

WHO LABOUR CARE GUIDE VERSUS PAPERLESS PARTOGRAM FOR EFFECTIVE MANAGEMENT OF LABOUR IN A TERTIARY CARE CENTER

Megha Ranjan¹, Rupam², Shivangi Sharma³, Samta Gupta⁴, Archana Meht⁴

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Corresponding Author:
Dr. Rupam,
Email: dr.ruapm1990@gmail.com

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¹Associate Professor, Department of Obstetrics and Gynecology, School of Medical Sciences and Research, Sharda University, Greater Noida, Uttar Pradesh, India.

²Assistant Professor, Department of Obstetrics and Gynecology, School of Medical Sciences and Research, Sharda University, Greater Noida, Uttar Pradesh, India.

³2nd year Junior Resident, Department of Obstetrics and Gynecology, School of Medical Sciences and Research, Sharda university, Greater Noida, Uttar Pradesh, India.

⁴Professor, Department of Obstetrics and Gynecology, School of Medical Sciences and Research, Sharda University, Greater Noida, Uttar Pradesh, India.

Abstract

Background: The aim is to compare the WHO Labour Care Guide versus Paperless partogram for effective management of labour in a tertiary care centre. **Materials and Methods:** This was a prospective interventional study conducted in the Department of Obstetrics and Gynaecology of Sharda Hospital (associated with school of medical sciences and research) from Aug 2024 to October 2024. All term patients visiting Sharda Hospital for delivery in labour ward, as per our inclusion criteria, were included in the study after giving informed and written consent. These antenatal term patients were divided into two groups (Group A and Group B). Group A consisting of 80 women whose normal labour was monitored by the WHO Labour care guide, and Group B consisting of another 80 women whose normal labour was monitored by the Paperless Partogram Method. **Result:** Out of total 80 patients in group A, 55% were multigravida and 45% were primigravida while on the other hand in group B (80), 60% were multigravida and 40% were primigravida. It was observed that most of the patients, 76.25% in group A and 82.5% in group B delivered before crossing ETD (estimated time of delivery) or reaching alert ETD respectively while only 6.25% in group A and 3.75% in group B delivered after ETD. Maximum patient delivered vaginally in both the groups (75% in group A and 77.5% in group B). There were no significant differences in perinatal outcomes in both the group in terms of neonatal weight and Apgar score at 1 minute and 5 minutes. **Conclusion:** Paperless partograph acts as an efficient tool in labour monitoring in a set up with high patient load and less manpower as it needs minimum training and skill when compared to WHO Labour Care Guide. Both are equally effective in preventing prolonged labour and other labour related complications.

INTRODUCTION

Prolonged labour is a frequent contributor to maternal mortality in developing countries, often linked to factors such as pelvic size and shape, as well as challenges with cervical dilation. Partograph is an easy-to-use, affordable monitoring tool that visually displays key events during labour, including the well-being of both mother and baby. This early warning system assists healthcare providers in detecting slow labour progression early on, allowing them to implement timely interventions to prevent prolonged or obstructed labor.^[1] The partograph was first created by Friedman in 1954, who documented

changes in cervical dilation during labour, measuring progress in centimetres of dilation per hour.^[2] It was subsequently modified by Philpott and Castle, who added alert and action lines to enhance its effectiveness.^[3] The World Health Organization (WHO) introduced the Safe Motherhood initiative in 1987. Since then, WHO has released three distinct versions of the partograph. The first was the composite partograph, which was later revised in 2000 to create the WHO-modified partograph by removing the latent phase of labour.^[4] In 2020 WHO labour care guide was introduced with various modifications.^[5-7] The LCG aims to promote the use of evidence-based, respectful and woman-centred care during labour and childbirth.^[8] The healthcare

provider regularly records clinical parameters related to labour progress and maternal and fetal wellbeing; deviations from normal are highlighted to ensure the required actions are taken.

- The previous 1 cm/hour 'alert' and 'action' lines have been replaced with evidence-based time limits for each centimetre of cervical dilation during the active first stage of labour, starting at 5 cm of dilation (instead of 4 cm or less).
- There is now a dedicated section for monitoring the second stage of labour.
- A new section has been added to assess and encourage the use of supportive interventions to enhance the overall childbirth experience.
- The strength of uterine contractions is no longer recorded, as it is challenging to quantify and standardize clinically.
- Any deviations from expected observations for any labour parameter must be highlighted, and the provider is required to document the corresponding response.

The Labour Care Guide has 7 sections, which were adapted from the previous partogram design:

Section 1: Identifying information and labour characteristics at admission.

Section 2: Supportive care

Section 3: Care of the baby

Section 4: Care of the woman

Section 5: Labour progress

Section 6: Medication.

Section 7: Shared decision-making

The WHO recommends that the LCG be incorporated into routine care worldwide.⁹ However, effectively implementing the LCG necessitates a proactive approach that enhances healthcare providers' clinical practices. This improvement aims to elevate the quality of intrapartum care, minimize unnecessary interventions, and better support women during labor.

WHO partogram remains underutilised in India due to poor doctor patient ratio. Low rate of complete documentation of the WHO LCG (labour care guide) can be attributed to several factors like limited awareness and training, a shortage of medical staffs, high patient volumes, inadequate supervision,

negative perceptions, and the complexity involved in plotting the WHO LCG. In order to overcome the challenges and complexities associated with the WHO partogram, Dr A K Debdas from India has devised a low skill method known as paperless partogram which can be used by health care worker in low resource settings. In the paperless partogram, clinicians calculate two times, an alert estimated time of delivery (ETD) and an action ETD. The alert calculation is based on the fact that cervix dilates at the rate of 1cm/hr in active phase of labour.² The clinician simply adds 6 hours to the time when the woman reaches 4 cm of dilation to determine the alert estimated time of delivery (ETD), which indicates when cervical dilation is expected to reach 10 cm. The clinician adds 4 hours to the alert ETD to get the action ETD.^[10-12] When the alert estimated time of delivery (ETD) is reached, clinicians should be aware that the woman has not yet delivered and should be referred to a center which is equipped with emergency obstetric care. No delivery by action ETD warns against prolonged labour and thus arrangement should be made to deliver the baby either by medical or surgical interventions.¹³ Timely intervention in case of any obstetric complication leads to healthy mother and the baby irrespective of estimated time of delivery (ETD).

Aim

To study the WHO-labour care guide in comparison to the paperless partogram for the effective management of labour.

Primary Objective

1. To measure the progress of labour in terms of the average number of hours taken by a woman for delivery where ETD /action ETD was crossed in both groups.
2. To calculate the average number of hours taken by a woman for delivery where alert was raised/alert ETD was crossed in both the groups.
3. To calculate the average number of hours taken by woman to deliver when ETD/Alert ETD was not crossed in both the groups.

Secondary objectives

To study maternal and perinatal outcomes.

MATERIALS AND METHODS

This was a prospective interventional study conducted in the Department of Obstetrics and Gynaecology of Sharda Hospital (associated with school of medical sciences and research) from Aug 2024 to October 2024. All term patients visiting Sharda Hospital for delivery in labour ward, as per our inclusion criteria, were included in the study after giving informed and written consent. Before starting the study, institutional ethical committee approval was obtained. A detailed history was taken, and clinical examination was done. Relevant haematological, biochemical investigations and ultrasound were performed on all study subjects. Measures were taken to ensure that trial participants remained unaware of their assigned groups through

single blinding. The statistician and outcome assessors were not blinded.

Inclusion criteria:

- Age: 19-40 years
- Gestational age: 37+0 to 40+6 weeks.
- Singleton pregnancy
- Cephalic presentation
- No history of medical or surgical illness
- In established labour (3 contractions in 10 minutes, lasting 45 to 60 seconds)
- Cervical dilation of 5 cm on vaginal examination for group A and 4cm in group B.
- Adequate pelvis

Exclusion criteria:

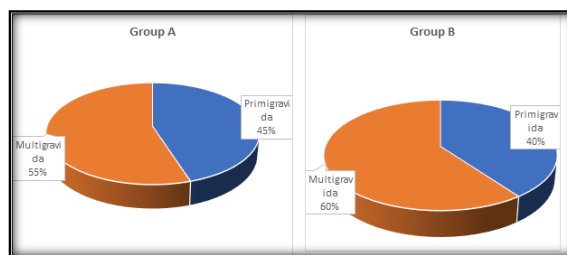
- Non cephalic presentation
- Obvious cephalopelvic disproportion
- Previous caesarean section
- Multiple pregnancy
- Pregnancy-induced hypertension
- Antepartum haemorrhage
- Known major foetal structural anomaly
- Previous uterine surgery

On review of the hospital record prevalence of normal vaginal delivery was found to be 60 percent at our center and thus taking 8 percent margin of error with 10 percent defaulter rate the sample size calculated was 160. These antenatal term patients were divided into two groups (Group A and Group B). Group A consisting of 80 women whose normal labour was monitored by the WHO Labour care guide, and Group B consisting of another 80 women whose normal labour was monitored by the Paperless Partogram Method.

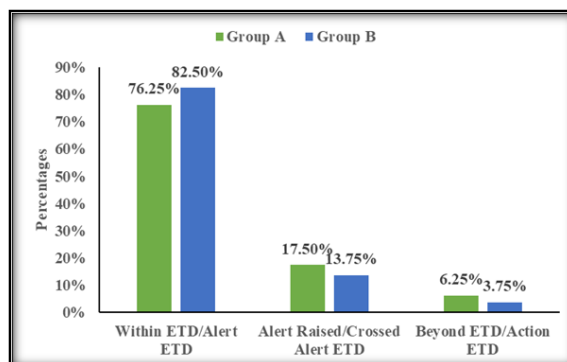
Statistical Analysis: The comparison was based on the effective management of labour using the action and alert reference points in WHO labour care guide and action and alert Estimated Time of Delivery (ETD) in paperless partogram. Data were collected and analysed for the two groups using the Statistical Package for the Social Sciences (SPSS) software latest version for windows. P-value was set at <0.05 for significant results.

RESULTS

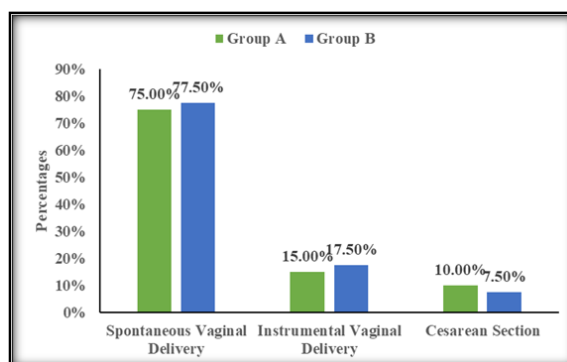
A total of 160 mothers with pregnancies that meet specific criteria were recruited after providing informed consent. These participants were divided into two groups: Group A consisting of 80 women whose labour will be monitored by the WHO labour care guide, Group B consisting of 80 women whose labour will be monitored by the Paperless Partogram Method. Baseline characteristics of population is mentioned in [Table 1].



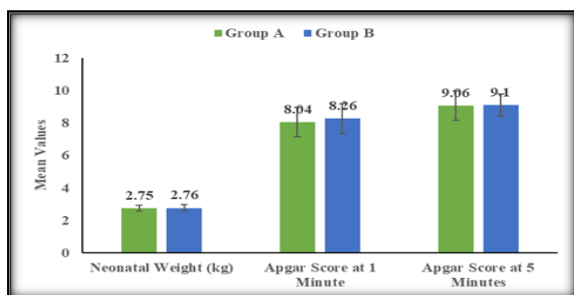
Out of total 80 patients in group A, 55% were multigravida and 45% were primigravida while on the other hand in group B (80), 60% were multigravida and 40% were primigravida



It was observed that most of the patients, 76.25% in group A and 82.5% in group B delivered before crossing ETD or reaching alert ETD respectively. 17.5% in group A and 13.75% in group B delivered after the alert was raised or crossed alert ETD respectively. Only 6.25% in group A and 3.75% in group B delivered after crossing ETD and action ETD respectively [Table 3].



On comparing the mode of delivery 75% in group A and 77.5% in group B had spontaneous vaginal delivery. 15% in group A and 17.5% in group B had instrumental (either forceps or vacuum assisted) vaginal delivery [Table 4]. P value was found to be significant as 0.046.



Mean of the neonatal weight in kg was found to be 2.75 in group A and 2.76 in group B. Mean of APGAR Score at 1 minute and 5 minutes in group A were 8.04 and 9.06 respectively while for group B it was found to be 8.26 and 9.1 respectively [Table 5]. There was no significant difference in both the groups in terms of perinatal outcomes.

Table 1: The baseline characteristics of the patients.

Variable	Group A (n=80)	Group B (n=80)	P value
Age (years)			0.862
Mean \pm SD	26.8 \pm 3.4	26.2 \pm 3.2	
Range	18 – 36	18 – 35	
Gestational Age (weeks)			0.413
Mean \pm SD	38.8 \pm 0.8	38.6 \pm 0.89	
Range	37 – 41	37 – 41	
BMI (kg/m ²)			0.922
Mean \pm SD	29.7 \pm 3.5	27.8 \pm 2.6	
Range	22 – 34	22 – 32	

Table 2: The Obstetric characteristics of the patients.

Variable	Group A (n=80)		Group B (n=80)		P value
	Frequency (n)	%	Frequency (n)	%	
Primigravida	36	45.00%	32	40.00%	0.230
Multigravida	44	55.00%	48	60.00%	

Table 3: Distribution of cases in relation to alert and action ETD

Variable	Group A (n=80)		Group B (n=80)		P value
	Frequency (n)	%	Frequency (n)	%	
Within ETD/Alert ETD	61	76.25%	66	82.50%	0.611
Alert Raised/Crossed Alert ETD	14	17.50%	11	13.75%	0.190
Beyond ETD/Action ETD	5	6.25%	3	3.75%	0.742

Table 4: Comparison between the two groups as regard Mode of delivery

Variable	Group A (n=80)		Group B (n=80)		P value
	Frequency (n)	%	Frequency (n)	%	
Spontaneous Vaginal Delivery	60	75.00%	62	77.50%	0.281
Instrumental Vaginal Delivery	12	15.00%	14	17.50%	0.046
Cesarean Section	8	10.00%	6	7.50%	0.079

Table 5: Comparison between the two groups as regard Perinatal outcome

Variable	Group A (n=80)	Group B (n=80)	P value
Neonatal Weight (kg)			0.967
Mean \pm SD	2.75 \pm 0.19	2.76 \pm 0.2	
Range	2.2 – 3.3	2.3 – 3.4	
Apgar Score at 1 Minute			0.130
Mean \pm SD	8.04 \pm 0.9	8.26 \pm 0.93	
Range	6 – 10	7 – 10	
Apgar Score at 5 Minutes			0.373
Mean \pm SD	9.06 \pm 0.9	9.1 \pm 0.67	
Range	8 – 10	8 – 10	

DISCUSSION

Labour monitoring and proper management help in reducing maternal and perinatal morbidity and mortality. The partograph is a bedside tool that allows midwives and obstetricians to record maternal and fetal observations in a simple, visual format, illustrating the progress of labor.^[14] It acts as an early warning system, aiding in timely decision-making about labour augmentation, termination, and, if needed, transfer to a higher-level facility for further management. While the WHO recommends the

universal use of the partograph,^[15] it is seldom utilized and, when it is, it is often misinterpreted. The paperless partogram proposed by Debdas's method is simple, requires minimal skill, and is more easily accepted in low-resource settings.

In our study we recruited 160 women with term gestations (Group A and Group B) and were monitored using WHO Labour Care Guide and Paperless Partogram respectively. The duration of active first stage (from 5 cm until full cervical dilatation) usually does not extend beyond 12 hours in first labours, and usually does not extend beyond

10 hours in subsequent labours while second stage of labour does not extend beyond 3 hrs in first labour while 2 hrs in subsequent labour as per WHO Labour Care Guide.

In the present study the course of labour with Paperless Partogram was comparable with that of WHO Labour Care Guide. Most of the cases (82.5%) in Paperless partogram had normal course of labour and delivered before alert ETD and 3.75% beyond action ETD and total of (17.5%) after alert ETD, while 76.2% in WHO Labour Care guide was delivered before ETD and 6.25% beyond ETD. A study conducted in the labour unit of Bankura Sammilani Medical College included 354 cases of normal labour to assess the validity of the paperless partogram. Of these, 301 (85.03%) patients delivered within the expected time of delivery (ETD), while 53 (14.97%) patients delivered after the ETD.^[16]

In our study the rate of caesarean section in paperless group was 7.5% in compared to 10% in WHO group, while 77.5% had spontaneous vaginal delivery and 17.5 % had instrumental vaginal delivery in paperless group, 75% had spontaneous vaginal delivery and 15.5% had instrumental vaginal delivery in WHO group.

The study by Faswila et al. showed a slightly higher rate of C.S., with 13% in the paperless group and 18% in the WHO group.^[17]

On analysing the perinatal outcome, we found that the APGAR score after 1 min was (Mean \pm SD) (8.04 \pm 0.19) in group A and (8.26 \pm 0.93) in group B respectively (p=0.96). The Apgar score after 5 mins had (Mean \pm SD) (9.06 \pm 0.9) in group A and (9.1 \pm 0.67) in group B. There is no statistically significant difference between the two studied groups as regard prenatal outcomes. The neonatal outcomes in the paperless group, as reported by Abbas et al, showed similar results, with an average Apgar score of Mean \pm SD (8.7 \pm 0.4) at 1 minute and (99.9 \pm 0.1) at 5 minutes.^[18]

CONCLUSION

In our study, we found that the paperless partograph was as effective as the WHO partograph in monitoring labour and determining further management, as both partographs help prevent prolonged and obstructed labour. Paperless partograph acts as an efficient tool in labour monitoring in a set up with high patient load and less manpower as it needs minimum training and skill when compared to WHO Labour Care Guide.

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