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The Effectiveness and Usability of E-partograf for Obstetric Care: A Systematic Review

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ABSTRACT

Introduction: Partographs are tools used in monitoring and prevention in childbirth complications. Unfortunately, labor monitoring is still poor in many places due to some of the problems associated with the use of monitoring tools during childbirth such as partographs. one of the efforts made was to develop partographs in the form of applications (electronic partographs). Moreover, this study intends to identify evidence on the use of electronic partograph for point-of-care decision support and improved quality of care by health care workers.

Method: This study carried out a systematic review of journals using four academic databases (Science Direct, PubMed, Google Scholar and grey literature) with a publication range from 2016 to 2022. Furthermore, the subjects in this study were Skills Birth Attendants (SBAs) dan Obstetric care Provider. Therefore, these variables include Effectiveness and Usability of E-partograf. Inclusion criteria in the literature study were: use electronic-based partographs in monitoring. Thus, the keywords used are Partograph AND electronic AND obstetric and the guidelines for reviewing journals using PRISMA.

Result: Results from 13 studies exploring e partograph in the last six years (201 6-2022). Alarge part of the results of the review (13 studies) the effectiveness of the use of e partograh compared to paper partographs. In addition, e partograph has another advantage, namely that there is a reminder system when filling in data by the SBA, so that it can identify the delivery process to run normally or require further treatment. The use of e partograph can save time and is easy to use, SBA is easy to accept and apply.

Discussion and Conclusion:
The use of an e partograph gives a better finish than a paper partograph. E partograph is able to maintain normal delivery, lowering the incidence of participular section and prolonged labor. E partograh which is designed to provide benefits for its users, namely there is an audio and visual reminder system that can be used to detect difficulties during childbirth. From the results of the article, it describes the SBA's acceptance of e partographs very well as evidenced by the higher rate of use of epartographs compared to paper partographs.

Keywords: Partograph, Electronic, Obstetric

1. INTRODUCTION

In 2015, an estimated 303,000 women died from complications during childbirth such as bleeding during labor, prolonged labor, and infections(Graham et al., 2016; Say et al., 2014). Prolonged labor directly contributes to 6-10% of the occurrence of death and pain in the mother and baby (Balikuddembe et al., n.d.; Ollerhead & Osrin, 2014). One of the efforts to be able to prevent the occurrence of pain and death in the mother and baby during childbirth is to carry out a fast and appropriate monitoring of the delivery and handling of actions (Ogwang et al., 2009; Windrim et al., 2007). The World Health Organization (WHO) recommends monitoring during childbirth using partographs. .

Partographs are used by skilled birth attendants to document important developments during the labor process. This partograph sheet is prepared to collect and record all the important information over a 12-hour period starting with the onset of contractions until the baby is born. The partograph impacts as a decision-making aid because it indicates when the delivery is proceeding at a normal level and when the officer should prepare to intervene.(L. E. Litwin et al., 2018a)

However, currently the effectiveness of the use of partographs in monitoring childbirth is not optimal. This is related to the attitude of health workers who are still low in the use of paper partographs To overcome this challenge, many researchers have made improvements to partographs(Rahman et al., 2019a), one of the efforts made is to develop partographs in the form of applications (electronic partographs). The e-partograph is an electronic prototype of the paper-based partograph that automatically plots the vita; trends in labour and childbirth. It is fitted alarm systems to alert Provider Health Care workers about the next examination schedule also in case of danger. The development of this partograph is based on android tablets with reference to partographs issued by WHO with the aim of making it easier for officers to monitor and document during childbirth. Therefore, the e-partograph intervenes to improve efficiency in filling patients' information during labour and childbirth, allows PHC workers to seek and receive real-time professional support and reduce time to accessing lifesaving care, even after normal work hours.(Okokon et al., 2014; Weerasekara, 2014)

As new innovations of electronic partograph are increasingly being tested and adopted in resource-poor settings, it is necessary to comprehensively assess what has been achieved in order to inform implementers and policy makers on the effectiveness of technology in

evidence-based practice.

2. METHOD

2.1 Design

This Systematic Review follows the guidelines of the Statement of Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA). (David Moher1 et al., 2015) Data has been completed a review on the journal using four academic data bases (PubMed, Science Direct and Google Scholar) and grey literature from the Journal Conference Series.

2.1 Inclusion & Exclusion Criteria

Selection of the inclusion criteria that have been determined for this systematic review, using PICOS (population, intervention, comparison, outcomes, and study design). The population in this study were Skill birth attendant and obstetric care provider who provide childbirth services and use electronic-based partographs in monitoring them. The exclusion criteria such as labor monitoring using paper partographs.

2.3 Search strategy

This literature search used articles in English from Pubmed, Science Direct, Google Scholar and grey literature from 2016 to 2022. The literature search used the keywords "partograph", "electronic", and "obstetric". The literature search found there were 182 articles filtered using the keywords above. The articles were then narrowed down and identified based on the PICOS and obtained as many as 109 articles that could be included in the article screening process. At the article screening stage according to the suitability of the article based on the abstract, there were 148 articles. Then a feasibility selection was carried out based on the essence and scope of the discussion in the article as a whole, it was found that 14 articles could be made for further selection, namely as many as 13 articles that were included in the inclusion and 1 article were excluded.
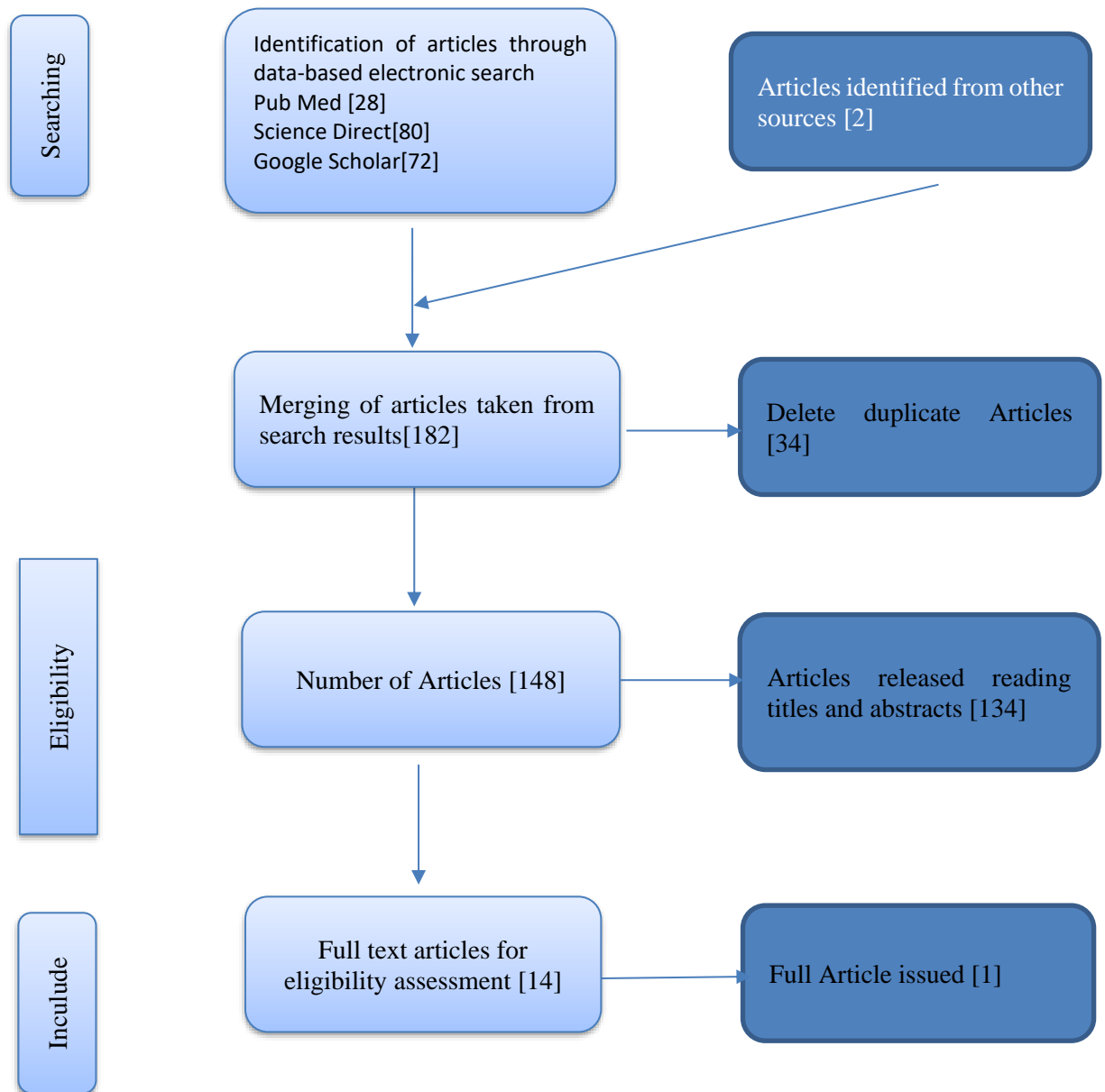
Figure 1 The article selection steps are depicted in the PRISMA flow chart.

2.4 Quality assessment

After collecting the results identify the articles through electronic search the data based articles are exported to a Microsoft Excel spreadsheet. Three authors (WMN, YB and RBU) independently extracted the data and reviewed the filtered and qualified articles. Any disagreements over the results of the 3 reviewers (WMN, YB and RBU) were consensus between the three authors through discussion. The methodological quality of each study (sampling strategy, response rate, and research representation), comparability, and results were

examined using the JBI tool. JBI for cross-sectional, quasi-experimental, and qualitative studies is used to assess the methodological quality of a study and to determine the extent to which a study has addressed possible biases in its design and analysis. All articles that are given a JBI score of 50% or more can be considered "good" studies with low risk.

3. RESULT

3.1 Overview of included studies

Of the 13 studies reviewed, all labor monitoring used application-based partographs. The name used is different. "Life Curve" [1], mLabour [4], PrasavGraph [5], DAKSH [12] is an android-based Mobile applications (Begum et al., 2020a; Schweers et al., 2016a; M. Singh et al., 2019; S. Singh et al., n.d.-a), electronic partograph (e partograph) [2,3,7,8,10] are some of the names of tools used for childbirth monitoring with different devices that can be accessed using a smartphone or tablet PC or computer device , digital partograph [11,13] is some of the names of tools used based on android and Word Electric Browser (WEB); and some other names such as Web-Based Partograph, and midwifery documentation use Web Based. No. 5.9] (L. E. Litwin et al., 2018b; Rahman et al., 2019b; Sanghvi et al., 2019a; States & States, 2022; Tadesse et al., n.d.)(Ahmad et al., 2019; Tandiallo et al., 2019) . These studies were conducted in 5 countries namely India [1,3,4,5,7,12], Indonesia [6,9,11,13] Kenya [2], Tanzania [8], and Northwest Ethiopia [10]. Judging from the results of the article, it shows that users of this application-based partograph are varied. In Indonesia the users of partograph application are midwives [6,9,13], midwifery students [11], and researcher [9]; in contrast to other countries for the life Curve [India] application, m labour [India] used by doctors during childbirth monitoring [1,4], DAKSH [India] used by nurses [12]; e partogram [Kenya] used by Skill Birth Attandent (SBA): Doctor, Nurse, Midwife. e partograph [India] is used by SBA (doctors, midwives, nurses) [3] and Staff nurses and medical officers [7]. e partograph [Northwest Ethiopia] used by Obstetric care providers (a certified midwife, nurse, Health Officers, Integrated Emergency Obstetrics and Surgery & Medical Doctors who provide care for the woman during labor and delivery) [10]. To aid ease of understanding, we took the studies as the unit of analysis and different articles in which they are reported. Results are presented in a narrative format.

Table 1. Overview of included studies

No	Authors	Years	Countries	Name Aplication	usser	Study Design	Score JBI %
1	Begum et al [9]	2017	India	Life Curve	Docthete	*Cross-sectional*	75
2	Sanghvi et al	2017	Kenya	e partogram	Skill Birth Attandent (SBA): Doctor, Nurse, Midwife	Mixed-method, quasi-experimental	89
3	Rahman et al	2019	India	e partograph	SBA (doctor, midwife, nurse)	Quasi-experimental	100
4	Schweers et al l	2016	India	m labour	Doctor	Qualitative	50
5	Singh et al [9]	2016	India	PrasavGraph	a resident doctor	Qualitative	50
6	Juwita et al	2019	Indonesian	Midwifery Documentation Use Web Based	Midwives	*Cross-sectional*	50
7	Singh et al	2021	India	e partograph	Staff nurses and medical officers	Cross-sectional	75
8	Litwin et al	2018	Tanzania	e partograph	SBA	Qualitative	50
9	Tandiallo et al [9]	2019	Indonesian	Web-Based Partograph	researcher	Quasi-experimental	100
10	Tadesse et al	2019	Northwest Ethiopia	e partograph	Obstetric care providers (a certified midwife, nurse, Health Officers, Integrated Emergency Obstetrics and Surgery & Medical Doctors who [12] provide care for the woman during labor and delivery)	Cross-sectional	100
11	Ulfa et al	2020	Indonesian	Digital Partograph	Midwife students	Cross-sectional	50
12	Singh et al	2019	India	DAKSH	nurses	Cross-sectional	88
13	Ningrum et al	2019	Indonesian	Digital Partograph	Midwife	Qualitative	70

3.2 Comparing The Efficacy of e Partograph and paper Partograph [1,2,3,6,8,9]

The use of partographs is one of the important steps to ensure that the care provided to mothers and newborns during childbirth is of high quality. The development of application-based partographs aims to improve upcare during childbirth by overcoming the challenges of low use of paper partographs. (Begum et al., n.d.; L. Litwin et al., n.d.; Schweers et al., 2016b). From the results of the article analysis carried out, there was an increase in labor outcomes based on monitoring using application-based partographs (e partographs) compared to paper partographs. In monitoring childbirth using the Life Curve Mobile application by measuring the performancep arameter which is assessed on a scale of 1-5 with a total score of 45. The results showed that the Life Curve had a score of 42.7 compared to the paper partograph with a score of 19.52. This shows that the difference is very significant (p=.001). The average score±SD life curve (4.74±.52) is statistically much higher than that of paper partographs (2.17±1.18): p<.0002. These results showed an increase in SBA performance in childbirth care using a life curve mobile application. (Begum et al., 2020b). In line with the results of other studies that show that using an e partograph is easier to maintain normal labor and take action. The results of the analysis of the article can be seen for the use of e partographs can be complications in the mother and janis during childbirth. The use of e Partograms was lower in the likelihood of fetal outcomes with complications than paper partographs, with a yield of 56% (95% CI= 27%-73%), lowering the trend of cesarean section rates [43% to 37% at Jessore Hospital and from 36% to 25% at Kushtia Hospital] and a reduction in long labor [identified 42% of long labor with paper partographs ,monitoring by using e partographs of old labor dropped to 29%], (Rahman et al., 2019a; Sanghvi et al., 2019b).

From the results of the analysis of the article, it explains the reasons for the development of this application-based partograph to solve various problems that arise when using paper partographs, one of which is the use of very low paper partographs. From the results that can be seen, the use of e partographs shows that (Ningrum et al., 2019)the recording frequency appears higher in web-based partographs, namely by 26 (86.7%) compared to the speed of recording using conventional methods, which is 25 (83.3%), the majority of SBA (87-91%) complete the filling of ePartograms, WEB-based partographs are faster in recording contractions, oxytocin, and the process of giving birth to a p-value of 0.000 (<0.05). (Ahmad et al., 2019)(L. E. Litwin et al., 2018b)(Tandiallo et al., 2019). These results show that e partographs are more effective in maintaining normal delivery, preventing the occurrence of

difficulties during childbirth and increasing use during labor monitoring.

3.3 Advantages of e Partograph with paper Partograph [1,2,5]

Partographs are tools for recording the progress of childbirth. The key parameters in the partograph are the progress of childbirth (opening of the cervix, the lowest decrease in parts, contractions), the condition of the mother (blood pressure, pulse and temperature) and the condition of the fetus (the soluble pulsation of the fetus, amniotic water and moulage). On the monitoring of the partograph paper filling and interplay depends on the person who fills. In the e partograph there are several advantages that can be felt when using it. Partograph application (e partograph) developed in the form of a mobile phone or tablet based on android [1,2,3,4,5,7,8,10,12,13], with a web-based computer device [6,9,11], with advantages made by each developer. One of the benefits of using partographs is that it can make decisions when carrying out childbirth, whether this delivery can be helped or needs an action(Ayenew & Zewdu, 2020; Ningrum et al., 2019). In e partographs there are several advantages compared to paper partographs. In some system applications, it is contained by adding a notification feature in the form of an audio or visual alert, which shows the charging time, and the difficulties that occur in mothers and babies [1,2,3,7,8,12,13]. This notificationsystemis very helpful for users to determine what decisions and actions should be taken.

In some applications there is another advantage, namely being able to save the data that has been filled in, a graph appears according to the data filled with varying display results [2,3,12,13]. This partograph application uses a "delay-tolerant framework", which allows it to be used even in poor internet network conditions(S. Singh et al., 2016), and some can even be used by not using the internet network(Ningrum et al., 2019). This shows that e partographs have other benefits compared to paper partrographs. Several developers have focused on low-cost digital applications to address deficiencies in the paper partograph, improve recordkeeping, support decision making, and enhance quality of care during labor and delivery(Adepoju et al., 2017)

3.4 Acceptance of e Partograph di Among Health Workers

The development of applications on partographs aims to make it easier for users to fill in partographs. Most SBA agree that e partographs make it easier to fill and increase their use, but it needs to be a concern for obstetric services with a high rate of maternity cases. It takes a lot of SBA to be trained to be more optimal in its utilization. (Sanghvi et al., 2019b). Almost all SBA (93%) show confidence and comfort in using e Partogram, SBA gives a positive impression and feels efficient and easy to use. The SBA expressed confidence in their ability to interpret and act on the reminders and warnings contained in the e partograph. By using e partograh there is a change in behavior from the SBA related to the filling of partograph(L. Litwin et al., n.d.; Ningrum et al., 2019)

Table.2 Summary of Selected Studies

No.	App Name	Description of partograph applications	Outcome	Result
1	Life Curve	mobile application, android based, This app will analyze all the entered data and draw the pictogram of the corresponding color. This pictogram shows the condition of the mother and baby by three colors: red, yellow and green: where red indicates 'critical', yellow 'need for close observation' and green 'safe condition'. Any critical condition of the mother and or baby will generate an automatic SMS	utilization of life Curve Mobile application in childbirth	The average age of the subjects was 25.9±5.7 years, the average gestational age was 39.6±.9 months, and 83% had vaginal delivery. The application is easy to fill, automatically generates graphs, pulls to work on, provides automatic timely reminders for evaluating childbirth, generates digital color-coded alert numbers, sends automatic text messages to supervisors in abnormal situations. Performance parameters are assessed on a scale of 1-5. To compare the advantages of using these two partographs, nine features were compared with a total score of 45. The total score for the Live Curve has 42.7 and for the paper partograph is 19.52 the difference is very significant (p=.001). The average score±SD of the life curve (4.74±.52) is statistically much higher than that of paper partographs (2.17±1.18): p<.0002.
2	e partogram	android tablet based, there is an audio and visual reminder system when it comes to doing the next check and in case of complications. The application is made efficient when data entry automatically graphs appear, and the data is stored in the application. In addition to filling in the past data can not be done	utilization of e Partogram to maintain normal delivery	The results showed a comparison of data from 842 active phase maternity clients using ePartograms with data from 1,042 clients monitored using paper partographs. SBA using ePartograms was easier to take action and maintain normal delivery compared to SBA using paper partographs, such as ambulation, feeding, and fluid intake, and to address abnormal measurements of fetal well-being (14.7% versus 5.3%, adjusted relative risk =4.00, 95% confidence interval [CI]=1.95–8.19). The use of ePartograms was associated with 56% (95% CI= 27%-73%) lower likelihood of fetal outcomes with complications than paper partographs. Users of ePartograms are more likely to adhere to routine labor observations. The SBA states that the technology is easy to use but raises concerns about its use in locations with high amounts of childbirth. More research is needed to evaluate the costs and benefits and to include the recent WHO guidance on labor management .

No.	App Name	Description of partograph applications	Outcome	Result
3	e partograph	E partographs can be accessed via a smart phone or tablet pc or computer device. There is a system in the e-partograph software to give a red signal for any abnormalities of the mother or fetus during the active phase of labor. The application has the option to store data both in local storage and in remote central database storage at the same time. Local storage contains data for a while; the remote server contains data permanently which makes partograph information searchable anytime and anywhere. The app allows partograph data to be monitored remotely	testing the feasibility and effectiveness of partograph applications	In total 2,918 deliveries were performed in Jessore DH and 2,312 in Kushtia DH during the one-year study period. Of these, 1012 (506 in each facility) childbirth was monitored using partographs (paper or electronic). The trend of facility-based cesarean section rates is declining in both hospitals; 43% to 37% in Jessore and from 36% to 25% in Kushtia Hospital. There is a significant reduction in cases of prolonged childbirth with the use of e-partographs. In Kushtia DH, labor monitoring was carried out with paper partographs identified 42% of long labor, monitoring using e partographs of long labor dropped to 29% during phase-2. Similar results were observed in Jessore DH where the rate of long labor was reduced to 7% with paper partographs from 30% of long labors reported with e-partographs. The user rate of e-partographs was higher than that of paper partographs during both phases (phase 1: 3.31, CI: 2.04–5.38, p < .001 and in phase 2: 15.20 CI: 6.36–36.33, p < .001) after adjusting for maternal age, parity, gestational age, religion, maternal education, husband education, and fetal sex
4	m labour	a mobile application	the use of ml labour in documenting partographs	m Labour helps physicians detect long and obstructed labor quickly, while avoiding usability difficulties that reduce paper partographs. mLabour combines a reminder system, decision support for emergencies, and support for the full patient lifecycle, from admission to referral
5	PrasavGraph	The application is made based on android, made using the "delay-tolerant framework", which allows it to be used even in poor internet network conditions	PrasavGraph application for childbirth monitoring	It is easy to use on a smartphone, so it is hoped that the partograph will be easier to use in the delivery process of health workers in the peripheral area which until now is still very low
6	Midwifery Documentation Use Web Based	The application web based	Recording Speed	The results showed that the frequency of recording appeared to be higher on web-based partographs, namely 26 (86.7%) compared to the speed of recording using conventional methods, which was 25 (83.3%)
7	e partograph	The tablet-based partograph application used is named DAKSH. The app allows the integration of	Use and Acceptance	The results showed that nursing staff and medics concluded that tablet-based partographs were better than paper-based partographs because

No.	App Name	Description of partograph applications	Outcome	Result
		several features such as alerts and alarms to improve the user experience.		they save time and were easy to use. It is useful for healthcare workers as it has a reminder feature
8	e partograph	Android Tablet partograph app, with special attention to improving the ease and efficiency of real-time documentation	feasibility and use of e partograph	Observations of 23 SBA using an ePartogram to monitor 103 deliveries of 84 shifts showed that the majority of SBA (87-91%) completed the filling of the e Partogram: registering the client, first and subsequent observations, and using the screen easily on the first shift; this increases to 100% on the fifth shift. Almost all SBA (93%) showed confidence and comfort in using the ePartogram on the fifth shift. SBA expresses a positive impression of the ePartogram and feels efficient and easy to use, starting with the use of the first client. The SBA records the usefulness of auditory reminders (indicating that measurements are due) and visual alerts (indicating abnormal measurements). The SBA expresses confidence in their ability to interpret and act on these reminders and warnings.
9	Web-Based Partograph	computer-based partographs with the use of internet networks	utilization of web-based partographs	The results showed that the use of WEB-based partographs was faster in recording contractions, oxytocin, and childbirth processes compared to the use of conventional partographs. In addition, the accuracy of WEB-based partographs in early detection has a p-value of 0.000 (<0.05) and the p-value in emergency detection is 0.014 (<0.05) which means that there is a difference between the use of WEB-based partographs and conventional partographs. Meanwhile, the p-value of the referral process is 1,000 (>0.05) which means there is no difference in the use of WEB-based partographs and conventional partographs.
10	e partograph	partograph in mobile phone	Mobile phone usage for e-Partograph	The study found that 460 (99.6%) care providers had cell phones. Smartphone owners accounted for only 102 (22%). Of them, 205(46%) are willing to use mobile phones for e-Partograph. Care providers aged >30 years (AOR = 2.85, 95% C.I: 1.34-6.05), medical doctors and higher level doctors (AOR = 8.35.95% C.I: 2.07-33.63), Health Centers (AOR = 4.41, 95% C.I: 0.10-9.26), favorable attitude towards Partgrapho (AOR = 2.76.95% C.I: 1.49-5.09) and training in related services (AOR = 7.63.95% C.I: 3.96-14.69) are supporting factors for willingness to use mobile phones

No.	App Name	Description of partograph applications	Outcome	Result
11	Digital Partograph	web-based partograph design	the use of digital partographs as a learning media	the median pretest score is 71.09 from these data which can be concluded that the knowledge of the respondents was put into a sufficient category, after conducting learning using digital partograph media, the skill of filling partography in students has increased to 85.95 with an excellent category. Meanwhile, the significance of the p-value is 0,000 < 0.05, meaning that digital partographs as a learning medium are very effective for developing partographic filling skills
12	DAKSH	DAKSH is a tablet-based application. The app is designed to provide real-time labor monitoring, basic decision-making support with better alerts and logging	utilization of DAKSH	A total of 10 staff nurses from these healthcare centers used the application to monitor 424 pregnancies for a period of 10-months. During this period the hospital observed around 463 childbirths and out of which 91.56% (n=424) were recorded into the application
13	Digital Partograph	Android-based partographs, real-time recording, there is a notification system in case of labor difficulties, can be accessed on the playstore	use of digital partographs, behavior change, stakeholder support	Research shows that the information systems contained in digital partographs have met the aspects of system quality, information quality and user satisfaction. The application of digital partographs has met the use in clinical decision making, monitoring of labor progress, documentation, monitoring of maternal and fetal conditions, digital partographs, and support from stakeholders for the application of digital partographs. Based on the results of the study, it was concluded that the digital partograph application can already be used as a tool to monitor the development of births and can already be accessed on Google Playstore. With the existence of digital partographs, there is a change in the behavior of midwives in their use.

DISCUSSION

Digital partographs are designed to solve various problems that arise when using paper partographs. Many researchers have developed partograph applications in different countries of the world, but all of them have varying effectiveness, advantages and acceptance rates.(Ningrum et al., 2019)

Based on Sanghvi et al. (2017), the use of e-partograph applications has a higher effectiveness than using paper partographs. This is shown by the use of e-partographs associated with 56% (95% CI= 27%-73%) lower likelihood of fetal outcomes with complications than paper partographs. Users of ePartograms are more likely to adhere to routine labor observations. Similarly, Rahman et al. (2019), explained that the trend of facility-based cesarean section rates is declining in both hospitals; 43% to 37% in Jessore and from 36% to 25% in Kushtia Hospital, Bangladesh. Similar results were observed in Jessore, Banglasdesh, where the rate of long labor was reduced to 7% with paper partographs from 30% of long labors reported with e-partographs. Litwin et al (2018) stated that the use of e Partogram to monitor 103 deliveries of 84 shifts showed that the majority of health workers completed the filling of the e Partogram: registering the client, first and subsequent observations, and using the screen easily on the first shift; this increases to 100% on the fifth shift. In terms of recording, the use of e-partographs is reported to be more effective when compared to paper partographs, as stated by Juwita et al (2019) that the results showed that the frequency of recording appeared to be higher in web-based partographs, namely 26 (86.7%) compared to the speed of recording using conventional methods of 25 (83.3%). Research byTandiallo et al (2019) shows that the use of WEB-based partographs is faster in recording contractions, oxytocin, and childbirth processes than the use of conventional partographs. In addition, the accuracy of WEB-based partographs in early detection has a p-value of 0.000 (<0.05) and the p-value in emergency detection is 0.014 (<0.05) which means that there is a difference between the use of WEB-based partographs and conventional partographs. Meanwhile, the p-value of the referral process is 1,000 (>0.05) which means there is no difference in the use of WEB-based partographs and conventional partographs. The research developed by Ulfa et al (2020) is the effectiveness of e-partographs as student learning media, from the results of this research, digital partographs as a learning medium are very effective for developing partographic filling skills

Based on Begum et al. (2017), e-partograph applications have the advantage of being easier to fill, automatically generating graphs, more interesting to work with, providing timely automatic reminders to evaluate childbirth, generating digital color-coded warning numbers, and sending

automatic text messages to supervisors in abnormal situations. Singh et al (2016) also showed that e-partographs are easy to use on smartphones, so it is hoped that partographs will be easier to use in the delivery process of health workers in peripheral areas which until now are still very low. Research on the advantages of e-partographs is also by Ningrum et al (2019), which shows that the information systems contained in digital partographs have met the aspects of system quality, information quality and user satisfaction. The application of digital partographs has met the use in clinical decision making, monitoring of labor progress, documentation, monitoring of maternal and fetal conditions, digital partographs, and support from stakeholders for the application of digital partographs.

Some studies also assess the level of acceptance of e-partographs by health workers. Based on Singh et al (2021) showed that nursing staff and medics concluded that tablet-based partographs are better than paper-based partographs because they save time and are easy to use. Research by Litwin et al. (2018) showed that almost all health workers (93%) showed confidence and comfort in using the ePartogram on the fifth shift, health workers expressed a positive impression of the ePartogram and felt efficient and easy to use it, health workers expressed confidence in their ability to interpret and act on reminders from this e-partograph. Tadesse et al (2019) assessed the level of acceptance of e-partographs in terms of cellphone ownership for application installation, from the survey results obtained as many as 205 (46%) were willing to use mobile phones for e-Partograph.

CONCLUSION

Most studies have shown that the development of application-based partographs aims to facilitate the process of monitoring childbirth. With e partograph the end result of childbirth is better than with paper partographs. E partograph is able to maintain normal delivery, lowering the incidence of participular section and prolonged labor. In addition, e partograh has the advantage that there is an audio and visual reminder system that can be used to detect difficulties during childbirth, all data is stored and can be accessed again so that the documenting system is easier. And the SBA acceptance rate of e partograph is very well proven by the higher rate of use of e partigraph compared to paper partograph.

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CONFLICT OF INTEREST

None

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