

## **COMPARISON OF OUTCOME OF LABOUR USING EXISTING AND NEW GUIDELINES OF WHO ON ACTIVE PHASE BY USING PARTOGRAPH**

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**ABSTRACT:**Worldwide, more than a million women between the ages of 15 and 49 years die each year from complications of pregnancy and childbirth. About 500,000 women die annually with a huge number left with injury because of pregnancy related causes.<sup>1</sup>For each maternal death more women suffer serious complications. Prompt detection of abnormal progress and prevention of prolonged labour can significantly reduce these complications. Therefore, techniques for monitoring labour play an important role in preventing poor maternal and perinatal outcomes.The use of partograph is an important and cheap way of achieving this goal. It is an inexpensive tool designed to provide a continuous pictorial overview of labour and has been shown to improve outcomes when used to monitor and manage labour.. Parameters used in monitoring foetal condition during labour include foetal heart rate, membrane status, liquor quality and moulding. The progress of labour is central to labour management using a partograph. It records the rate of cervical dilatation, descent of the presenting part and pattern as well as strength of uterine contractions. The third component records maternal temperature, pulse rate, maternal blood pressure and urinalysis.

The evolution of partograph dated back to 1954 when Friedman first described a normal graphical cervical dilatation pattern which is sigmoid in nature. It divided labour into two functional parts; the early or latent phase and the active phase.

The purpose of this study is to use contemporary labour data in parturients with spontaneous onset of labour to examine the labour patterns.

### **1. INTRODUCTION**

Worldwide, more than a million women between the ages of 15 and 49 years die each year from complications of pregnancy and childbirth. About 500,000 women die annually with a huge number left with injury because of pregnancy related causes.<sup>1</sup>For each maternal death more women suffer serious complications. Prompt detection of abnormal progress and prevention of prolonged labour can significantly reduce these complications. Therefore, techniques for monitoring labour play an important role in preventing poor maternal and perinatal outcomes.The use of partograph is an important and cheap way of achieving this goal. It is an inexpensive tool designed to provide a continuous pictorial overview of labour and has been shown to improve outcomes when used to monitor and manage labour.. Parameters used in monitoring foetal condition during labour include foetal heart rate, membrane status, liquor quality and moulding. The progress of labour is central to labour management using a partograph. It records the rate of cervical dilatation, descent of the presenting part and pattern as well as strength of uterine contractions. The third component records maternal temperature, pulse rate, maternal blood pressure and urinalysis.

The evolution of partograph dated back to 1954 when Friedman first described a normal graphical cervical dilatation pattern which is sigmoid in nature. It divided labour into two functional parts; the early or latent phase and the active phase.

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### **2. AIM:**

Comparison of outcome of labour using existing and new guidelines of WHO on active phase by using partograph

#### **Inclusion Criteria**

Patients with the following criteria were included in the study.

- Cephalic presentation
- Singleton pregnancy
- Spontaneous onset of labour
- Group 1 – Cervical dilatation 4 cm or less

- Group 2 – Cervical dilatation 6 cm or less

Any case with any of the following conditions was excluded from the study:

- Women with high risk factors in pregnancy
- Women with previous LSCS
- Need for an emergency delivery [fetal heart rate abnormalities at admission]
- Malpresentation
- Antepartum haemorrhage
- Intrauterine death
- LSCS on maternal request

### **Sampling Technique**

It was a consecutive sampling where pregnant women admitted in the labour room were assigned to either group A or group B.

### **Data collection:**

All the cases admitted in the labour room were subjected to detailed history, general physical, and systemic as well as obstetrical examination at the time of admission. Partographic record of the progress of labour was maintained for the patients fulfilling the inclusion criteria. Patients were randomly divided into 2 groups. In Group A, partographic record of active phase was started from 4cm. In Group B, partographic record of active phase was started from 6cm. Progress of labour, subsequent interventions and the outcome of labour was monitored in both the groups.

### **Outcome Measurement**

Outcome was measured in terms of duration of active phase of labour in both the groups, slope of active phase in both the groups.

### **Statistical Methods**

Data was analyzed and appropriate statistical methods like frequency, percentage, mean, standard deviation, 95% CI, chi-square test and t test were employed to analyze data throughout the study.

Descriptive and inferential statistical analysis was carried out in the present study. Results on continuous measurements were presented on Mean  $\pm$  SD (Min-Max) and results on categorical measurements were presented in Number (%). All the baseline characteristics and outcome variables in Group A (4am) and in Group B (6cm) were compared with each other. Significance was assessed at 5 % level of significance. Inferential statistics was employed based on the following assumptions:

Assumptions: Dependent variables should be normally distributed, Samples drawn from the population should be random and representative of population, Cases of the samples should be independent.

Student t test (B tailed, independent) was used to find the significance of study parameters on continuous scale between B groups (Inter group analysis) on metric parameters. Chi-square/ Fisher Exact test was used to find the significance of study parameters on categorical scale between B or more groups.

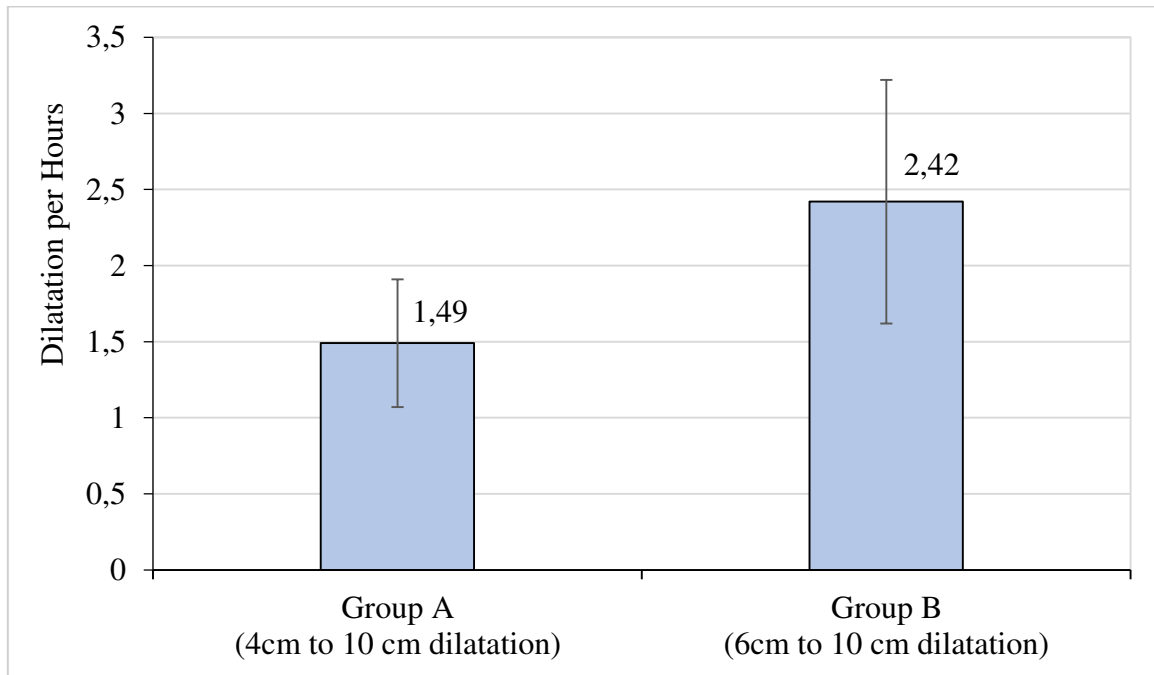
## **3. RESULTS**

This study was conducted among 300 women to compare outcome of labour using existing (4cm) and new guidelines (6cm) on active phase by using partograph. Observations of the study are presented below:

**Table 1: Comparison of Rate of dilatation on both the groups**

Groups	Dilatation	Rate of Dilatation	95% CI Range	P value
Group A	4 cm to 10 cm	1.49 $\pm$ 0.42 cm per hour	0.65 – 2.33	<0.001 (t test)
Group B	6 cm to 10 cm	2.42 $\pm$ 0.80 cm per hour	0.82 – 4.02	

Table 1 shows the comparison of cervical dilatation rate per hour among patients of both the groups. In group A (4 cm), during the observation period, from 4 cm to 10 cm cervix dilated at the average rate of 1.49 cm per hour. In group B (6 cm), during the observation period, from 6 cm to 10 cm cervix dilated at the average rate of 2.42 cm per hour. In Group B (6 cm) the dilatation was significantly quicker during the observation period compared to group A. (p<0.01). In group A the slowest rate was 0.65 cm per hour while in group B was 0.8 cm per hour.



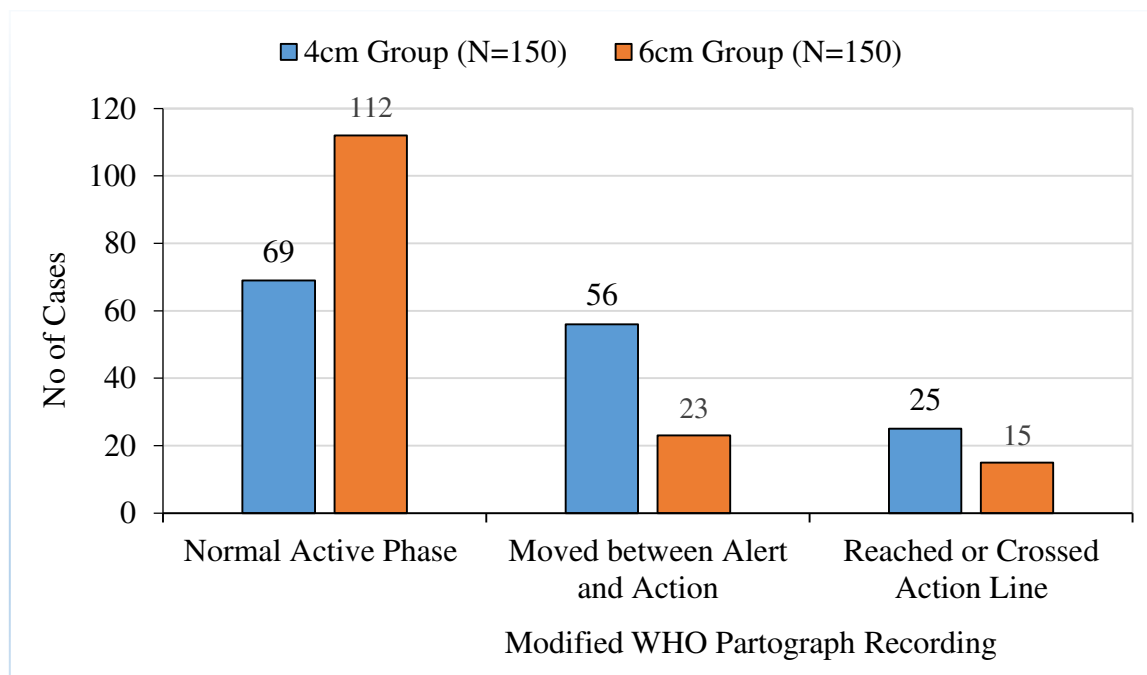
**Figure 1: Comparison of Dilatation Rate among patients of both the groups**

**Table 2: Comparison of Progress of Labour on modified WHO partograph**

Progress during labour	4cm Group		6cm Group		P value
	Cases	%	Cases	%	
Normal Active Phase	69	46.0	112	74.7	<0.001
Moved between Alert and Action	56	37.3	23	15.3	<0.001
Reached or Crossed Action Line	25	16.7	15	10.0	0.089

P value was calculated using chi square test

Table 2 shows the comparison of progress of labour according to WHO partograph in both the study groups. In group A 69 women (46%) and in group B, 112 women (74.7%) remained on or left of the alert line which is statistically significant ( $p < 0.001$ ). In group A and group B 16.7% and 10.0% crossed the action line respectively.



**Figure 2: Comparison of Progress of Labour on Modified WHO partograph**

#### 4. DISCUSSION

In the 1950s, Dr. Emanuel Friedman established the labour curve and defined normal and abnormal labour.<sup>35,36,37</sup> In today's obstetric procedures, his concepts of normal and abnormal labour are still widely accepted. Because of rising incidence of needless labour interventions such as oxytocin augmentation and caesarean section<sup>11</sup>, Friedman's universally recognized typical dilation rate of 1cm/hour is becoming controversial in our present obstetric community.

Recent studies also suggest that the active phase of labour may not begin until the cervical dilatation reaches 5-6 cm, and that it may be slower than previously thought, but that women can still have a normal vaginal delivery.<sup>12,38,39</sup> Because of disparities in race, ethnicity, and pelvic structure, there is significant dispute about the previously stated labour pattern.<sup>40,41</sup>

The present study was conducted among 300 women to compare outcome of labour using existing (4cm) and new guidelines (6cm) of WHO on active phase by using partograph.

In the present study, during the observation period, in group A (4 cm), from 4 cm to 10 cm cervix dilated at the average rate of 1.49 cm per hour. In-group B (6 cm), during the observation period, from 6 cm to 10 cm cervix dilated at the average rate of 2.42 cm per hour. In Group B (6 cm) the dilatation was significantly quicker during the observation period compared to group A. ( $p < 0.01$ ). In-group A the slowest rate was 0.65 cm per hour while in-group B was 0.8 cm per hour.

Purwar R et al<sup>34</sup> (2020) found that the average slope was 1.1 cm/hour, while in the study done by Friedman, the average slope was 1.6 cm/hour. In Purwar R et al study, the minimum active phase dilatation rate in both groups was 0.6cm/hour, which reflects the slowest yet normal labour. Friedman's curve was expanded to 1.2 cm/hour because he did not determine the minimum slope.<sup>44</sup>

Purwar R et al<sup>34</sup> research observations and other recent studies both confirmed this. They have also discovered that vaginal birth is possible even if labour progresses at 1cm/hour. They also discovered that the slope of the labour curve changes after 6 cm in both groups, which was also noticed on Friedman's curve at 4 cm, indicating that the active phase has begun.

In present study, 69 women (46%) in 4 cm group and in 6 cm group, 112 women (74.7%) remained on or left of the alert line which is statistically significant ( $p < 0.001$ ). In 4 cm group and 6 cm group, 16.7% and 10.0% crossed the action line respectively.

Purwar R et al<sup>34</sup> (2020) discovered that 133 women (53.2%) in the 4 cm group and 209 women (83.6%) in the 6 cm group remained on or left of the alert line, which is

WHO recently backed up its position by pointing to new evidence. The National Institute for Health and Care Excellence's intrapartum care guidelines have also been updated to say that a minimal rate of progress in the active first stage of labour is 0.5 cm per hour.<sup>50</sup>

When making a clinical judgement about labour progress, it may be more therapeutically helpful to conceptualise a labour pattern that is slower at the beginning of the typical active phase and quicker towards complete dilatation, based on this study. Although this may be difficult to execute in reality, especially because dilation rates can fluctuate dramatically even within the same woman, it has the potential to prevent the premature diagnosis of dystocia in early labour and the use of needless measures to speed up labour.

## 5. CONCLUSION

From this study we conclude that 6cm of cervical dilatation, rather than 4cm, is a better marker for the commencement of the active phase. Allowing labour to continue for longer before cervical dilatation reaches 6 cm may lower the risk of needless intrapartum interventions and caesarean sections for labour dystocia. If cervical dilation is less than 6 cm and other maternal and foetal conditions are normal, a woman should be permitted to continue labour without assistance.

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