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RESEARCH ARTICLE

USE OF PAPERLESS PARTOGRAPH IN MANAGEMENT OF LABOUR

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Abstract

Background: InIndia,a country with low resources, problems of lack of trained staff, large number of deliveries, lack of basic facilities for monitoring of foetuslead to challenges faced by treating obstetrician. Partograph though a simple tool is underused.Several factors have been implicated for this and it's incorrect use at all centres providing maternity care.These are lack of knowledge,improper training,graphs non availability, wrong perceptions regarding it, huge patient number, shortage of staff, lack of monitoring and unsupportivebehaviour among some of the health care givers. Dr. Debdas proposed the Paperless Partograph to be used by clinicians in poor resource areas.

Material and Methods Women were enrolled and randomly divided into two –A and B of 520 each. Group A women were monitored with Modified WHO Partograph.In Group B,once the women reached cervical dilatation of four cm or more, Alert ETD (Estimated Time of Delivery) and Action ETD were calculatedand monitored as per paperless partograph protocol.

Results: Paperless Partograph can be easily used in place of Modified WHO partograph in low resource and high patient load settings as the time taken from 4 cm to full dilatation was similar in both the graphs and the number of PV examinations done and time taken to plot the graph was less in Paperless Partograph than Modified WHO Partograph.

Conclusion: Paperless Partograph is a simple 20 second tool which can be used to monitor labour progress in high patient load settings and peripheral centres.

Introduction:-

India has shown a decrease in the Maternal Mortality Ratio from 130 in 2014-2016 to 97 per lakh live births in 2018-2020.[1]India at 17% and Nigeria at 14% together make up for one third of all maternal deaths worldwide.Prolongedlabour and obstructed labourare the leading causes of maternal deaths, which also lead to perinatal morbidity and mortality.The Sustainable Development Goals target to reduce the global maternal mortality ratio to less than 70 per 100 000 live births till 2030. [2]

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Partograph is a graphic recording of the progression of labour and vital conditions of the woman and foetus, has been used to diagnose labour that is not normally progressing. Use of partograph helps in maintaining uniformity in the referral system and improves the effectiveness andperformance of delivery services.

In poor or developing countries, lack of trained staff, large number of deliveries, lack of basic facilities for monitoring of foetuslead to challenges faced by treating obstetrician. and therefore, less recording and acceptance of Modified WHO Partograph.[3]

Dr. Debdas devised the Paperless Partograph to be used by doctors in peripheral areas as a simple, quick, two step calculation based on simple basic addition and a watch, identifying delayed progress of labour, the time to take action or to transfer a woman to other centre with facilities for better monitoring and if required Caesarean section.[3]

This graphmay be implemented at the Primary Health Centres/Community Health Centres , as they may help in reducing maternal complications, without any extra expense.[4]

Material and Methodology:-

The study was a comparative prospective onecarried out in the Department of Gynaecology and Obstetrics in SMS Medical College, Jaipur, from October 2022 till June 2024 .It aimed to compare effectiveness of Modified WHO partograph and Paperless partograph in assessment of women in active labour.

A total of 1040 women were selected after applying inclusion and Exclusion criteria .Women with single, live, term pregnancy with vertex presentation in spontaneous labour with a cervical dilatation of four or more centimetres suitable for vaginal delivery were included. Women with previous caesarean section, any medical disorder or any congenital anomaly or foetal distress at the start of study were excluded from the study. Data Collection was started after obtaining Ethical clearance after taking written and informed consent. The women were enrolled into two groups of 520 each. Group A women were monitored with Modified WHO Partograph.In Group B, when the women had four cm or more cervical dilatation , Alert Estimated Time of Delivery(ETD) and Action ETD were calculated. The two ETD were calculated using FRIEDMAN'S FORMULA of cervical dilatation of 1cm/hour. ALERT ETD was calculated by adding the remaining dilatation to initial per vaginal examination result.

ACTION ETD was calculated by adding four hours to ALERT ETD.

In Paperless Partograph both ETDs were written in bold on the front page of woman's case sheet and ACTION ETD was circled in red as this is the time when any intervention (like caesarean section, amniotomy, oxytocin augmentation etc.) must be done for better maternal and foetal outcome. Maternal condition in terms of general condition, pulse rate, blood pressure and temperature noted. Foetal heart rate was also noted. Uterine contractions were noted – C1/2/3 (Contractions number/frequency/duration). Initial per vaginal examination was noted at the beginning of plotting the data of partograph and then PV examination was done every 3 hours or when required.

Results:-

The mean age was 25.88±4.26 years in Paperless Partogragh and 25.66±4.06 years in WHO Partograph group. 94.4% and 95.5% women were housewives in WHO and paperless partograph each. 52.30% women in paperless partograph group had studied till 10th standard or below. The two groups were similar on statistical analysis.

The number of per vaginal examinations done in Paperless partograph group was 1-3 in 85.7% women, 4-5 in 18.6% and >5 in only 4.6% women compared to 69.23%, 25.76% and 4.8% respectively in WHO partograph group. The results were statistically significant between the two groups (p-value=0.0198). This suggest that in paperless partograph group lesser number of PV examinations were required as compared to WHO partographgroup.Table 1

Table 1:- Number of Per Vaginal Examination Done in the Two Groups.

No. of PV done	PAPERLESS PARTOGRAPH (n=520)		MODIFIED WHO PARTOGRAPH (n=520)		**Test of Significance-** Chi-square Test χ^2	
	n	%	n	%		
1-3	399	85.7%	361	69.23%	χ^2 1.9	

				Pvalue=0.161	χ^2 = 7.85 p-value=0.0198 (**Significant**)
4-5	97	18.6%	134	25.76%	χ^2 5.93 Pvalue=0.019
>5	24	4.6%	25	4.8%	χ^2 0.02 pvalue=0.884

About 97.11% women when monitored with Paperless partograph group and 93.84% with WHO partograph group progressed from 4 cm to full dilatation in < 6 hours, i.e, before Alert ETD/Line. 2.88% in Paperless and 6.15% in WHO partograph progressed to full dilatation taking 6-12 hours, i.e, after Alert ETD/ Line.

The mean time ± SD for Paperless and WHO partograph was 3.78 ± 1.52 and 3.87 ± 1.65 respectively. No significant statistical difference was seen in the two graphs at the common 0.05 alpha level, although it is somewhat close to the threshold when it comes to time taken to progress from 4 cm to full dilatation of cervix.Table 2

Table 2:- Time Taken to Progress from 4cm to Full Dilatation.

Time Taken to Progress (in hours)		PAPERLESS PARTOGRAPH (n=520)		MODIFIED WHO PARTOGRAPH (n=520)		Chi-square Test χ^2
		N	%	n	%	
4cm – Full Dilatation	<3	142	27.30	143	27.5	7.180 with 3 DF p-value= 0.066
	3-6	363	69.80	345	66.34	
	6-9	13	2.5	30	5.76	
	9-12	2	0.38	2	0.38	
Mean ± SD		3.78 ± 1.52		3.87±1.65		

The time taken to plot data in 75% cases in Paperless group and 59.2% in WHO groups was 1 minute. It was 2 minutes in 23.6% and 36.7% in Paperless and WHO groups respectively and 3 minutes in 1.3% cases in Paperless and 3.8% in WHO group. Only 1 woman (0.2%) in WHO partograph group required 4 minutes to plot the data. The mean ± SD for Paperless group was 1.263 ± 0.469 and for WHO partograph group is 1.450 ± 0.579. Statistically,there was difference in the time taken to plot data in Paperless and WHO partograph.Table 3

Table 3:- Time Taken to Plot Data in both Paperless and Modified WHO Partograph.

Time Taken (in minutes)	PAPERLESS PARTOGRAPH (n= 520)		MODIFIED WHO PARTOGRAPH (n=520)		**TEST OF SIGNIFICANCE-** Chi-square Test χ^2
	n	%	n	%	
1	390	75%	308	59.2%	p-value=0.00191 **(Significant)**
2	123	23.6%	191	36.7%	p-value=0.00012 **(Significant)**
3	7	1.3%	20	3.8%	p-value=0.012 **(Significant)**
4	-	-	1	0.2%	p-value=0.317 **(Significant)**
5 or more	-	-	-	-	-
Mean ± SD (Time in minutes)	1.263 ± 0.469		1.450 ± 0.579		Chi-square = 31.62 p-value= 0.00000063 **(Significant)**

Discussion:-

The number of per vaginal examinations done in Paperless partograph group were less as compared to WHO partographgroup.This significant difference was because of doing PV examination only when required in Paperless partograph group instead of every 4 hours as in WHO partograph group. Less number of PV examinataions done in

a particular patient also decreases the risk of introduction of infection to the patient and its complications like chorioamnionitis , sepsis etc.

There was no significant difference in time taken from 4 cm dilatation to delivery between both the groups as the monitoring of labour done in both the groups was on similar standard protocols, proving that either partograph can be used to monitor the progress of labour.

In a study by Agarwal et al (2013) 4.3 hours was the mean duration for delivery after Alert ETD in Paperless partograph which was in accordance with the recommendations of WHO for partograph with a action line at four-hours.[5]

Debdas A et al (2020) reported that 68.2% women delivered before Alert ETD and 11.8% delivered after Alert ETD when monitored by Paperless partograph.[6]

The time taken to plot data in Paperless partograph group was significantly less compared to WHO partograph group as it required simple time calculation and there was no graph to chase and almost requiring only a minute or less to note the ETDs (Alert and Action Estimated Time of Delivery) on the bedhead ticket and monitor the patient accordingly. Also there is no need of specifically skilled trained doctors to use this partograph as it includes only simple time calculation which can easily be done by any MBBS doctor / Medical officer/ labour room staff which makes it more useful to use in peripheral centres.

In a study conducted by Veena et al ,on questioning regarding the preference, 83.3% resident doctors preferred to use the paperless partograph over the WHO partograph (16.7%) as it took less time. Also because of the ease of writing the Paperless partograph,it required less time.[7]

A study by Deka G et al showed that 66.6% of the resident doctors favoured the use of paperless partograph than the WHO partograph as it was graphless , simple and less time consuming.[8]

Conclusion:-

We can conclude that Paperless Partograph can be easily used in place of Modified WHO partograph in low resource and high patient load settings **.**

Limitation Of Study

1. The study was performed in a tertiary care referral centre, thus it is not indicative of the rest of the population.
2. Since, the research was carried out in a tertiary Hospital, any other limitation that could arise during the use of Paperless partograph in PHCs, CHC or sub-district hospitals could not be identified. Hence, more such studies need to be carried out in peripheral institutes.

Declarations
Funding:
Nil.

Conflict Of Interest:
None to be declared.

Ethical Approval:
The study was approved by the Institutional research review board and Ethics Committee.

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