



UTILITY OF WHO LABOUR CARE GUIDE AND MODIFIED PARTOGRAPH IN EFFECTIVE MANAGEMENT OF LABOUR: A PROSPECTIVE INTERVENTIONAL STUDY

Obstetrics & Gynaecology

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ABSTRACT

Background: Maternal mortality remains a major global health concern, particularly in low- and middle-income countries. Effective labour monitoring is essential for early detection of complications and timely intervention. The WHO Labour Care Guide (LCG) has been introduced as an advanced alternative to the modified partograph. **Aim:** To evaluate the effectiveness and clinical utility of the WHO Labour Care Guide compared with the modified WHO partograph. **Methods:** A prospective interventional study was conducted over one year at a tertiary care centre in Northern India. A total of 200 low-risk term pregnant women were equally divided into two groups: LCG group (n=100) and modified partograph group (n=100). Labour was monitored using respective tools, and maternal and neonatal outcomes were compared using appropriate statistical analysis. **Results:** Both groups were comparable in baseline characteristics. The LCG group demonstrated significantly better pain relief (86% vs 49%, $p=0.0005$) and improved neonatal outcomes, with a higher proportion of neonates having APGAR scores ≥ 8 at 1 minute (78% vs 59%, $p=0.01$). There were no statistically significant differences between the groups in terms of oxytocin use (29% vs 35%, $p=0.45$), mode of delivery (spontaneous vaginal delivery: 62% vs 47%, $p=0.08$), or overall maternal complications ($p=0.27$), although a higher incidence of atonic postpartum haemorrhage was observed in the modified partograph group (10% vs 4%). **Conclusion:** The WHO Labour Care Guide is an effective and user-friendly tool that enhances labour monitoring and maternal satisfaction. While overall clinical outcomes were comparable between the two groups, the LCG offers advantages in terms of improved supportive care and early neonatal outcomes. The modified partograph, however, remains a reliable tool for labour management.

KEYWORDS

Labour Care Guide, Partograph, Labour Monitoring, Maternal Outcome, Neonatal Outcome

INTRODUCTION

Maternal mortality continues to be a major public health challenge, with approximately 287,000 maternal deaths reported globally in 2020, predominantly in low- and middle-income countries [1]. The leading causes include postpartum haemorrhage, infections, hypertensive disorders, and complications arising from prolonged labour [2].

Early identification of abnormal labour progression is crucial to preventing adverse maternal and neonatal outcomes. The partograph has long been used as a standard tool for monitoring labour progress and guiding clinical decisions [3,5]. It provides a graphical representation of labour events and serves as an early warning system to detect deviations from normal progress.

Despite its usefulness, limitations in interpretation and implementation have led to the development of improved tools. The WHO Labour Care Guide (LCG) is a next-generation monitoring tool designed to promote individualized labour care, supportive interventions, and improved clinical decision-making [6,9]. It incorporates dynamic thresholds and emphasizes patient-centred care.

Previous studies have shown mixed results regarding the effectiveness of partograph use on labour outcomes [3]. Furthermore, challenges related to training, compliance, and usability have been reported [7,10]. Therefore, evaluating the clinical utility of LCG in comparison to the modified partograph is essential, particularly in resource-limited settings.

This study aims to compare the effectiveness, usability, and outcomes associated with the WHO Labour Care Guide and the modified WHO partograph.

METHODOLOGY

This quasi-experimental study was conducted from March 2023 to February 2024 in the Department of Obstetrics and Gynaecology at a tertiary care teaching hospital in Northern India. Ethical approval was obtained from the Institutional Ethics Committee prior to the commencement of the study, and written informed consent was obtained from all participants.

Study Population and Design

A total of 200 low-risk term pregnant women admitted in labour were enrolled consecutively and allocated into two groups of equal size:

- **Group A (LCG Group):** 100 women monitored using the WHO Labour Care Guide

- **Group B (Modified Partograph Group):** 100 women monitored using the WHO modified partograph

Both groups were managed according to standard institutional labour protocols, with monitoring guided by the respective tool.

Inclusion Criteria

- Singleton pregnancy
- Cephalic presentation
- Term gestation (≥ 37 weeks)
- Spontaneous onset of labour

Exclusion Criteria

- High-risk pregnancies (e.g., hypertensive disorders, diabetes mellitus, cardiac or renal disease)
- Malpresentation
- Obstructed labour
- Known cephalopelvic disproportion
- Antepartum haemorrhage

Labour Monitoring Protocol

In the LCG group, labour was monitored using the WHO Labour Care Guide, which incorporates dynamic assessment of labour progress, maternal well-being, fetal condition, and supportive care practices, including emphasis on pain relief and labour support measures. In the modified partograph group, labour was monitored using the WHO modified partograph with alert and action lines.

Maternal parameters including pulse rate, blood pressure, uterine contractions, and cervical dilatation were recorded at regular intervals. Fetal monitoring included fetal heart rate and assessment of amniotic fluid characteristics. Interventions such as oxytocin augmentation, analgesia, and operative delivery were undertaken based on standard clinical indications.

Outcome Measures

The following outcomes were assessed:

Primary Outcomes

- Duration and progression of labour (categorized based on first-stage duration intervals)
- Mode of delivery
- Requirement of oxytocin augmentation
- Provision of pain relief and supportive care during labour

Secondary Outcomes

- Maternal outcomes (postpartum haemorrhage, perineal trauma, and other complications)

- Neonatal outcomes (APGAR score at 1 and 5 minutes, birth weight, NICU admission, neonatal mortality)
- Patient satisfaction and caregiver feedback assessed using a structured 5-point Likert scale

Data Collection and Statistical Analysis

Data were collected using structured proformas and entered into a database for analysis. Continuous variables were expressed as mean ± standard deviation, while categorical variables were presented as frequencies and percentages. Comparative analysis between groups was performed using the Chi-square test for categorical variables. A p-value of <0.05 was considered statistically significant.

RESULTS

Table 1: Sociodemographic and Clinical Characteristics

Variable	LCG (n=100)	Partograph (n=100)	p-value
Mean Age (years)	25.7 ± 3.1	25.0 ± 3.8	0.51
Gestational Age (weeks)	38.6 ± 1.2	39.1 ± 1.2	0.41
Rural (%)	56%	59%	0.12
Mean BMI	21.1 ± 2.3	21.7 ± 3.1	0.37

Interpretation: Both groups were comparable (p>0.05).

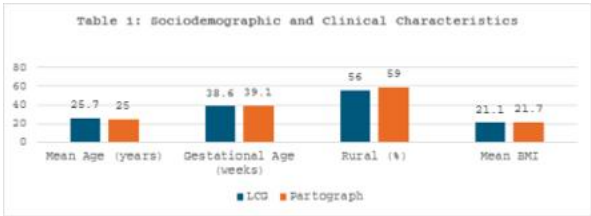


Table 2: Labour Outcomes

Parameter	LCG (%)	Partograph (%)	p-value
First Stage Duration (<8 hrs)	3%	13%	0.01*
Oxytocin Use	29%	35%	0.45
Pain Relief Provided	86%	49%	0.0005*
Spontaneous Vaginal Delivery	62%	47%	0.08

Interpretation: LCG significantly improved pain management and labour monitoring.



Table 3: Maternal Complications

Complication	LCG (%)	Partograph (%)	p-value
None	90%	82%	0.27
Atonic PPH	4%	10%	—
Perineal Trauma	2%	4%	—

Interpretation: No significant difference in complications.

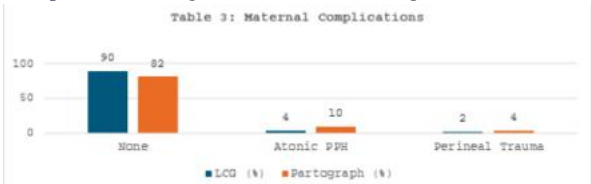


Table 4: Neonatal Outcomes

Parameter	LCG (%)	Partograph (%)	p-value
NICU Admission	16%	26%	0.12
APGAR ≥8 (1 min)	78%	59%	0.01*
Neonatal Mortality	2%	4%	0.68

Interpretation: Better early neonatal outcomes in LCG group.

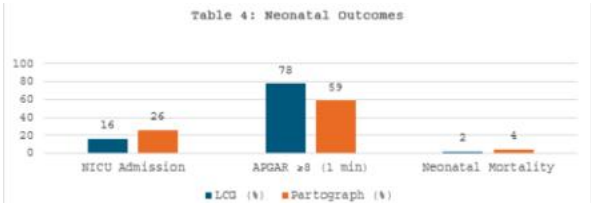


Table 5: Patient Feedback

Parameter	LCG (%)	Partograph (%)
Acceptability	67%	51%
Satisfaction	86%	63%

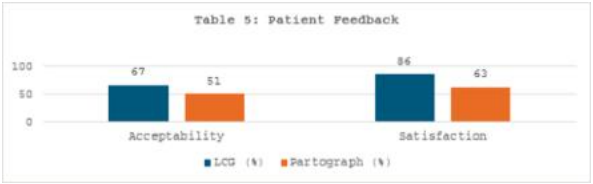
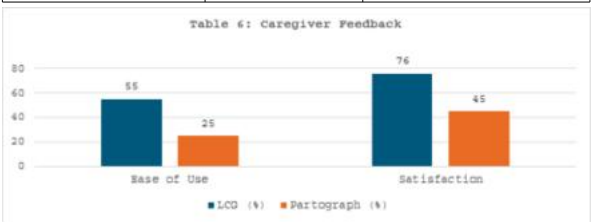


Table 6: Caregiver Feedback

Parameter	LCG (%)	Partograph (%)
Ease of Use	55%	25%
Satisfaction	76%	45%



DISCUSSION

The present quasi-experimental study was conducted at a tertiary care hospital in Northern India to evaluate the effectiveness of the WHO Labour Care Guide (LCG) in comparison to the modified WHO partograph for labour monitoring and decision-making. The findings of this study demonstrate that the WHO Labour Care Guide is an effective tool for labour monitoring, with improved maternal satisfaction and comparable clinical outcomes .

The baseline characteristics of the participants in both groups were comparable, indicating homogeneity between the study populations. The mean age in the modified partograph group was 25.0 ± 3.8 years, while in the LCG group it was 25.7±3.1 years, which is consistent with the findings of Ghulaxe et al. [8], who reported similar age distribution in both groups. The majority of participants in both groups were primiparous, and the mean parity was comparable between groups. There was no statistically significant association between parity and management approach, which aligns with findings reported by Singh et al. [10], suggesting that both tools are equally effective irrespective of parity.

In terms of sociodemographic characteristics, 56% of participants in the LCG group and 59% in the modified partograph group were from rural areas, with no statistically significant difference. Similarly, the majority of participants in both groups belonged to middle socioeconomic class. These findings are consistent with Bedwell et al. [2], who emphasized that the effectiveness of labour monitoring tools is not influenced by socioeconomic status but rather by proper implementation and adherence.

The duration and progression of labour did not differ significantly between the two groups. In the present study, a significantly lower proportion of women in the LCG group had a first-stage duration of less than 8 hours compared to the modified partograph group (3% vs 13%, p=0.01), indicating a relatively longer duration of the early phase of labour in the LCG group. These findings differ from those reported by Srividya et al. [10], who observed shorter labour duration in both groups. However, Metawia et al. [11] reported no significant difference in labour outcomes between different partograph types. Similarly, Sospeter et al. [12] and Vogel et al. [15] also demonstrated comparable labour progression across different labour monitoring tools.

In the present study, 29% of women in the LCG group and 35% in the modified partograph group required oxytocin augmentation, with no statistically significant difference. These findings are consistent with Sospeter et al. [12] and Ninama et al. [13], who also reported no significant association between labour monitoring tools and oxytocin use.

A significant improvement in pain relief was observed in the LCG group compared to the modified partograph group (86% vs 49%, p=0.0005). This can be attributed to the emphasis of the LCG on supportive care measures, including labour companionship, positioning, adequate hydration, and pharmacological interventions. These findings are consistent with WHO recommendations for respectful maternity care and continuous labour support [4]. Lavender et al. [3] also reported that the use of partograph alone does not

significantly influence labour outcomes, highlighting the importance of supportive care interventions.

The incidence of maternal complications was low in both groups, with no statistically significant difference ($p=0.27$). However, a slightly higher incidence of atonic postpartum haemorrhage was observed in the modified partograph group. These findings are comparable with those reported by Pandey et al. [14], who found no significant difference in maternal complications between labour monitoring methods.

Neonatal outcomes in the present study were comparable between the two groups. However, a significantly better APGAR score at 1 minute was observed in the LCG group, suggesting improved immediate neonatal adaptation. Similar findings have been reported in studies evaluating advanced monitoring tools such as electronic partographs and WHO LCG implementation, which demonstrated improved neonatal outcomes through timely interventions [16,17].

Participants reported greater satisfaction with the Labour Care Guide due to its continuous monitoring, improved sense of safety, and supportive care measures. The interventional group receiving comprehensive care (companionship, analgesia, hydration, positioning) showed higher acceptability (67%) compared to the control group (51%). However, a small proportion of participants found frequent monitoring intrusive.

Healthcare providers also preferred the LCG due to its structured and comprehensive approach, with higher satisfaction levels compared to the modified partograph. However, some providers reported challenges related to training and familiarity with the tool. These findings are consistent with Singh et al. [10], who highlighted the importance of training and adherence for effective implementation. Additionally, studies by Pandey et al. [14] and Vogel et al. [15] suggest that LCG improves decision-making and reduces unnecessary interventions, although initial training requirements remain a challenge.

Khan et al. [18] further emphasized that psychosocial support, including labour companionship, improves maternal satisfaction and complements clinical monitoring tools such as LCG and partograph.

Overall, the present study demonstrates that while both the WHO Labour Care Guide and the modified partograph are effective tools for labour monitoring, the LCG offers additional advantages in terms of patient satisfaction, supportive care, and early detection of deviations in labour progress. However, adequate training and familiarization are essential for its successful implementation in routine clinical practice.

Limitations

The present study has certain limitations that should be acknowledged. It was conducted at a single tertiary care centre, which may limit the generalizability of the findings to other settings. The sample size was relatively small, which may affect the statistical power of the study. Additionally, only low-risk pregnancies were included, and therefore the results may not be applicable to high-risk obstetric populations.

CONCLUSION

The WHO Labour Care Guide (LCG) emphasizes comprehensive monitoring and individualized care, which may be associated with a relatively longer early phase of labour compared to the modified partograph. Both tools demonstrated consistent efficacy across different sociodemographic groups and showed comparable outcomes in terms of spontaneous vaginal delivery and caesarean section rates. However, the modified partograph group exhibited a slightly higher incidence of maternal complications, particularly atonic postpartum haemorrhage.

The LCG group demonstrated improved neonatal outcomes, especially in terms of higher 1-minute APGAR scores, suggesting better immediate neonatal adaptation and more effective intrapartum monitoring.

The WHO Labour Care Guide is emerging as a next-generation partograph that enables intensive monitoring of both mother and fetus, early identification of deviations in labour progress, timely reassessment, and shared decision-making among healthcare providers and patients, ultimately contributing to improved labour management and patient experience.

Overall, while both the LCG and modified partograph provide comparable clinical outcomes, the LCG appears to offer additional advantages in terms of comprehensive monitoring, supportive care, and maternal satisfaction. Nevertheless, the modified partograph remains a reliable and effective tool for labour management.

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