Zagazig University Medical Journal
www.zumj.journals.ekb.eg
https://dx.doi.org/10.21608/zumj.2020.24548.1747 Volume 28, Issue 6, November 2022(39-44) Supplement Issue

Manuscript ID ZUMJ-2002-1747 (R1)
DOI **10.21608/zumj.2020.24548.1747**

ORIGINAL ARTICLE

Comparative Study between WHO Modified Partograph and the Paperless Partograph in Management of Labour

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Submit Date 2020-02-24
Revise Date 2020-03-25
Accept Date 2020-03-30

ABSTRACT

Background: Partograph is an important tool for preventing prolonged and obstructed labour used firstly by Friedman since 1954. However the current problem is that the use of patograph is low in developing countries due to many factors as high patient load. The Paperless Partograph proposed by Dr. Debdas is a 20 second tool for detection of abnormal labour. This study aimed to assess user friendliness and effectiveness of paperless partograph in management of labour. **Methods:** This study was performed prospectively during the period from November 2018 to August 2019 at Zagazig University Hospital, Egypt. where 300 women in labour were included and divided in two groups ,one group monitoring by WHO partograph and other group by paperless partograph. 10 resident doctors were included t o assess the user friendliness and which partograph they prefers **Results:** The maternal and perinatal outcome and were comparable between both the partographs (91.3%) of cases monitored WHO partograph and (93.3%) cases monitored by the Paperless partograph had a spontaneous delivery with no significance difference between both .the mean of user friendliness score was lower for WHO Modified Mean ± SD (3.7 ±0.47) than Paperless partograph Mean ± SD (8.12±0.8) p value was < 0.001 highly significant. The Paperless partograph was preferred by doctors (80%) as it is simple and non consuming time .

Conclusions: In our study paperless partograph was found to be preferred for monitoring labour.

Keywords: Abnormal Labour, WHO partograph, paperless.

INTRODUCTION

Partograph is a simple, low-cost monitoring tool that graphically presenting the critical events of labor progress, including maternal and fetal wellbeing. It is an early warning system helps the care provider to identify slow progress in labor early, and to initiate appropriate interventions to prevent prolonged and obstructed labor [1]. The partograph was originally developed by Friedman in 1954 He reported the change in cervical dilatation occurring in labor. The progress was recorded in centimeters of dilatation per hour [2]. It was later modified by Philpott and Castle by inclusion of the alert and action lines [3]. These partographs formed the basis of the WHO (world health organization) partograph. The earliest WHO partograph was the Composite partograph which was further modified by eliminating the latent phase to considering the beginning of active phase at 4 cm dilatation of cervix instead of 3cm[1]. However the current problem is that the use and complete documentation of the Partograph is very low in developing countries high patient load, inadequate staff at the health facilities and lack of awareness are some causes of the problem[4]. Dr. Debdas argues that the WHO partograph fails to meet the present requirements and proposes the paperless partograph the Paperless Partograph is a simple, non-time consuming tool, only involves the calculation of two ETDs (estimated time of delivary)[5].

This study was aimed to assess user friendliness and effectiveness of paperless partograph in management of labour.

PATIENTS AND METHODS

This study was performed prospectively at Obstetrics and Gynecology Department, Zagazig University Hospitals at the period from November

2018 to August 2019 on 300 pregnant women in labour divided into two groups, Group A (150) cases monitoring by WHO partograph and Group B (150) cases monitoring by Paperless partograph. Inclusion criteria: Singleton pregnancy, Gestational age 37-41 weeks, Age of patients from 16 to 40 years, cephalic presentation and Cervix dilatation 4cm or more. Exclusion criteria: Multiple pregnancies, Malpresentation, Medical diseases with pregnancy, Cervix dilation more than 8cm and any obstetric complications (ante partum hemorrhage, preeclampsia).

Written informed consent was obtained from all participants, the study was approved by the research ethical committee of Faculty of Medicine, Zagazig University. The study was done according to The Code of Ethics of the World Medical Association (Declaration of Helsinki) for studies involving humans.

Demographic details and history of all patients were taken and those willing to participate after an informed and written consent were included in the study. Half of the patients (150) were monitored by WHO partograph in group A and the other half group B were monitored by Paperless partograph. The plotting of both partographs were started as soon the cervical dilatation was 4 cm along with regular painful uterine contractions. In the paperless partograph two times, an ALERT ETD (estimated time of delivery) and an ACTION ETD are calculated and the doctor simply adds six hours to the time at which the woman becomes dilated to 4 cm to find the ALERT ETD (when cervical dilation is at 10 cm). The doctor adds four hours to the ALERT ETD to get the ACTION ETD. Both the ETDs were written in big letters on a woman's management sheet, the ACTION ETD was circled in red. At the time of the ACTION ETD, if the woman had not yet delivered, a diagnosis of abnormal labor was made and arrangements were made for emergency obstetric care, and delivery was done by suitable medical treatment or surgical intervention.

Questionnaire to resident doctors was used to assess the user friendliness of the Paperless partograph against the WHO Modified partograph. The inclusion criteria were 10 resident doctors working on shift duties in the labour room had at least one years experience in normal labour. I trained them how to use WHO modified partograph as illustrated in WHO book (Essential Antenatal, Perinatal and Postpartum Care).[6] and how to a plicate Paperless partograph .

Every doctor had 5 printed WHO partograph to monitor 5 patiants with it and another 5patiants in labour with paperless partograph .then took their opinions about both partograph. User-friendliness, Teachability and overall Usefulness score of either partographs. A score of 1-10 each for user-friendliness, teachability and overall usefulness was given to either partographs on the basis of doctor's personal experience. Questions designed to detect factors of non compliance of partographs and which partogaph is preferred .

Statistical Analysis:

Data were collected and Data on each of our study parameters were analyzed for the two groups using the Statistical Package for the Social Sciences (SPSS) software version 20.0 for windows. P-value was set at <0.05 for significant results and <0.001 for high significant results.

RESULTS

This study included 300 patient (150) were monitored by the WHO Modified partograph in group A and the other half by Paperless partograph in group B .The baseline characteristics of the patients are as mentioned. (Table 1)

It was observed that most of the cases delivered before reaching the alert line/ETD (77.3%) in group A and (82.7%) in group B.18.7% of cases monitored by WHO partograph and 15.3% of cases monitored by Paperless partograph delivered between the alert line/alert ETD and action line/action ETD.(table 2)

Regarding the mode of delivery 91.3% of cases in group A and 93.3% of cases of cases in group B had a spontaneous delivery. But only 8.7% of cases in group A and 6.7% of cases in group B needed cesarean section. (table 3)

On analysis of user friendliness, it was observed that the mean of user friendliness score was lower for WHO Modified (3.7±0.47) than Paperless partograph (8.12±0.8) which was highly significant. In regard to teach ability also the paperless partograph was rated better than the WHO Modified partograph. Paperless was (7.8±0.8) but WHO was (3.6±0.6) As regards to the score for overall usefulness there was no significant difference because both partographs prevent abstracted labour . (table 4)

Neonatal weight (kg) Range (2-3.6) and APGAR score at 1 min Range (6-10) and APGAR score at 5 min8-10. No significant difference between two groups. (table 5)

70% of residents found Difficulty in plotting and maintaining WHO partograph while no one found this difficulty with papereless partograph, The various factors for non-compliance of WHO Partograph was less staff (20%), time consuming (10%) and high patient load (30%).complex graph (10%). (table 6)

(80%) residents preferred paperless partogram rather than WHO (20%) as it was simple, graphless and less time-consuming. In addition, also because

of the ease of plotting and maintaining the Paperless partograph which required minimal time consumption. (Figure 1)

Table(1)The baseline characteristics of the patients.

Variable	Group A (n=150)	Group B (n=150)
Age: (Years):		
Mean ± SD Range	26±3.6 (17-36)	26.1±3.2 (16-34)
Gestational age (Weeks)		
Mean ± SD Range	37.6±1.04 37-41	37.7±0.78 37-41
BMI(KG/m^2)		
Mean ± SD Range	28.8±4.7 (22-34)	29.9±5.7 (22-35)

Table (2): Distribution of cases in relation to alert and action line/ETD:

Variable	Group A (n=150)		Group B (n=150)	
	No.	**%**	**No.**	**%**
Within Alert line/Alert ETD	116	77.3	124	82.7
Between Alert line /Alert ETD and Action line/ Action ETD	28	18.7	23	15.3
Beyond Action line/ETD	6	4.0	3	2.0

Table (3): Comparison between the two groups as regard Mode of delivery:

Variable	Group A (n=150)		Group B (n=150)		χ^2	P value
	No.	**%**	**No.**	**%**		
Spontaneous vaginal	137	91.3	140	93.3		
Caesarean section	13	8.7	10	6.7	0.423	0.515

Table (4): Comparison between the two groups as regard User-friendliness, Teach ability, Overall usefulness.

Variable	Group A	Group B	Paired t-test	P value
User friendliness:				
Mean ± SD	3.7±0.47	8.12±0.8	15.06	**<0.001 (HS)**
Teachability:				
Mean ± SD	3.6±0.6	7.8±0.8	13.28	**<0.001 (HS)**
Overall usefulness:				
Mean ± SD	7.9±0.5	8.05±0.45	0.705	0.489

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

Variable	Group A (n=150)	Group B (n=150)	t-test	P value
Neonatal weight (kg)				
Mean ± SD Range	2.7 ±0.41 (2-3.5)	2.7 ±0.38 (2-3.6)	0.0	1.0
APGAR score at 1 min:				
Mean ± SD Range	8.1 ±1.7 (6-10)	8.3 ±0.7 (7-10)	1.33	0.183

Variable	Group A (n=150)	Group B (n=150)	t-test	P value
APGAR score at 5 min:				
Mean ± SD Range	9.6 ±0.7 8-10	9.45 ±1.6 8-10	1.05	0.293

Table (6):Assessment of factors of non-compliance of partographs

Variable	Group A (n=10)		Group B (n=10)	
	No.	**%**	**No.**	**%**
Difficulty in plotting and maintaining partograph	7	70	0	0
Factors of noncompliance:				
Less staff	2	20	0	0.0
Time consuming	1	10	0	0.0
High patient load	3	30	0	0.0
Complex graph	1	10	0	0.0

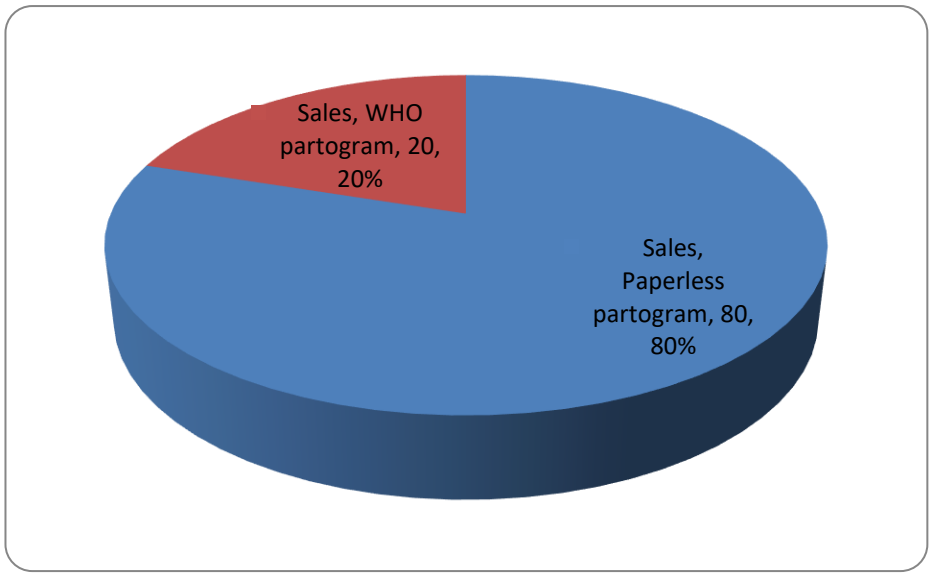

Fig. 1: transabdominal ultrasound showing: (A) Preoperative evaluation of the prostate (B) perioperative picture of the prostate after epTUR (C) postoperative evaluation.

DISCUSSION

Labour monitoring and appropriate management is an important step to reduce maternal and perinatal morbidity and mortality. Partograph is a bedside tool which that enables midwives and obstetricians to record maternal and fetal observations simply and pictorially depicts the progress of labour [6]. It serves as an early warning system and assists in early decision making regarding augmentation, termination of labour and if necessary transfer to higher center for further management. Although the WHO recommends universal application of the partograph [7] but it is rarely used and when used is incorrectly interpreted. The Paperless Partograph proposed by Dr. Debdas is simple and non-time consuming to monitor labour and aid in appropriate decision making .

The base line data of women revealed that the present study enrolled on 300 laboring women, maternal age Mean ± SD (26±3.6) years. The gestational age at onset of labour mean±SD 37.6±1.04.

These results are slightly similar to the finding conducted in Labor ward at Maternity Hospital affiliated to Ain Shams University, Egypt. which used the paperless partogram for out of 100 laboring women who participated in the study which revealed that their ages Mean±SD 25.6±5 years the gestational age at onset of labor weeks with mean ±SD 39±0.9. [8]

Similar to the finding conducted in Women's Health Hospital in Assiut University, Egypt study enrolled 370 laboring women, their ages Mean±SD 25.1±5.4 years The gestational age at onset of labor weeks with mean±SD = 39.1 ±1.86 [9]

In the present study the course of labour with Paperless partograph was comparable with that of

WHO modified partograph. Most of the case (82.7%) monitored by the Paperless had a normal course of labour and delivered before the alert ETD. (2%) delivery beyond it while (77.3%) in WHO partograph was delivered within alert line and (4%) delivery beyond alert line .

Similar results in study in 2018, to compare between paperless and WHO partogram in india, faswila et al [10] (84%) of cases monitoring by paperless was delivered within alert ETD. (2%) delivery beyond it while (74%) in WHO partograpgh was delivered within alert line and (8%) delivery beyond alert line

A study in labor unit of Bankura Sammilani Medical college, a total of 354 cases of normal labour study validity of paperless partogram301(85.03%) patients delivered within the ETD and 53(14.97%) patients delivered after ETD [11]

The results of this study showed that mode of delivery (91.3%) of cases monitored WHO partograph and (93.3%) cases monitored by the Paperless partograph had a spontaneous delivery. Caesarean section was required in 13 cases (8.7%) monitored by WHO partograph as against 10 cases (6.7%) of paperless partograph with no significant difference .

These findings were nearly corresponding with (88.5%) of cases monitored by the Paperless partograph and (85%) cases monitored by WHO partograph had a spontaneous delivery. Caesarean section was required in only (6%) cases monitored by Paperless partograph as against (10.5%) cases of WHO partograph (p=0.18) [12].

This study **Faswila et al, [10]** was showed a little high rate of C.S **(**13%) in paperless group and (18%) in WHO group

Abbas et al, [9] revealed that the most of the women (99.5%) were vaginal delivery, and (0.5%) were caesarian section In group used paperless but (3.3%) were C.S in group used WHO partogaph.

Fatouh et al., [8] which used the paperless partogram for the management of labor revealed that the most of the women had normal vaginal delivery (88%), whereas only (12 %) of them had caesarean section.

On analysing the perinatal outcome we found that the APGAR score after 1 min was (Mean ± SD) (8.1±1.7) in group A and (8.3±0.7) in group B respectively (p=0.18). The Apgar score after 5 mins had Mean ± SD 9.6±0.7 in group A and 9.45±1.6 in group B. There is no statistically significant difference between the two studied groups as regard prenatal outcomes. This result was interpreted by there was no newborn need to admit to Neonate Intensive Care Unit or need ventilation.

Similar results As regard to the neonatal outcome in paperless group in **Abbas et al** [9] the average Apgar score after 1 minute and 5 minutes were Mean ± SD (8.7±0.4& 99.9±0.1 respectively).

On analysis of user friendliness of both graphs, it was observed that the mean of user friendliness score was lower for WHO Modified Mean ± SD (3.7 ±0.47) than Paperless partograph Mean ± SD (8.12±0.8) p value was< 0.001 highly significant .

In regard to teachability also the paperless partograph Mean ± SD 7.8±0.8was rated better than the WHO Modified partograph 3.6±0.6.p value < 0.001 highly significant

As regards to the score for overall usefulness was 7.9±0.5 in group A and 8.05±0.45 in group B so there was no significant difference because both partographs were equally effective in preventing prolonged labour and had almost similar rates of augmentation and operative intervention.

The same result ,On analysis of user friendliness 2017, in **Veena et al., [13]** study was observed that the mean of user friendliness score was lower for WHO Modified (3.65 ±0.45) than Paperless partograph (8.1±0.9) which was highly significant. In regard to teachability also the paperless partograph was 7.9±0.6 but WHO was 3.7±1.6 Observers found it easier to train others (interns, nurses) on the utility and maintenance of Paperless partograph. As regards to the score for overall usefulness there was no significant difference [13].

Factors for non-compliance In the present study was 70% of residents found Difficulty in plotting and maintaining WHO partograph while no one found this difficulty with papereless partograph, The various factors for non-compliance of WHO Partograph was less staff (20%), time consuming (10%) and high patient load (30%).complex graph (10%).

Veena et al., [13] (66.7%) of the residents expressed difficulty with the WHO Modified partograph while they found the Paperless partograph much easier to plot and monitor in veen et al study the various factors for non-compliance of WHO Partograph was less staff (16.6%), time consuming (16.6%) and high patient load (33.3%)**.** Also The study by **Asibong et al**., **[14]** showed factors of non compliance were little or no knowledge (85.4%), non availability of the partograph (70%), shortage of staff (61.5%), and the fact that it is time-consuming (30%).

Ogwang et al [4]; found that most health units had partograms but were never used due to lack of knowledge about how to use .All the health units never had guidelines/protocols on the use of the partograms

As regard preference of partographs (80%) residents preferred paperless partogram rather than

WHO as it was simple, graphless and less time-consuming. In addition, also because of the ease of plotting and maintaining the Paperless partograph which required minimal time consumption .

Fatouh et al, [8] Similar results were seen where (75%) of nurses preferred to use the paperless partograph over WHO partograp [8]. But (83.3%) preferred to use the paperless partograph rather than the WHO partograph [13]

CONCLUSIONS

In our study we found that the paperless partograph was as efficient as the WHO partograph in monitoring labour and to decide further management, as both partogaphs prevent prolonged and obstructed labour.

RECOMMENDATIONS

We recommended use of paperless partograph in monitoring of labour especially in high patient load areas and low staff, as paperless more simple and 20 second tool not need time for application. Also recommended increase training and knowledge about using of partograph protocols.

Disclosure of potential conflicts of interest: No conflicts of interest. This study was fully funded by the authors

REFERENCE

1- **Mathews JE, Rajaratnam A, George A, Mathai M.** Comparison of two World Health Organization partographs. *Int J Gynecol Obstet.* 2007; 96(2):147–50.

2- **Friedman EA.** The graphic analysis of labor. *Am. J. Gynecol Obstet.* 1954. 68(6): p. 1568-1575.

3- **Philpott R, Castle W.** Cervicographs in the management of labour in primigravidae: I. The alert line for detecting abnormal labour. BJOG: *Int J Gynecol Cancer.* 1972. 79(7): p. 592-8.

4- **Ogwang S, Karyabakabo Z, Rutebemberwa E**. Assessment of partogram use during labour in rujumbura health Sub district, Rukungiri district, Uganda. African Health Sciences, 2009; 9(2).27-34 .

5- **Debdas A.** Paperless partogram. 41st Annual Scientific Sessions: Sri Lanka College of Obstetrics and Gynaecologists. 2008; (30) 1:124.

6- **Chalmers B, Mangiaterra V. Porter R.** WHO Principles of Perinatal Care: the essential antenatal, perinatal, and postpartum care course. Birth, 2001; 28: 202-7.

7- **World Health Organization partograph in management of labour.** World Health Organization Maternal Health and Safe Motherhood Programme. Lancet Lond Engl. 1994; 343 (8910):1399-404.

8- **Fatouh E, Ramada S.** Effect of Using Paperless Partogram on the Management and Outcome of Labour and the Nurses' Opinion. *J Educ Pract.* 2015; 6(8), 17-23.

9- **Abbas AM, Mohammed AA, Abd-Elmohimen HA, Mostafa MF.** Effect of using paperless versus modified WHO partograph on labor progress and delivery outcomes. *Am. J Gynecol Obstet.* 2019; 220(1), S79.

10- **Faswila M, Rao SB.** Comparative study of user friendliness of paperless partogram compared to WHO partogram in preventing prolonged labour. *Int J Reprod Contracept Obstet Gynecol.* 2019; 8(1): 229-233.

11- **Roy D, Mandal D, Sahana RK, Mandal A, Chowdhury P, Kundu P**. ETD-Expected Time Of Delivery-A New Simple Clinical Tool For Management Of Labour. A/COG, 2014; 4(4), p 51-7.

12- **Sharma R, Deka G, Das GC.** The Paperless partograph–The new user-friendly and simpler tool for monitoring labour. *J Dent Med Sci.* 2015;14(11), 39-43.

13- **Veena L, Sarojini, Anagondanahalli P, Prakash, Suchitra.** Study to compare between paperless partogram and modified who partogram in management of labour. *Int J Reprod Contracept Obstet Gynecol.* 2018;7: p 99-103.

14- **Asibong U, Okokon I B, Agan TU, Oku A, Opiah M, Essien E J. et al.** The use of the partograph in labor monitoring: a cross-sectional study among obstetric caregivers in General Hospital, Calabar, Cross River State, Nigeria. *Int J Womens Health.* 2014; 6:P 873–80.

How to cite

Metawia, A., Abdelrahman, A., Abdeldayem, H., Albehady, T. Comparative Study between WHO Modified Partograph and the Paperless Partograph in Management of Labour. Zagazig University Medical Journal, 2022; (39-44): -. doi: 10.21608/zumj.2020.24548.1747