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Role of Paperless Partograph in Monitoring Primiparous and Multiparous Labour

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ABSTRACT

***A** hospital based prospective study was conducted to determine the role of paperless partograph in monitoring primiparous and multiparous labour by comparing with the WHO Modified partograph. The course of labour in 400(200 primiparous and 200 multiparous) women with term, singleton pregnancies with vertex presentation in labour without any complications was studied by using either partographs in groups of 200 (100 primiparous and 100 multiparous) and the labour outcome of primiparous and multiparous compared. The rate of caesarean section was 9% primiparous and 13% multiparous monitored by Paperless partograph as against 9% primiparous and 12% multiparous of the WHO one. Augmentation was required in 8% primiparous and 5% multiparous cases subjected to the Paperless partograph which was comparable to the WHO Modified partograph. The labour Paperless partograph was similar to the WHO Modified partograph in monitoring primiparous and multiparous labour as an effective means to prevent prolonged labour and its sequel.*

***Keywords**: Prospective studies, caesarean section, labour, pregnancy*

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INTRODUCTION

The partogram is a chart of cervical dilation during labor. Friedman first described it in the 1950s.[8] and thereafter completed by the concept of alert and action lines by Philpott and Castle.[9]

Prolonged and obstructed labour is one of the major causes of maternal and perinatal mortality and morbidity worldwide. Around 42000 or 8% of all maternal deaths in the year 2000 were attributed to prolonged labour. In India 5% of the total maternal deaths are caused by prolonged labour and obstructed labour.[1]

Moreover prolonged labour is associated with significant maternal morbidity due to sepsis, post partum hemorrhage, ruptured uterus and urinary fistula. Again prolonged and obstructed labour is also a major precedent of perinatal deaths, birth asphyxia and neonatal sepsis. Early detection of abnormal labour and timely intervention to prevent prolonged labour can reduce the sequel of obstructed labour, postpartum hemorrhage and sepsis and thus result in better labour outcomes. The partograph which is a graphical representation of the various events of labour and salient features of mother and father plotted against time serves to be an effective tool to monitor labour. Use of WHO partograph facilitates early recognition of any deviation from normal labour and thereby aids appropriate intervention like amniotomy, oxytocin induction and also caesarean section. It serves to be an early warning system for all health professionals including doctors, midwives and traditional birth attendants and assists in early decision on transfer, augmentation and termination of labour. Yet the WHO partograph is not used widespread in low resource areas. Dr. A. K. Debdas argues that the present WHO partograph is not adapted to local needs, is not acceptable to those who use it and cannot be used given the available resources. Dr. Debdas has proposed

a new, low-skill and graphless method for preventing prolonged labour- the Paperless partograph[2]. In this study we have tried to evaluate the impact of use of Paperless partograph in labour outcomes of primiparous and multiparous women.

MATERIALS AND METHODS

The present study was undertaken at the tertiary hospital of Gauhati Medical College and Hospital (GMCH), Assam, between 1.05.2014 to 30.04.2015. The study was an observational study. Ethical clearance was obtained from the Institutional Ethics committee and the participants were included after an informed and written consent.

In our study 400 (200 nulliparas and 200 multiparous) women attending the labour room was included on the basis of the following inclusion and exclusion criteria.

Inclusion criteria: Woman with term singleton pregnancies with vertex presentation in spontaneous labour without any complications.

Exclusion criteria:

a) Woman with obstetric complications like preterm labour, previous caesarean section post dated pregnancy, cephalopelvic disproportion, ante partum haemorrhage, severe pre eclampsia/ eclampsia, malpresentations, multiple pregnancy, foetal distress, intrauterine foetal death, intrauterine growth retardation (IUGR), premature rupture of membranes (PROM) etc.

b) Woman with medical complications like anaemia, hypertension, diabetes and immuno compromised states

Patients fulfilling the inclusion criteria and those willing to participate were randomly divided (100 primiparous and 100 multiparous) into two groups – Group A and Group B. WHO Modified partograph was used in Group A and Paperless partograph was used in Group B respectively to monitor labour. . The following protocol was followed-

- The plotting was started when cervical diclaration was 4 cms.
- Four hourly per vaginal examination was done but could be performed earlier if indicated.
- If delivery is not achieved by Alert line/ Alert ETD the case is re-evaluated and appropriate decision taken for augmentation, transfer or termination of pregnancies.
- If delivery does not occur by Action line/ Action ETD, the patient is at risk of prolonged labour and termination is planned by appropriate medical or surgical intervention.

RESULTS AND OBSERVATIONS

The mean age was 23 ±3.6 years for primiparous and the 26 ±3.2 years for multiparous patients. The average gestational age was 37.6 ± 1.04 weeks in primiparous and 37.7±0.78 weeks in multiparous (**Table 1** and **Figure 1)**). The early age of marriage and pregnancy explains the reason for low mean age of primiparous and multiparous. The pulse and blood pressure of both primiparous and multiparous were within the normal range. The average uterine contractions were 2.7±1.06/ 10 mins for primiparous and 2.74±1.16/ 10 mins for multiparous which implied that they were in active labour.

Table 1 Baseline characteristics of study Population

Variable	Range	Mean ±SD	
		Primiparous	Multiparous
Age (years)	17-36	23±3.6	26±3.2
Nutritional status (BMI Kg/m^2)	16-31	24.17±3.6	25.4±3.4
Gestational age (weeks)	37-41	37.6±1.04	37.7±0.78
Pulse (beats /min)	60-90	72.5±4.48	72.6±3.73
Systolic BP (mm Hg)	90-120	108.5±9.5	107.5±8.9
Diastolic BP (mm Hg)	60-90	75.9±9.2	77.1±8.9
Uterine contractions /10 mins	1-5	2.7±1.06	2.74±1.16

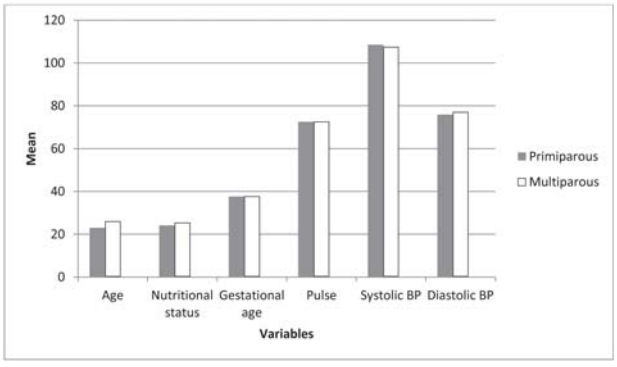

Figure 1 Baseline characteristics of study Population

In our study it was found that most of the cases delivered before reaching the alert line/alert ETD. 79% primiparous and 85% multiparous in group A delivered within alert line as against 84% primiparous and 85% multiparous of group B who delivered within alert ETD. Again 14% primiparous and 13% multiparous monitored by the WHO Modified partograph delivered between the alert and action line in group A while 13% of primiparous and 14%

multiparous delivered between alert and action ETD in group B. Only a small proportion of 7% primiparous and 2% multiparous of group A crossed the action line while 3% primiparous and 1% multiparous monitored in group B delivered beyond the action ETD. Another aspect seen in our study was that augmentation was required in 13% of primiparous and 8% of multiparous monitored by the WHO Modified partograph while 8% of primiparous and 5% of multiparous monitored by Paperless partograph required augmentation (**Table 2**). There was no statistical significant difference between the two. Thus course of labour with Paperless partograph in both primiparous and multiparous was comparable with that of WHO modified partograph.

Table 2 Type of labour in relation to alert line/alert ETD and action line/action ETD

Type of labour		**Group A (WHO Modified)**	**Group B (Paperless)**	**p**
Labour within alert line/alert ETD	Primiparous	79	84	0.3
	Multiparous	85	85	1
Labour between alert line/ alert ETD and action line/ action ETD	Primiparous	14	13	0.8
	Multiparous	13	14	0.8
Labour crossing action line/action ETD	Primiparous	7	3	0.2
	Multiparous	2	1	0.56
Augmentation of labour	Primiparous	13	8	0.26
	Multiparous	8	5	0.39

In the present study (**Table 3**) it was seen that 84% of primiparous and 86% of multiparous monitored by the WHO Modified partograph delivered spontaneously which was similar to those monitored by the Paperless partograph. Again 7% primiparous and 2% multiparous were delivered by assisted vaginal delivery as against 9% primiparous and 3% multiparous of group B. 9% of primiparous and 12% multiparous cases monitored by the WHO Modified partograph needed caesarean section while 9% primiparous and 13% multiparous subjected to Paperless partograph required caesarean section. There was however no statistical difference between the two groups in regards to mode of delivery.

Table 3 Labour outcome with either partograph

Mode of delivery		**Group A (WHO Modified)**	**Group B (Paperless)**	**p**
Spontaneous delivery	Primiparous	84	82	0.7
	Multiparous	86	84	0.6
Assisted Vaginal delivery	Primiparous	7	9	0.6
	Multiparous	2	3	0.6
Caesarean section	Primiparous	9	9	1
	Multiparous	12	13	0.8

DISCUSSION

Prolonged and obstructed labour is one of the easily preventable causes of maternal mortality. Early detection of abnormal labour through partograph serves to be an efficient measure to reduce the incidences of prolonged labour and its sequel. The Paperless partograph was devised by Dr. Debdas in a simple and graphless manner to monitor labour and aid in appropriate decision making. In this context the present study was conducted to determine the labour outcome of the Paperless partograph in primiparous and multiparous women by comparing it with the WHO Modified one.

In the present study we found that most of the cases followed a normal course of labour and delivered before the alert line/ alert ETD without any undue intervention. 79 % of primiparous and 85 % of multiparous monitored by the WHO Modified partograph delivered within the alert line. Again 84 % primiparous and 85% multiparous subjected to Paperless partograph delivered within the alert ETD. This was in concordance with the study conducted by Dr. Prakash et al in 2014 in Odisha where 75.5% of primigravida and 90.7% of multigravida monitored with the Paperless partograph delivered before the alert ETD.[3]

Only 14% of primiparous and 13% of multiparous monitored by the WHO Modified partograph crossed the alert line while 13% of primiparous and 14% of multiparous cases monitored by Paperless partograph crossed the alert ETD. A minor proportion i.e. 7% primiparous and 2% multiparous monitored by the WHO Modified partograph crossed the action line. They were reassessed and terminated accordingly. Similarly only 3% primiparous and 1% multiparous cases subjected to the Paperless partograph crossed the action ETD. However they were delivered within appropriate time so that none of them progressed to obstructed labour. Almost similar results were seen in a study conducted by Dr. Deblina et all in 2013 in Bankura Medical College, West Bengal where it was observed that 14.5% cases monitored by the Paperless partograph delivered between alert and action

ETD and only 1.8% beyond the action ETD.[4]

The rate of spontaneous deliveries in our study was 84% primiparous and 86% multiparous women in group A and 82% primiparous and 84% multiparous in group B respectively. Similar results were also observed by Dr. Krishna Lingegowda in his study on comparison between WHO and Paperless partograph conducted in PESIMSR, Kuppam in 2014 where 44% cases monitored by WHO partograph and 74% cases monitored by Paperless partograph had a spontaneous delivery.[5]

Augmentation of labour was required with only 13% primiparous and 8% multiparous in group A as against 8% primiparous and 5% multiparous of group B in our study. Another important aspect was that 9% of primiparous and 12% of multiparous women monitored by the WHO Modified partograph required a caesarean section while 9% of primiparous and 13% of multiparous labour observed by the Paperless partograph required caesarean section. A study by Kiran Agarwal et al in Uttar Pradesh observed a rate 13% augmentation of labour and 1% of caesarean sections with the Paperless partograph.[5]

Another study conducted by Entesar Fatouh et al in Egypt from 1st March to last of August 2014 observed a CS rate of 23.1% with the Paperless partograph.[6, 7]

From our results we found that primiparous and multiparous women monitored by the Paperless partograph had similar labour outcomes as those monitored by the WHO Modified partograph. It is seen that the Paperless partograph is as effective as the WHO Modified partograph in management of labour. Thus the use of Paperless partograph holds great promises as a simple tool for monitoring labour and preventing prolonged labour and its sequel.

Using the Alert and Action ETD was found convenient to derive appropriate measures for the outcome of labor. So, the paperless partogram is a simplified method to manage the active stage of labor that needs advocacy among caregivers, mostly in low-skilled and/or staffed settings.[10]

CONCLUSION

Prolonged labour accounts for nearly 5% of the causes of maternal mortality in India.[1] These maternal deaths are easily preventable if we can identify any deviation of normal labour at the earliest and initiate prompt measures. The WHO Modified partograph have been a time tested and effective measure for appropriate monitoring and management of labour. However the Paperless partograph devised by Dr. Debdas was found to be as effective as the WHO Modified partograph in monitoring both primiparous and multiparous labour. From our study we can conclude that the Paperless partograph has great prospects to prevent prolong labour as it is more simpler, less time consuming without any graph and has similar labour outcomes as the WHO Modified partograph.

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