (13).

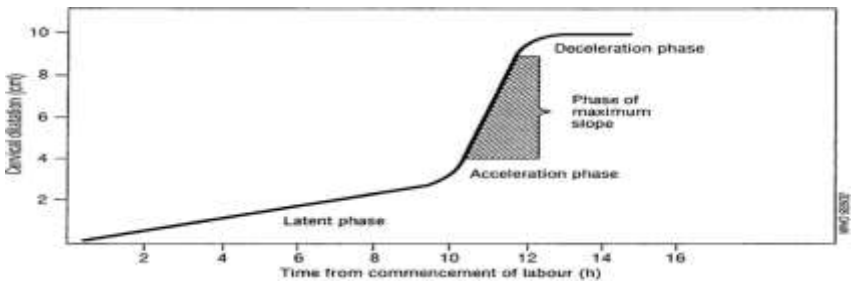


Figure 1: Friedman's Cervicograph showing phases of labour (12)

The Partograph:

In 1972 Philpott et al. developed the composite partograph to monitor labour progress and help prevent prolonged labour and its complications. This tool included maternal and fetal elements—uterine contractions, cervical dilatation, maternal vitals, descent of the fetal head, fetal heart rate, and use of medications—laying the groundwork for graphical intrapartum monitoring (5). The World Health Organization later modified this tool in 1994 (Fig. 2), adding "alert" and "action" lines to prompt timely interventions.

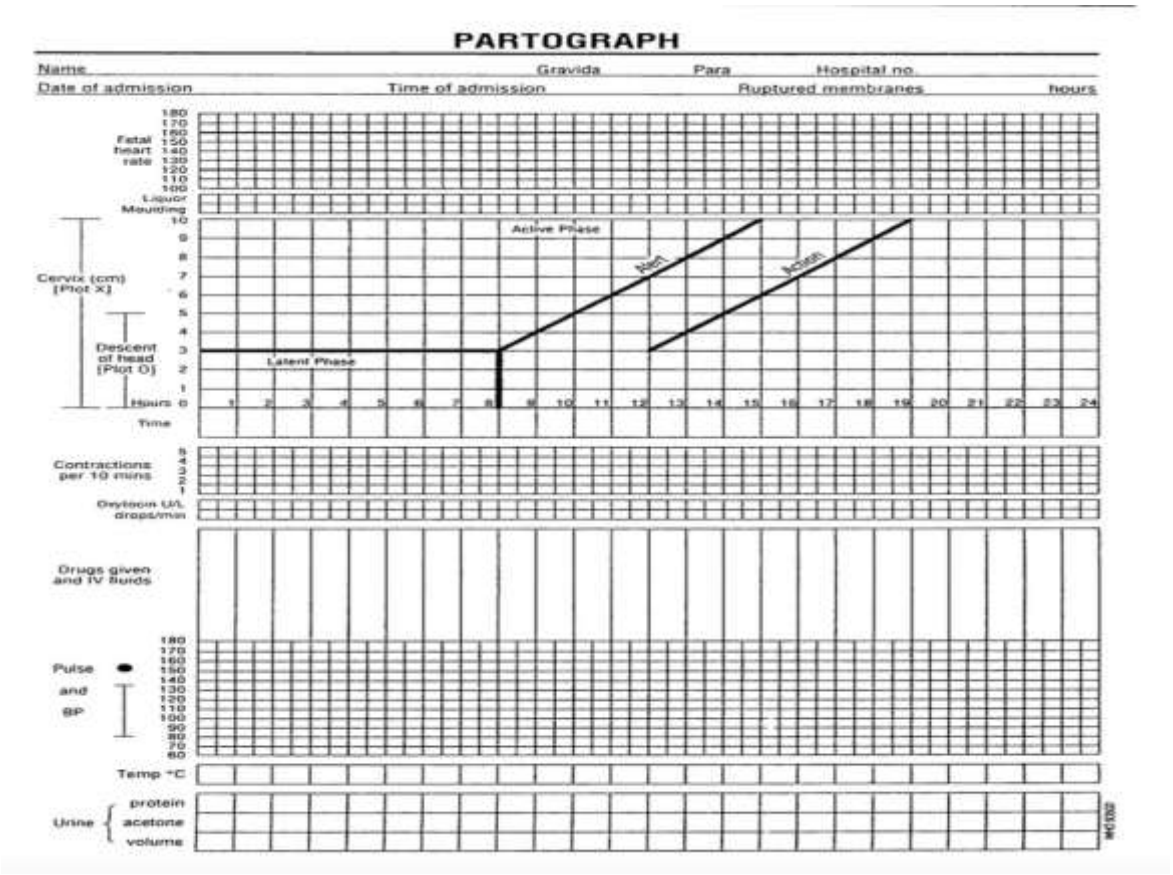


Figure 2: The WHO Partograph (12)

The WHO Modified Partograph:

Because the latent phase recorded in the WHO partograph was highly variable and often led to unnecessary interventions, the WHO Modified Partograph (1994) excluded the latent phase, set a cervical dilatation cut-off at 4 cm, and was applied to all labouring women to reduce prolonged labour and improve outcomes (2,14–16). The WHO Modified Partograph is a simplified instrument for tracking labour progression using cervical dilatation, descent of the fetal head, uterine contractions, fetal heart rate, and maternal vital signs, with alert and action lines to indicate when interventions are needed (14). It is organized into three sections: the upper (fetal) section—used

to record fetal heart rate with dots and to note amniotic fluid and moulding; the middle section—shows cervical dilatation against time with two diagonal lines (alert and action); and the lower section—records maternal conditions such as contractions, oxytocin use, medications, pulse, blood pressure, temperature, urine protein, urine volume, and urine acetone (8). Introduced as a graphical representation of key labour parameters (Fig. 3), the WHO Modified Partograph has long been a standard for monitoring labour and for early detection of dystocia. However, it has limitations, including insufficient emphasis on maternal well-being and nonclinical aspects of care. Studies have reported variable use and interpretation across settings, leading to inconsistent outcomes and indicating a need for further modification (17).

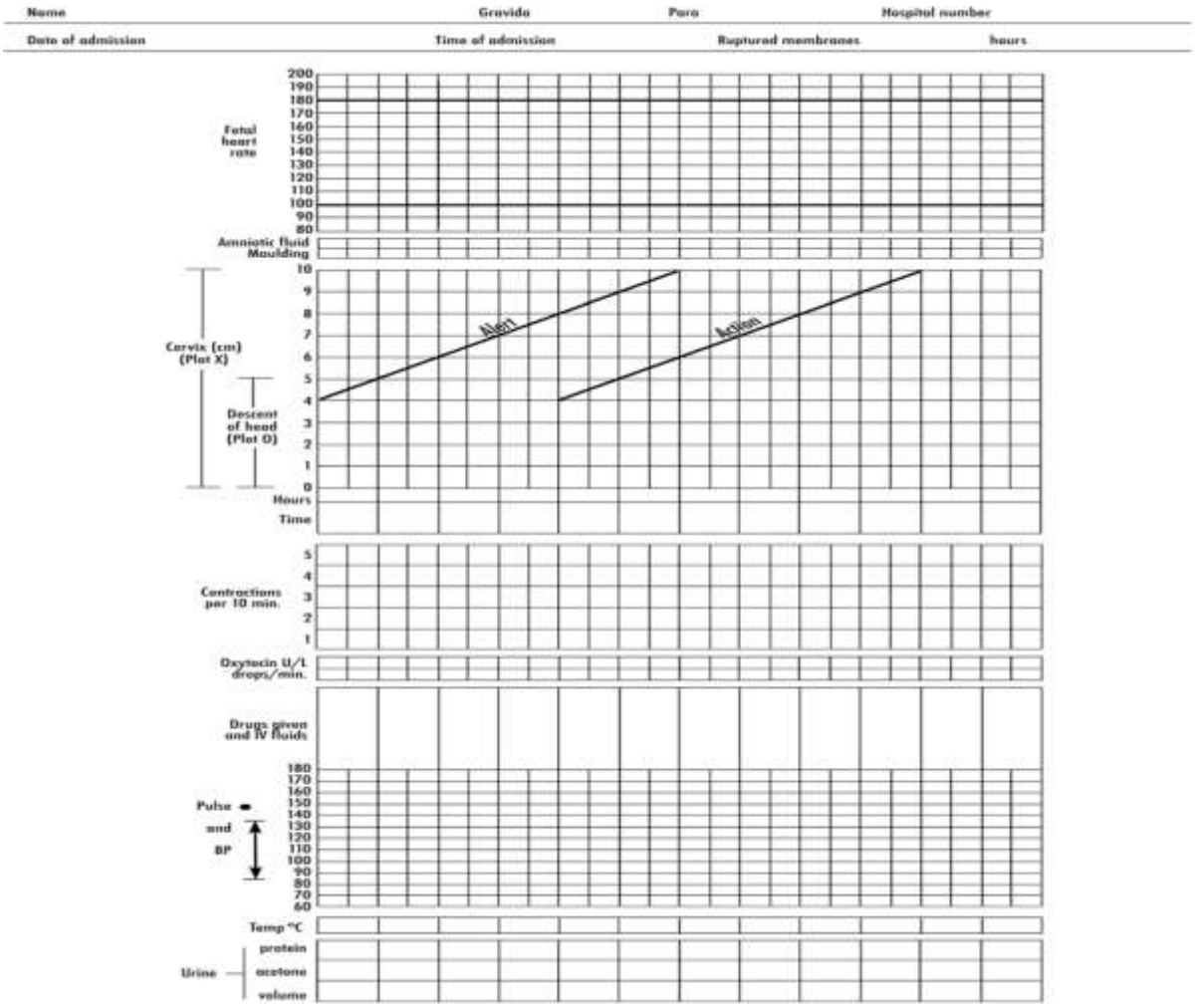


Figure 3: WHO Modified Partograph 14

WHO Labour Care Guide (LCG):

The WHO Labour Care Guide, introduced in 2020, is an evidence-based tool intended to promote a more holistic approach to labour monitoring as part of a new intrapartum care model aimed at improving quality of care and positive childbirth experiences (18). The LCG replaces the alert and action lines with evidence-based reference

thresholds and emphasizes woman-centred care. It comprises eight sections covering clinical and nonclinical components, including maternal well-being, supportive care, and fetal monitoring (19,20). According to WHO (2020), the LCG aligns with the 2018 WHO intrapartum care model that stresses respect, communication, and emotional support (18). Vogel et al. outlined the rationale for the LCG, noting that it integrates current WHO intrapartum recommendations, moves away from fixed time-based thresholds, and promotes woman-centred, respectful care practices (6,20). In addition to prompting regular clinical observations to detect emerging problems in mother or infant, the LCG provides a way to document crucial supportive care activities—such as labour companionship, birth position, pain management, and maternal mobility—which can improve childbirth experience and outcomes compared with the conventional partograph. WHO also notes that the LCG includes new reference thresholds and alerts for unusual labour observations intended to trigger specific actions (18) (Fig. 4). Key recommendations associated with the LCG emphasize timely decision-making, improved documentation, and individualized, respectful maternity care, shifting away from the rigid timelines of the partograph to allow for physiological variations in labour (20).

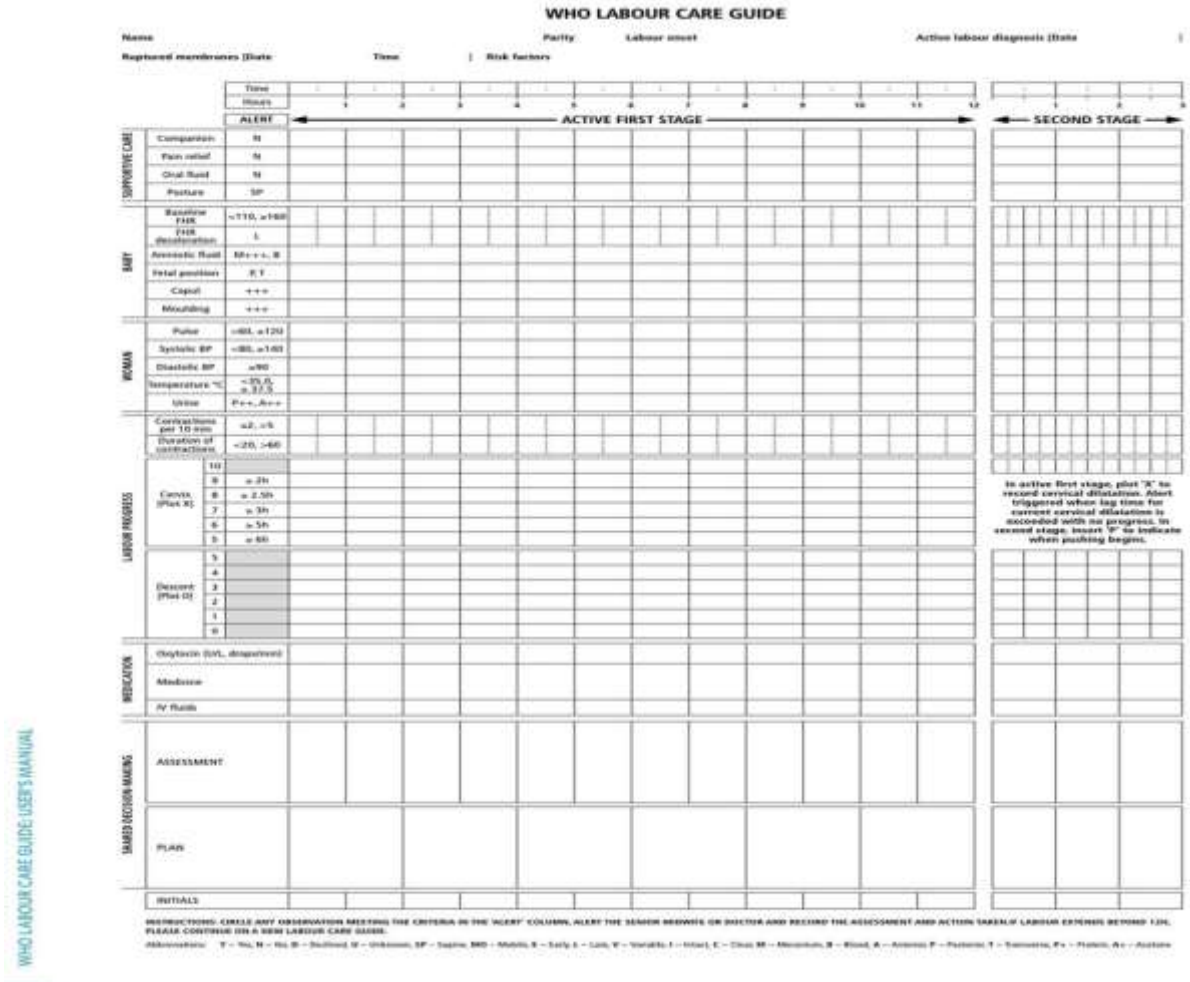


Figure 4: WHO Labour Care Guide8

Studies Evaluating the WHO Modified Partograph:

Mathai et al. (2009) highlighted the role of the WHO Modified Partograph in improving intrapartum decision-making, particularly in resource-constrained settings, and reported associations between partograph use and lower rates of prolonged labour, obstructed labour, and unnecessary cesarean sections (21). A 2018 study of primigravida women in labour by Niveditha et al. found that active labour management using the WHO partograph substantially reduced the duration of the first active stage, the second stage, and overall labour, although cesarean section rates did not change (22). Lavender et al. (2018) noted that the partograph remains valuable but that its effect on maternal and neonatal outcomes depends on how well it is applied; in a Cochrane review they concluded that despite widespread promotion of the tool, high-quality evidence for its benefit is limited and further research is needed (23). Use of the partograph has been linked to fewer prolonged labours, reduced cesarean sections, and lower maternal morbidity. However, Opiah et al. reported suboptimal utilization and gaps in knowledge among obstetric caregivers in Nigeria, indicating that effectiveness depends on adequate training and proper implementation (17). Studies by Opiah et al. and Mathai et al. showed reductions in maternal morbidity, fewer prolonged labours, and improved perinatal outcomes with partograph use (17,21). Panchal et al. (2021) also found the partograph useful in reducing maternal and neonatal complications and in enabling early detection and monitoring of abnormal labour, thereby preventing maternal mortality and morbidity (24).

Studies Evaluating the WHO LCG:

Research by Vogel et al. and Adjie et al. demonstrated that implementation of the LCG is feasible and acceptable and can improve clinical outcomes, including lower cesarean rates and better documentation (20,25). Vogel et al. assessed feasibility and acceptability among midwives and obstetricians, finding that initial training was required but that users considered the LCG more comprehensive and supportive of respectful, individualized care (6).

Comparative Studies Involving Both WHO LCG and WHO Modified Partograph / Paperless Partograph:

A randomized trial by Pandey et al. comparing the LCG with the modified partograph reported greater maternal satisfaction and fewer unnecessary interventions—particularly a reduction in primary cesarean deliveries—in the LCG group, while maternal complications, hospital stay duration, and Apgar scores were similar between groups; they also observed higher rates of spontaneous vaginal delivery with the LCG, attributing this to more individualized, evidence-based monitoring (9). Vogel et al. reported better neonatal outcomes and timelier interventions with the LCG, along with improved documentation, decision-making, and emphasis on respectful maternity care (26). Mugyenyi et al. found that LCG use improved maternal satisfaction, reduced unnecessary interventions, and enhanced intrapartum support without compromising safety; LCG uptake required training but was well received by healthcare workers. They observed increases in cesarean section rates, labour augmentation, 5-minute Apgar scores, and tool completion rates, with no differences in stillbirths, maternal deaths, postpartum haemorrhage, or uterine rupture (27). In a prospective interventional study, Rao et al. compared the WHO LCG with a paperless partograph in a tertiary care setting and concluded that the paperless partograph required less training and expertise, making it practical in high-volume, understaffed settings; both approaches were effective in preventing protracted labour and related complications (28).

Comparison of WHO Labour Care Guide and WHO Modified Partograph — Similarities and Differences:

Both tools are intended to monitor labour progression and guide clinical decisions. The LCG, however, explicitly incorporates respectful care and encourages active involvement of the woman, taking maternal preferences and comfort measures into account—features not emphasized in the modified partograph (26,27,29). Comparative studies suggest the LCG is associated with improved maternal experience, better communication among health

workers, and more individualized care (25). Nevertheless, larger randomized trials are needed to confirm these findings. (Tab.

Table 1: Salient features of WHO labour care guide and WHO modified partograph

Feature/Aspect	WHO Labour Care Guide (LCG)	WHO Modified Partograph	Similarities
Purpose	Monitors labour progress, maternal/fetal well-being, supports decision-making	Monitors labour progress, maternal/fetal well-being, supports decision-making	Both are labour monitoring and decision tools
Structure/ Sections	Seven sections: admission, supportive care, maternal/fetal care, progress, medication, shared decision-making	Focuses on progress (alert/action lines), maternal/fetal status	Both record maternal and fetal parameters
Start of Active Labour	Begins at 5 cm cervical dilatation, no alert or action line	Traditionally begins at 4 cm cervical dilatation. Alert and action line present for decision making.	Both track active phase of labour
Second Stage of Labour	Monitoring is documented	Not documented	-
Evidence Based Updates	Developed from 2018 WHO intrapartum care recommendations; emphasizes respectful, individualized care	Based on earlier WHO guidelines; less emphasis on individualized care	Both are WHO-endorsed, evidence-based
Detection of Prolonged/ Obstructed Labour	Higher detection rates for prolonged/obstructed labour	Lower detection rates compared to LCG	Both aim to identify abnormal labour
Impact on Outcomes	No significant difference in maternal/perinatal outcomes in some studies	Similar outcomes to LCG in some studies	Both effective in outcome identification
User Experience	More detailed, requires training, supports shared decision-making	Simpler, more familiar to many providers	Both require provider engagement
Implementation	Newer, being adopted globally; requires adaptation and training	Widely used, established in practice	Both used in diverse settings

Gaps and Limitations in Current Research

Methodological limitations: Numerous studies have small sample sizes, are observational, and lack control groups. Differences in study settings and the level of provider training may also affect results (11).

Gaps in current research: Randomized comparative evidence is scarce, especially from low-resource settings. Further research is needed on long-term outcomes and the cost-effectiveness of the LCG compared with the

partograph. The efficacy and safety of the LCG in high-resource contexts (for example, where all deliveries occur in well-equipped facilities) are not well established. Prior to widespread implementation of new recommendations, it is essential to evaluate their effects on women's childbirth experiences, costs, and clinical outcomes (10,30).

Conclusion:

The WHO LCG seems to offer advantages over the modified partograph—improved documentation, greater maternal satisfaction, and more individualized care—but the evidence base is still developing. Wider adoption of the LCG could improve intrapartum care quality, particularly in settings where respectful, evidence-based care is not consistently delivered.

REFERENCES:

1. World Health Organization. Monitoring childbirth in a new era for maternal health [Internet].15 Dec 2020[cited 2025 Jul24].Available from: https://www.who.int/news/item/15-12-2020-monitoring-childbirth-in-a-new-era-for-maternal-health
2. Cresswell J. Trends in maternal mortality 2000 to 2020: estimates by WHO, UNICEF, UNFPA, World Bank Group and UNDESA/Population Division. 1st ed. Geneva: World Health Organization; 2023.1 p.
3. Office of the Registrar General & Census Commissioner, India (ORGI) (October21, 2022) India - SAMPLE REGISTRATION SYSTEM (SRS)-STATISTICAL REPORT 2020 [Internet]. New Delhi: Ministry of Home Affairs, Government of India;2022 Oct 21 [cited 2025 Jul 24]. Available from: https://censusindia.gov.in/nada/index.php/catalog/44376
4. Ministry Of Health and Family Welfare (India) Saving Mothers, Strengthening Futures | Ministry of Health and Family Welfare | GOI [Internet]. New Delhi: Press Information Bureau; 2025 Mar 21 [cited 2025 Jul 25]. Availablefrom:https://www.pib.gov.in/www.pib.gov.in/Pressreleaseshare.aspx?PRID=2113800
5. Philpott RH, Castle WM. Cervicographs in the management of labour in primigravidae. II. The action line and treatment of abnormal labour. J Obstet Gynaecol Br Commonw. 1972 Jul;79(7):599–602. doi: 10.1111/j.1471-0528.1972.tb14207.x. PMID: 5043422.
6. Vogel JP, Comrie-Thomson L, Pingray V, Gadama L, Galadanci H, Goudar S, et al. Usability, acceptability, and feasibility of the World Health Organization Labour Care Guide: A mixed-methods, multicountry evaluation. Birth. 2021;48(1):66–75. doi: 10.1111/birt.12511
7. Wilson AN, Spotswood N, Hayman G, Vogel J, Narasia J, Elijah A, et al. Improving the quality of maternal and newborn care in the Pacific region: a scoping review. Lancet Reg Heal Pac. 2020;3. doi: 10.1016/j.lanwpc.2020.100028. PMID: 34327381; PMCID: PMC8315605.
8. Singh R, Agarwal M, Sinha S, Sinha HH, Anant M, SINGH Sr R, et al. Modified WHO Partograph in Labour Room: A Quality Improvement Initiative to Find Out Concerns, Challenges and Solutions. Cureus. 2022;14(10):e30851. doi: 10.7759/cureus.30851. PMID: 36337778; PMCID: PMC9622032.
9. Pandey D, Bharti R, Dabral A, Khanam Z. Impact of WHO Labour Care Guide on reducing cesarean sections at a tertiary center: an open-label randomized controlled trial. AJOG Glob Rep. 2022;2(3):100075. https://doi.org/10.1016/j.xagr.2022.100075
10. Yadav A, Baghel J, Davile M, Prakash A. An Analysis of the Barriers in Implementation of Labour Care Guide in India and Possible Measures to Combat Them. J Obstet Gynaecol India. 2023 Dec;73(Suppl 2):330–2. doi: 10.1007/s13224-022-01711-1. Epub 2022 Sep 17. PMID: 38143969; PMCID: PMC10746680
11. N S, M SJL. A study on implementation of WHO labour care guide in low-risk pregnant women and its impact on maternal and perinatal outcome. Int J Reprod Contracept Obstet Gynecol. 2023;12(1):226–30. doi:10.18203/2320-1770.ijrcog20223498
12. Programme WHOMH and SM. Preventing prolonged labour : a practical guide : the partograph.

1994[Internet]. Geneva:World Health Organization; 1994 [cited 2025 Jul 24]; Available from: https://iris.who.int/handle/10665/58903
13. Hendricks CH, Brenner WE, Kraus G. Normal cervical dilatation pattern in late pregnancy and labour. Am J Obstet Gynecol. 1970;106(7):1065–82. doi: 10.1016/s0002-9378(16)34092-3. PMID: 5435658.
14. Organization Pan American Health Organization, World Health Organization. The partograph : A managerial tool for the prevention of prolonged labour : Section IV=4 : Guidelines for operations research on the application of the partograph. Le partographe: Instrument de detection et de prevention des anomalies dans la duree du travail: Section IV: Indications concernant la recherche operationnelle sur lútilisation du partographe [Internet]. Washington, D.C.: PAHO/WHO; 1989 [cited 2025 Jul 24]; Available from: https://iris.paho.org/handle/10665.2/45045
15. World Health Organization. United Nations Population Fund & United Nations Children's Fund (UNICEF). Managing complications in pregnancy and childbirth: a guide for midwives and doctors, 2nd ed. - PAHO/WHO | Pan American Health Organization 2nd ed. Geneva: World Health Organ. 2017;1–492.
16. World Health Organization. WHO recommendations for augmentation of labour [Internet]. Geneva: World Health Organization; 2014 [cited 2025 Jul 24]. 57 p. Available from: https://iris.who.int/handle/10665/112825
17. Opiah MM, Ofi AB, Essien EJ, Monjok E. Knowledge and utilization of the partograph among midwives in the Niger Delta Region of Nigeria. Afr J Reprod Health. 2012;16(1):125–32. PMID: 22783676
18. World Health Organization. WHO labour care guide: user's manual [internet]. Geneva:World Health Organization;2020. [cited 2023 Jun 20] Available from:https://www.who.imt/publications/i/item/9789241550215
19. Respectful maternity care [Internet]. White Ribbon Alliance. [cited 2025 Jul 24]. Available from: https://whiteribbonalliance.org/search/respectful maternity care
20. Vogel JP, Pingray V, Althabe F, Gibbons L, Berrueta M, Pujar Y, et al. Implementing the WHO Labour Care Guide to reduce the use of Caesarean section in four hospitals in India: protocol and statistical analysis plan for a pragmatic, stepped-wedge, cluster-randomized pilot trial | Reproductive Health | Full Text. 2023;20(1):18. doi: https://doi.org/10.1186/s12978-022-01525-4. PMID: 36670438; PMCID: PMC9862839.
21. Mathai M. The partograph for the prevention of obstructed labour. Clinical Obstetrics and Gynaecology. 2009;52(2):256–69. PMID: 19407533.doi: 10.1097/GRF.0b013e3181a4f163.
22. Nivedita D, Anjum M. Evaluation of primigravida in labour using modified WHO partograph: comparative study of 100 cases. Int J Reprod Contracept Obstet Gynecol. 2018;7(2):471. doi:10.18203/2320-1770.ijrcog20180157
23. Lavender T, Cuthbert A, Smyth RM. Effect of partograph use on outcomes for women in spontaneous labour at term and their babies - Lavender, T - 2018 | Cochrane Library. [cited 2025 Jul 24]; Available from: https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD005461.pub5/full,doi: https://doi.org/10.1002/14651858.CD005461.pub5
24. Panchal DV, Patel DRD, Charel DAK, Jikadara DP, Mehta DD. A Prospective Observational Study of Evaluation of Progress of Labour With Partograph In Primigravida and Multigravida: Evaluation of Progress of Labour With Partograph In Primigravida And Multigravida. Natl J Integr Med. 2021;12(6):88–93. doi: 10.70284/njirm.v12i6.3284
25. Adjie J, Saroyo YB, Madjid OA, Kayika I, Pusponegoro A, Indrianie S. Midwives' Experience with the 2020 WHO Labor Care Guide in Rural Hospital Settings: Usability, Feasibility, Acceptability, and Satisfaction Open PublicHealth J. 2024;17(1). e18749445337530. doi: 10.2174/0118749445337530241002082819.
26. Vogel JP, Pujar Y, Vernekar SS, Armari E, Pingray V, Althabe F, et al. Effects of the WHO Labour Care Guide on cesarean section in India: a pragmatic, stepped-wedge, cluster-randomized pilot trial. Nat Med. 2024;30(2):463–9. Epub 2024 Jan 30. PMID: 38291297; PMCID: PMC10878967. doi: 10.1038/s41591-023-

02751-4.
27. Mugyenyi GR, Atukunda EC, Tumuhimbise W, Farjardo YF, Byamugisha J. Exploring potential opportunities and strategies of using the new WHO Labour Care Guide to improve labour monitoring and health outcomes among health care providers in Uganda: A Qualitative Study. 2023; doi https://doi.org/ 10.1371/journal.pgph.0002780
28. Rao SB. Comparative study of user friendliness of paperless partogram compared to WHO partogram in preventing prolonged labour. 2019; doi:10.18203/2320-1770.ijrcog20185429
29. Mugyenyi GR, Byamugisha J, Tumuhimbise W, Atukunda E, Yarine FT. Labour Care Guide implementation as a decision-making tool for monitoring labour among healthcare providers in Uganda: protocol for a mixed-methods study. BMJ Open. 2024;14(4): e079216. PMID: 38626961; PMCID: PMC11029502 doi: https://doi.org/10.1136/bmjopen-2023-079216
30. Isgren AR, Korsoski R, Abrahamsson T, Wendel SB, Källén K, Lundborg L, et al. (2025) Can the use of a next generation partograph based on WHO's latest intrapartum care recommendations improve neonatal outcomes? (PICRINO) Study protocol for a stepped-wedge cluster randomized trial | PLOS One. 2025;20(3): e0316336. doi URL: https://doi.org/10.1371/ journal.pone.0316336