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Original Research Article

Intrapartum monitoring tools: a comparative analysis of WHO labour care guide versus the modified partograph in low-risk laboring women

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ABSTRACT

Background: Traditionally partograph has been used to monitor labour. WHO introduced Labour Care Guide in 2020. The present study was undertaken to compare labour outcomes using the WHO Labour Care Guide (LCG) and the modified WHO partograph. This study aimed to study the WHO LCG and modified partograph in low-risk labouring women.
Methods: The study was a hospital based cross sectional randomised study done in the Department of Obstetrics and Gynaecology, from 2023 to 2024. 200 low risk labouring women divided into two groups. Group A was monitored using the Labour Care Guide (LCG), whereas Group B was assessed using the WHO modified partograph.
Results: The mean duration of active stage of labour was 121.90±44.91 min in Group A and 210.10±45.75 min in Group B. This was the most important observation in the study (p-value <0.001). Oxytocin was used in 10% of subjects in Group A and 37% in Group B. This difference was highly significant (p value <0.001). The caesarean section rate was more in Group B (21% vs 7%) as compared to Group A.
Conclusions: The study concluded that the WHO LCG is a safe, effective, and patient-centred alternative to the Modified WHO Partograph for labour monitoring. Its use was associated with a shorter active phase of labour, reduced need for oxytocin augmentation, and lower caesarean section rates without adversely affecting maternal or neonatal outcomes.

Keywords: Active stage of labour, Labour care guide, Partograph

INTRODUCTION

Childbirth is considered to be a life changing and challenging event for most women and is associated with great apprehensions and risks. Labour pain is among the most intense physiological pains experienced by humans. Labor is defined as the chain of physiological events that allows the delivery of the foetus and the placenta out of the uterus through vagina.[1] Labour is traditionally divided into three stages: the first stage extends from the onset of labour to full cervical dilatation (10 cm), the second stage spans from full dilatation to delivery of the baby, and the third stage concludes with placental delivery. Therefore, close monitoring of all stages of labour is essential to ensure safe foetal-maternal outcomes.

Monitoring of each and every stage of labour is crucial and any negligence can be detrimental to the foetus as well as the mother. 40% to 45% of pregnancy-related deaths, stillbirths, and neonatal deaths occur strictly during labour, delivery, and the first 24 hours postpartum.[2] Majority of these deaths were witnessed in low resource settings and could be easily prevented by well-timed interventions which necessitated the introduction of some inexpensive, easily accessible yet useful tool that could be utilised to monitor labour routinely.

Partograph is the graphical assessment of the first stage of labour that records the labour progress. Partograph was originally designed by Friedman in 1954 and hence called Friedman's curve. It was later improved by Philpott and

Castle in 1972 by the introduction of alert and action lines that helped to improve the pregnancy outcome by facilitating timely intervention during labour. In 1994, WHO came up with another partograph design, the composite partograph in which a latent phase of 8 hours and an active phase at 3 cm dilatation was included.[3] Simplified WHO partograph was introduced in 2000 in which latent phase was excluded and active phase began at 4 cm dilatation.[4] The modified WHO partograph, introduced in 2007, has been widely used as a graphical tool for monitoring labour progress and guiding timely obstetric decisions.[5] Different authors have studied the utilization of partograph by health professionals, and concerns that it has not reached its full potential in improving clinical outcome and the reasons for the same.[6,7] However, evolving evidence and updated WHO intrapartum care guidelines (2018) have challenged traditional labour progression norms, emphasizing that labour patterns vary among women and that slower cervical dilatation alone should not prompt intervention.[8]

The increasing rates of caesarean delivery, particularly in institutional settings, have raised concerns due to associated short- and long-term maternal risks. Preventing unnecessary primary caesarean sections requires updated, evidence-based approaches to labour monitoring and management. These developments highlighted the limitations of traditional partographs and underscored the need for a more individualized and comprehensive tool.

Redefining labour dystocia is crucial, as newer data reveal that labour often progresses more slowly than previously believed. Equally important is expanding access to supportive, non-medical interventions such as continuous labour support which have been proven to lower caesarean rates and improve maternal outcomes

In response, the World Health Organization introduced the Labour Care Guide (LCG) in 2020 as an evidence-based labour monitoring and decision-support tool.[9] It aims at guiding the health care professionals so as to offer supportive care to the parturient and ensures a positive childbirth experience and help in identifying and addressing emerging labour complications by providing reference thresholds for labour observations that trigger reflection and specific action if any abnormal observation is encountered and thus preventing unnecessary use of labour supporting interventions. Designed for use from the active phase of labour (≥5 cm dilatation), it incorporates dynamic thresholds, supports physiological labour, and facilitates timely identification of complications across all levels of healthcare. Hence, the present study was undertaken to compare labour outcomes using the WHO labour care guide and the modified WHO partograph.

The aim of the study was to compare the WHO Labour Care Guide (LCG) and the Modified Partograph in low-risk labouring women. The primary objectives were to compare the duration of the active phase of labour and the mode of delivery between the study groups. The secondary objective was to assess and compare maternal and fetal outcomes between the study groups.

METHODS

The study was a hospital based cross sectional randomised study done in the Department of Obstetrics and Gynaecology, Govt. Medical College and Rajindra Hospital, Patiala from 2023 to 2024. 200 low risk labouring women divided into two groups. Group A was monitored using the Labour Care Guide (LCG), whereas Group B was assessed using the WHO modified partograph.

Inclusion criteria

All low risk antenatal women with term gestation more than or equal to 37 weeks, cephalic presentation, spontaneous labor, and cervical dilatation more than or equal to 4 centimetres.

Exclusion criteria

Women with any medical disorder like HTN, DM, CKD or pulmonary disease, multiple pregnancy, bad Obstetrical history, preterm labour, previous caesarean section, and abnormal presentation.

Procedure and randomisation

All low risk labouring women who fulfilled the inclusion criteria were chosen and randomly assigned Group A or B. In Group A, the plotting of LCG was started at cervical dilatation of 5 centimetres. The alert parameters were highlighted and any intervention needed and response were recorded. Oxytocin was started when uterine contractions did not correspond with those defined under the normal parameters. Intervention was considered when the cervical dilatation was slow or there was no dilatation as per the defined upper limit of LCG despite presence of adequate contractions. In Group B, the active phase plotting began at 4 centimetres cervical dilatation and any deviation of progress of labour to the right of the alert line or action line indicated need to intervene or to re-evaluate. Oxytocin was started in case of inadequate contractions and if the graph was on the right of the alert line. Here the protraction of labour was labelled when there was no improvement in the cervical dilatation for more than or equal to 4 hours with adequate contractions. Data was collected and entered in an excel sheet using Microsoft Excel 2021 software. The data was analysed using Microsoft Office Excel software and epi-info software version 7.2.5.0. Most of the data was numerical expressing the duration of active phase of labour, depending on which the mode of delivery was decided.

RESULTS

In this study, the mean age was similar in Group A (25.97±4 years) and Group B (25.89±4.14 years; p=0.874).

Majority of the participants were from rural areas (66% vs. 69%) and had low educational status, with primary schooling or illiteracy predominating. Multigravida women formed the majority in both groups (60% vs. 53%; p=0.318). In both Group A and B, majority of subjects were from lower class (68% in Group A and 70% in Group B) and the p value was 0.760. Thus, both groups were comparable at baseline in terms of the demographic features (Table 1).

Table 1: Demographic characteristics of the study groups.

Parameters	Group A	Group B	P value
Maternal age in years (Mean±SD)	25.97±4	25.89±4.14	0.874
Parity (%)			
Nullipara	40	47	0.318
Multipara	60	53	
Literacy rates (%)			
Illiterate	30	23	0.629
Primary	32	37	
Middle	20	16	
High school	12	16	
Graduate	6	8	
Area wise distribution (%)			
Rural	66	69	0.651
Urban	34	31	
Socioeconomic status (%)			
Lower	68	70	0.760
Middle	32	30	

The mean gestational age was also comparable (38.71±0.69 weeks in Group A vs. 38.55±0.74 weeks in Group B; p=0.137), indicating no significant baseline differences between the groups (Table 2).

Table 2: Distribution of gestational age between study groups.

Gestational age (weeks)	Group A	Group B	P value
Mean (SD)	38.71 (0.69)	38.55 (0.74)	0.137
Median	38.6	38.5	
Min-Max	37.3-39.6	37.2-40	

The comparison between the two groups revealed notable differences in labour progression. The Figure 1, demonstrates the duration of active stage of labour in the study groups where the mean duration in Group A (121.90±44.91mins) was shorter when compared to Group B (210.10±45.75mins). This was the most important observation in the study. This difference was highly significant clearly indicating that Group B subjects underwent a lengthier active phase of labour.

When looking at active stage of labour in study groups in primi and multi separately, the mean duration of active stage of labour in primigravida in Group A was151.75±37.2 mins and in Group B was 231.49±39.56 mins (p value <0.001) whereas mean duration of active stage of labour in multigravida women was Group A 102±38.25 mins in Group A and 191.13±42.66 mins in Group B (p value <0.001).

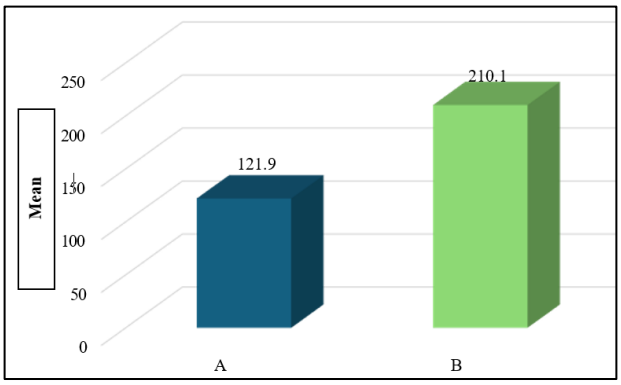

Figure 1: Duration of active stage of labour in study groups (mins).

The mean duration of 2nd stage of labour was comparable between the study groups-23.33±7.89 mins in Group A and 23.15±8.02 mins in Group B. The difference was not statistically significant (p value-0.756).

We also looked at need of oxytocin augmentation in study groups and observed that oxytocin was used in 10% of subjects in Group A and 37% in Group B. This difference was highly significant (p value <0.001) indicating a markedly greater need for labour augmentation in Group B (Table 3).

Table 3: Labour characteristics in the study groups.

Parameter	Group A	Group B	P value
Duration of active stage of labor in minutes (Mean±SD)	121.90±44.91	210.10±45.75	<0.001
Duration of second stage of labor in minutes (Mean±SD)	23.33±7.89	23.15±8.02	0.756
Oxytocin utilization (%)	10	37	<0.001

The Table 4 shows the various maternal outcomes in both the groups. Most women in Group A delivered vaginally (93%), while caesarean deliveries were more prevalent in Group B (21%; p=0.004) which was statistically significant and foetal distress being the most common indication for caesarean in both groups. Maternal

complications noted were very few and were similar between groups, with postpartum haemorrhage being the most frequent and accounting for 4 cases in Group A and 5 in Group B. Surgical site infection (SSI) was reported in 2 women in Group A and 3 women in Group B.

Table 4: Maternal outcome.

Parameters	Group A	Group B	P value
Mode of delivery (%)			
Vaginal delivery	93	79	0.004
Cesarean delivery	7	21	
Indications of cesarean delivery (%)			
Fetal distress	4	12	0.501
DTA	3	5	
NPOL	0	4	
Maternal complications (%)			
PPH	4	5	1.000
SSI	2	3	

Further, on evaluating the neonatal outcomes, it was found that the mean birth weight was comparable between the groups (2.98±0.32 kg in Group A and 3.01±0.30 kg in Group B). The mean APGAR score at 5 minutes was also similar (8.71±1.17 in Group A vs. 8.78±1.16 in Group B; p=0.073). A total of 8 neonates in Group A and 6 in Group B experienced complications. Respiratory distress was observed in 2 neonates in Group A and 3 in Group B, while birth asphyxia accounted for 2 cases in Group A and 1 in Group B. Meconium aspiration syndrome resulted in 1 NICU admission in each group, and jaundice led to later postpartum admissions in 3 neonates in Group A and 1 in Group B (Table 5).

Table 5: Neonatal outcomes.

Parameters	Group A	Group B	P value
Birth weight in kg (Mean±SD)	2.98±0.32	3.01±0.30	0.450
APGAR at 5 mins (Mean±SD)	8.71±1.17	8.78±1.16	0.073
Neonatal complications			
Respiratory distress	2	3	0.880
Meconium aspiration syndrome	1	1	
Birth asphyxia	2	1	
Jaundice	3	1	

DISCUSSION

In our study, the baseline characteristics such as age, residence, educational status, parity, and gestational age were comparable between the groups, ensuring homogeneity. Similar baseline 1comparability has been reported by Pandey et al (2022) and Srividya et al (2023).[10,11] A key finding was the significantly shorter active phase of labour in Group A (121.90±44.91 minutes) compared to Group B (210.10±45.75 minutes), suggesting that the labour care guide facilitates more efficient labour progression. Comparable findings were reported by Pandey et al (2022), who demonstrated duration of 2.27±1.44 hours in the LCG group and 4.12±1.60 hours in the control group.[10]

However, the duration of the second stage remained similar between groups. This suggests that while the LCG has a marked impact on the active phase, it does not significantly alter the duration of the second stage.

The requirement for oxytocin augmentation was significantly lower in Group A (10% vs. 37%), aligning with findings from Pandey et al (2022) who observed oxytocin augmentation in 18.4% of the LCG group versus 51.8% in the modified WHO partograph group and Vogel et al (2024), who reported a substantial 18% reduction in oxytocin use following LCG implementation.[10,12]

This reduction in intervention translated into improved delivery outcomes, with a higher vaginal delivery rate. In the present study, 93% subjects had spontaneous vaginal deliveries in

Group A compared to 79% in the Group B. The caesarean rate was considerably lower in Group A (7%) compared to Group B (21%) with the difference reaching statistical significance (p=0.004). These findings are consistent with those reported by Pandey et al (2022), who observed a caesarean rate of 15.2% in the study group versus 27.8% in the control group.[10] Vogel et al (2024) also reported a 5.5% absolute reduction in caesarean deliveries following LCG.[12]

implementation in Robson group 1. The study by Srividya et al (2023) found comparable rates of vaginal delivery between LCG and partograph groups (87.5% vs. 85%, respectively), with a slightly lower caesarean rate in the LCG group.[11] Although the results of the last two studies were not statistically significant, the trend suggested that LCG adoption may contribute to the reversal of rising caesarean trends.

In the present study, the most common indication for caesarean section was foetal distress which was seen in 57.1% cases in both the groups followed by DTA which was the indication for caesarean in 42.9% cases Group A and 23.8% in Group B. Notably, non-progression was observed exclusively in Group B (19% cases) suggesting a potential over-diagnosis of labour dystocia when relying on rigid time-based criteria. This indicates that traditional monitoring tools may prompt early surgical intervention without sufficient clinical flexibility. These findings align with previous study by Srividya et al (2023), which reported foetal distress as the most common indication for caesarean in active phase of labour.[11] Similarly, Poornima

et al (2023) observed in their cohort that foetal distress was the most commonly encountered indication in the study group (43% cases) followed by CPD (31%) and then by NPOL (20%).[13]

Maternal complications were infrequent and comparable between the groups. Neonatal outcomes, including birth weight, Apgar scores, and complication rates, were also similar, supporting findings by Pandey et al (2022) that LCG improves labour management without compromising neonatal safety.[10]

Overall, the findings support the labour care guide as a safe and effective labour monitoring tool that promotes physiological labour, reduces unnecessary interventions, and improves delivery outcomes without adversely affecting maternal or neonatal well-being.

Usability and acceptability

The Labor Care Guide (LCG), being a relatively recent innovation, presented an initial learning curve for us. Unlike the traditional partograph, which has been in use for decades and is familiar to most practitioners, the LCG required a shift in both mindset and workflow. Our centre, a bustling tertiary care institute operates under immense clinical pressure. In the initial days of implementing the LCG, filling it continuously felt tedious and was prone to mistakes. A notable limitation experienced while using the LCG was the absence of a distinct action line, which is a defining feature of the traditional partograph, which made it difficult to judge the right moment to intervene. However, with continuous use, these challenges could easily be overcome and enhance the intrapartum care.

The LCG was well received by the women in labour. A key factor noticed contributing to its greater acceptance among participants was the supportive, relaxed and responsive environment it fostered. The LCG encouraged the presence of a birth companion and respected the woman's autonomy by allowing her to choose a comfortable position throughout the labour which appealed maximally to the patients. The supportive and individualized approach of the LCG played a key role in enhancing labour progress, notably contributing to a drastically shorter duration of the active phase. As a result, many participants expressed greater satisfaction with the LCG-guided care.

This study has few limitations. The findings of this study are difficult to generalize, as it included only low-risk antenatal women and recruitment was limited to those in spontaneous labour. Future research with a larger and more diverse population, including high-risk pregnancies, is necessary to enhance the validity and broader applicability of the results.

CONCLUSION

The study concluded that the WHO labour care guide is a safe, effective, and patient-centred alternative to the modified WHO partograph for labour monitoring. Its use was associated with a shorter active phase of labour, reduced need for oxytocin augmentation, and lower caesarean section rates without adversely affecting maternal or neonatal outcomes. Although initial adaptation may be required, the individualized and evidence-based approach of the LCG enhances physiological labour management. Adoption of the LCG has the potential to redefine contemporary labour monitoring by aligning clinical practice with evidence-based, woman-centred care.

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