

The Paperless partograph – The new user-friendly and simpler tool for monitoring labour

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Abstract: It was a hospital based prospective analytical study

Objectives: To compare the user-friendliness of the Paperless partograph with the WHO Modified partograph

Methods: 12 resident doctors working in shift duties were trained regarding the use of either partographs (WHO Modified and Paperless Partograph). They were then asked to fill a structured questionnaire and score each partograph on the basis of their experience. The partographs were checked for completeness and causes affecting non compliance were identified.

Results: Only 75% of the WHO Modified partographs were completely documented as against 96.7% of Paperless one the various causes affecting compliance of WHO Modified partograph was less staff, more time consuming, high patient load and complex graph. Moreover the paperless partograph was significantly scored better than the WHO Modified partograph ($p < 0.001$) and most of them (66.4%) preferred to use the Paperless partograph.

Conclusion: The labour outcome with Paperless partograph was simple and more user-friendly than the WHO Modified partograph. It was more preferable for monitoring labour.

Keywords: prospective studies, pregnancy, birth, questionnaires, labour, obstetrics

I. Introduction

Maternal deaths still continues to be a major public health problem worldwide. Everyday women die during pregnancy and childbirth. India is among those countries which have a very high MMR. Although MMR has reduced from 212 per lac in 2007-09 to 178 per lac live births in 2013 yet figure was very high compared to other countries.¹ One of the major cause of these deaths is prolonged and obstructed labour (5%)¹ which leads to high maternal and perinatal mortality and morbidity. Studies have shown that using the WHO modified partograph can be highly effective in reducing complications from prolonged labor such as postpartum hemorrhage, sepsis, uterine rupture and its sequel and is associated with better neonatal outcome. It helps in making the correct decisions regarding the augmentation, timely caesarean section and transfer to a higher centre.

However the use and complete documentation on the partograph has become limited in present obstetrics. Appropriate use of partograph requires adequate number of skilled health workers with a positive attitude towards its use.² Several factors affecting the utilization of the partograph include poor knowledge^{3,4,5}, non-availability of the partographs in the labour wards^{6,7}, lack of adequate staff⁸, an additional time consuming task³ and lack of motivation of the health workers⁵.

In this context Dr. Debdas has proposed the "Paperless Partograph", which is a simple, graphless, non time consuming, two step calculation that identifies slow progress of labour and helps in appropriate decision making.⁸

Paperless partograph monitors labour on the basis of calculation of an Alert ETD and Action ETD based on Friedman's well accepted rule that the cervix dilates at the rate of 1 cm/ hour in active phase of labour.

The present study plans to compare the user friendliness of the Paperless partograph with the WHO modified partograph and to determine which is more preferable for monitoring of labour.

II. Methodology

The present study was a hospital based analytical study which was conducted at the tertiary hospital of Gauhati Medical College and Hospital, Assam, India over a period from 1.05.2014 to 30.04.2015. It was used to assess the user friendliness of the Paperless partograph against the WHO Modified partograph.

Ethical clearance was obtained from the Institutional Ethics committee and the participants were included after an informed and written consent.

The inclusion criteria were 12 resident doctors working on shift duties in the labour room. They were trained about the use of either partographs (WHO modified and Paperless partograph). 240 partographs (120 of

each type) was given to the residents with which they monitored labour. Purposive sampling was done. A structured Questionnaire divided into 4 sections was used in the study.

Section1- Questions that elicited the socio-demographic characteristic of the respondents.

Section 2- Questions related to the knowledge of partographs before the training.

Section 3- Questions designed to identify factors behind non compliance of partographs.

Section 4- Preferences regarding use of partographs (WHO Modified or Paperless)

Section 5- User-friendliness, Teachability and Usefulness score of either partographs.

In order to produce a more objective assessment, scoring method was devised to elicit the user-friendliness. A score of 1-10 each for user-friendliness, teachability and overall usefulness was given to either partographs on the basis of observer's personal experience. The data entry and analysis were performed using SPSS version 14. Descriptive frequencies, percentage, means, and charts were used. Chi-square test and student T test statistical methods were used as appropriate and results confirmed at 0.05 level of significance.

III. Results

Table 1- Sociodemographic characteristics of observers.

Variable		Frequency
Age (25-31 years)		Mean 27 years
Sex	Males	33.3%
	Females	66.7%

The residents participating in the study belonged to the age group of 25- 31 years the mean age being 27 years. Most of them were females (66.7%) pursuing their post graduation in the department of Obstetrics and Gynaecology in the institute.

Table 2- Observer's knowledge regarding partograph-

Definition of partograph	Number of observers
A simple graphic recording of progress of labour and salient maternal and fetal conditions plotted against time	10(86.1%)
A chart for monitoring labour	2(16.7%)
Reduce maternal and perinatal mortality and morbidity	
Yes	9(75%)
No	1(8.3%)
Don't know	2(16.7%)

Most of the participants were well acquainted with the WHO Modified partograph as it was a part of their undergraduate curriculum. However none of them had heard about the paperless partograph as it is a newer health intervention. In spite of previous knowledge of the WHO Modified partograph and its utility, 25% of the residents were not convinced of its role in reducing maternal and perinatal morbidity and mortality.

Table 3- Assessment of documentation of partographs(WHO Modified and Paperless)

Variables		WHO Modified (n=120)		Paperless Partograph(n=120)	
		Completely	Incompletely	Completely	Incompletely
Fetal parameters	FHR	120(100%)	0	120(100%)	0
	Moulding	115(95.8%)	5(4.2%)	Not included	Not included
	Liquor	117(97.5%)	3(2.5%)	118(98.3%)	2(1.7%)
Progress of labour	Cervical dilatation	118(98.3%)	2(1.7%)	120(100%)	0
	Descent	110(91.6%)	(8.4%)	119(99.2%)	1(0.8%)
	Uterine contraction	108(90%)	12(10%)	118(98.3%)	2(1.7)
Maternal condition	Pulse	100(83.3%)	20(16.7%)	116(96.7%)	4(3.3%)
	BP	98(81.7%)	22(18.3%)	116(96.7%)	4(3.3%)
	Temperature	99(82.5%)	21(17.5%)	Not included	Not included
	Urine Analysis	90(75%)	30(25%)	Not included	Not included
All parameters in partograph		90(75%)	30(25%)	116(96.7%)	4(3.3%)

In our study it was seen that only 75% of WHO modified partograph was completely documented in all parameters as against 96.7% of Paperless partographs. Among the fetal parameters the fetal heart rate was the most commonly maintained whereas moulding was the least maintained parameter.90% of WHO modified while 98.3% of Paperless partographs were complete regarding progress of labour. On analysis it was seen that cervical dilatation was the most commonly filled parameter of progress of labour in either partograph while Moulding was the least maintained in WHO Modified partograph. Again 75% WHO Modified partographs and 25% Paperless partograph were complete as regards maternal condition. It was observed that maternal pulse and Blood Pressure was the least maintained parameter.

Table 4- Assesment of factors of non compliance of partographs

Variable		WHO Modified		Paperless	
		No.	%	No	%
Difficulty in plotting and maintaining partograph		8	66.7	0	0
Factors of non-compliance	Less staff	4	33.3	0	0
	Time consuming	2	16.8	0	0
	High patient load	1	8.3	0	0
	Complex graph	1	8.3	0	0

An important aspect observed was that 66.7% of the residents expressed difficulty with the WHO Modified partograph while they found the Paperless partograph much easier to plot and maintain. Tje various factors for non-compliance of WHO Partograph was less staff(33.3%), time consuming (16.8%), high patient load(8.3%) and complex graphical calculation (8.3%) etc.

Table 5-Score of user friendliness, teachability and overall usefulness.

Variable	WHO Modified	Paperless	p value
User friendliness	3.6 ±0.8	7.9 ±0.65	<0.0001
Teachability	3.6 ±1.4	8.08 ±0.9	<0.0001
Overall usefulness	7.6 ±0.4	7.75 ±0.45	0.39

On analysis of user friendliness it was seen that the mean user friendliness score was lower for WHO Modified (3.6 ±0.8) than Paperless partograph (7.9±0.65) which was highly significant.(p value being <0.0001). The residents found the Paperless partograph more simple due its graphless and low time consuming nature.

In regards to teachability also the paperless partograph was rated better than the WHO Modified partograph. The p value being <0.0001 was highly significant. Observers found it easier to train others on the use of the Paperless partograph. Even nurses could be easily taught regarding its utility and maintenance. As regards to the score for overall usefulness there was no significant difference (p value being 0.39) because both partographs were equally effective in preventing prolonged labour and had similar rates of augmentation and operative intervention.

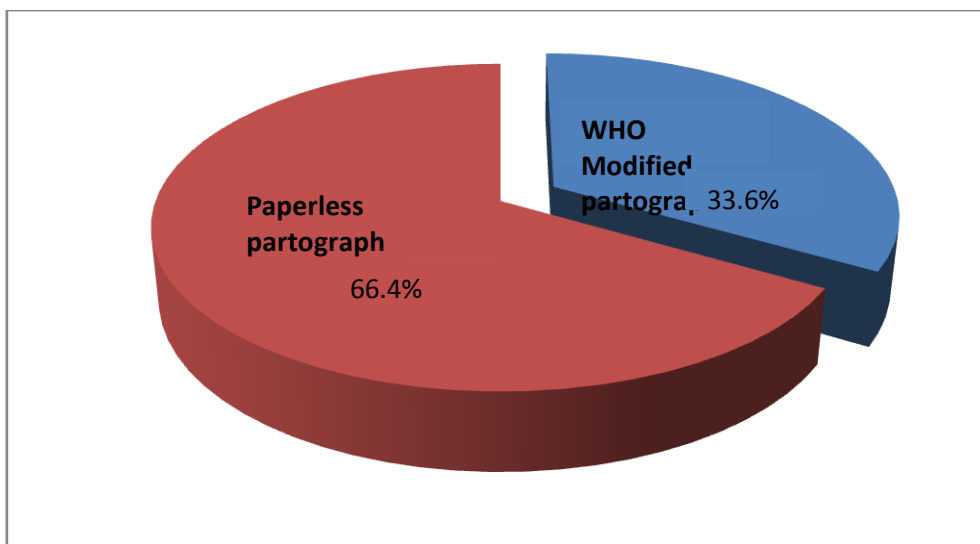


Figure 1 - Preference of residents for either partographs

On asking about their preference, 8 out of 12 residents (66.6%) preferred to use the Paperless partograph as against 4 (33.4%) who preferred the WHO partograph. This was because of the ease of plotting and maintaining the Paperless partograph which required minimal time consumption.

IV. Discussions

Labour is an enigma and complications can arise at any stage that can threaten the life of the mother and the fetus. Thus adequate management of labour involves proper monitoring of the various phases so as to identify any deviation from normal labour and plan appropriate measures to prevent complications and respond to emergencies. The WHO modified partographs are excellent and time tested measures for effective monitoring of labour. However its use has become limited in present obstetrics due to several factors which has affected the quality of intrapartum care. The Paperless partograph suggested by Dr. Debdas promises effective management of labour in a more simpler and graphless manner.

In our study it was seen that the residents were well acquainted with the WHO Modified partograph and its utility in managing labour as a part of their undergraduate training. However 25% of them were not convinced of its role in preventing maternal and perinatal morbidity and mortality. The concept of the Paperless partograph being new, none of them were aware of it before the training.

Another aspect seen in our study is that 26.6% residents faced difficulty in plotting and maintaining the WHO Modified partograph while none experienced difficulty with the Paperless one. The factors responsible for non-compliance of the WHO Modified partograph was less staff, more time consumption, complex graphical presentation and high patient load. Similar results were also seen in a study conducted by Qureshi Z P at Kenya in 2002 where it was concluded that shortage of staff was the major cause of poor use of WHO partograph.⁹ Another study carried out by Margaret M Opiah in the Niger Delta Region of Nigeria in 2012 observed that non availability of partograph (30.3%), shortage of staff(19.4%), lack of knowledge and experience on the use of partographs by midwives were responsible for the low rates of partographic monitoring.¹⁰

Another aspect seen in our study was that the mean user friendliness score was lower for the WHO Modified partograph (3.6±1.4) while it was high for the paperless partograph (7.9±0.65) which was statistically highly significant with $p < 0.0001$. There was significant difference of teachability score between the two groups with the average score for WHO Modified being 3.6±1.4 and Paperless being 7.9±0.65. Thus the Residents found it easier to teach the other staff on paperless Partograph which signifies its easier reproducibility. Both partographs scored similar in overall usefulness ($p=0.39$) as they were equally effective in detecting abnormal labour if plotted correctly.

Most of the resident doctors (66.6%) preferred to use the paperless partograph rather than the WHO partograph (33.4%) for monitoring. Similar results were also seen in a study conducted by Entesar Fatouh et al in Egypt in 2014 with the Paperless partograph where most of the nurses (75%) preferred to use the paperless partograph over the traditional WHO partograph in the management of labour¹¹. Another study by Dr. Krishna Lingegowda carried out with the Paperless partograph in Kuppam also concluded that the Paperless partograph was very simple to understand and can be implemented even in rural set up by midwives with minimal training.¹² Thus the Paperless partograph being simple, graphless and less time consuming was more user friendly and readily acceptable than the by health care providers for monitoring labour.

V. Conclusion

In our study we found that the Paperless partograph being simple and less time consuming was more preferred than the WHO partograph in monitoring labour and deciding further management. The residents found it less confusing as there was no graph to plot and no curve to chase. Also it was found less complicated and required minimal time. Considering the high workload of patients and shortage of manpower the paperless partograph can serve to be used in low resource areas as a more simple and user-friendly measure to monitor labour.

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