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Effectiveness of Electronic Partograph Compared to Manual Partograph in Improving Labor Documentation in Independent Midwife Practice

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Abstract

Partograph is an important tool in labor management that aims to monitor the progress of the labor process and identify potential complications. In today's digital era, the use of electronic partographs has begun to be introduced as an alternative to manual partographs. This study aims to explore the effectiveness of electronic partographs compared to manual partographs in improving labor documentation in independent midwife practices. This study used a qualitative approach with in-depth interviews with 30 independent midwives who used both types of partographs in their practice. Data were collected from direct observation and document analysis to assess the quality of labor documentation produced. Analysis was carried out using thematic analysis methods to identify key themes that emerged from the data. The findings showed that 90% of electronic partographs improved the accuracy and consistency of documentation compared to manual partographs. Most midwives reported ease in accessing and storing data, as well as the ability to reduce human error. However, several obstacles related to technology accessibility and training needs were also identified. The use of electronic partographs in independent midwife practices shows significant potential in improving labor documentation. Despite challenges in implementation, the benefits gained in terms of accuracy and efficiency support further adoption of this technology in maternal health practice.

Keywords: Electronic Partograph, Manual Partograph, Midwive

Introduction

Childbirth is one of the most important moments in a woman and her family's life. This process involves not only physical aspects, but also emotional and social aspects. In this

context, accurate and timely documentation is crucial to ensure the safety of the mother and baby. Partographs, as a tool for monitoring the progress of labor, have been widely used in obstetric practice. However, with the advancement of technology, the emergence of electronic partographs offers the potential to improve the efficiency and accuracy of labor documentation. According to research by Nurdiana et al. (2020), the use of electronic partographs can reduce human errors that often occur in manual recording, which in turn can improve labor outcomes

Although manual partographs have become standard in obstetric practice, challenges in their use remain. Several studies have shown that manual partographs are often not filled out properly, which can lead to errors in clinical decision making. A study by Sari et al. (2021) noted that approximately 30% of manual partographs examined were incomplete, potentially endangering maternal and neonatal safety. Therefore, it is important to explore the effectiveness of electronic partographs as a better alternative in improving labor documentation.

Electronic partographs not only offer convenience in recording data, but can also provide real-time analysis that helps midwives make the right clinical decisions. With features such as alarms for danger signs, electronic partographs can help reduce the risk of complications during labor. According to research by Wijaya et al. (2022), the use of electronic partographs has been shown to reduce the incidence of labor complications by up to 20% compared to manual partographs. This shows that the adoption of technology in midwifery practice can have a significant positive impact.

In Indonesia, where midwife self-practice is growing, it is important to evaluate the effectiveness of electronic partographs in this context. Midwives' independent practices often face limitations in resources and training, so the use of more efficient tools can be a solution to improve the quality of service. A study by Andini et al. (2023) showed that the implementation of electronic partographs in midwives' independent practices increased patient and midwife satisfaction, with 85% of respondents reporting a better experience in recording data.

Labor is a complex process and requires careful monitoring to ensure the safety of the mother and baby. One of the tools used to monitor and document the labor process is the partograph. Manual partographs have long been used in midwifery practice, but with the development of technology, electronic partographs have begun to be introduced. According to WHO, effective use of partographs can reduce maternal and infant morbidity and mortality (World Health Organization, 2021). In the context of midwifery's independent practice, the effectiveness of the use of partographs, both manual and electronic, is very important to improve labor documentation.

Data from the Ministry of Health of the Republic of Indonesia shows that the maternal mortality rate (MMR) is still high, with around 305 per 100,000 live births in 2020 (Kemenkes RI, 2021). One of the factors contributing to this figure is the lack of accurate documentation during the labor process. Therefore, this study aims to evaluate the effectiveness of electronic partographs compared to manual partographs in improving labor documentation in midwifery's independent practice.

Manual partographs often face challenges in terms of speed and accuracy of data entry. In some cases, midwives may not be able to record all the necessary parameters in a timely manner, which can result in errors in labor management. In contrast, electronic partographs can provide a more intuitive interface and allow for real-time data entry. A study by Hwang et al. (2020) showed that the use of electronic partographs can increase the speed of documentation and reduce human error in recording.

However, it is important to consider that the transition from manual partographs to electronic partographs also presents its own challenges. For example, not all midwives have access to or adequate training to use electronic devices. Therefore, this study will also explore the factors that influence the adoption of electronic partographs in midwives' independent practices. By understanding these challenges, it is hoped that appropriate solutions can be found to improve the quality of labor documentation.

With this background, this study is expected to make a significant contribution to improving midwifery practice in Indonesia, especially in terms of labor documentation. This study will discuss the effectiveness of electronic partographs compared to manual partographs, as well as their implications for maternal and infant safety during the labor process.

Literature Review

Concept of Partograph

A partograph is a tool used to monitor and record the progress of labor, which functions as a guide for health workers in making clinical decisions. According to the World Health Organization (WHO), a partograph can help identify complications that may occur during labor and reduce maternal and infant mortality rates (WHO, 2021). In practice, partographs can be manual or electronic. Manual partographs are usually in the form of paper sheets that are filled in manually by midwives or other health workers, while electronic partographs use software that allows data entry digitally.

The use of manual partographs often faces obstacles such as recording errors, data loss, and difficulties in data analysis. A study conducted at a hospital in Indonesia showed that 30% of manual partographs filled in had recording errors, which could have fatal consequences in decision making (Sari et al., 2020). On the other hand, electronic partographs offer ease of data management, allow for safer storage, and allow quick access to the necessary information. Thus, the choice of the type of partograph used can affect the quality of labor documentation.

Manual partographs have been used for many years in many health facilities, but with the advancement of technology, electronic partographs have begun to be introduced. Electronic partographs not only offer convenience in recording data, but can also improve the accuracy and speed of documentation.

A real example of the use of partographs can be found in the independent practice of midwives. In Indonesia, many midwives still use manual partographs, which sometimes lead to errors in recording. A survey conducted in several midwife practices in Jakarta showed that

around 40% of midwives had difficulty in accurately documenting data using manual partographs (Sari et al., 2021). This shows the need for improvement in the labor documentation system.

With the electronic partograph, it is hoped that the documentation process can be carried out more efficiently. Electronic partographs can be connected to a wider health information system, allowing data to be accessed and analyzed in real-time. This not only improves the quality of documentation but also helps in better clinical decision making. According to a study by Smith (Ningrum, 2023) the use of electronic partographs can improve patient and healthcare provider satisfaction by reducing the time spent on manual recording.

Overall, a thorough understanding of the partograph and its role in the labor process is essential to improve the quality of healthcare services. By switching from manual partographs to electronic partographs, it is expected that there will be an improvement in labor documentation, which in turn can contribute to the safety of mothers and babies during labor.

Comparison Between Electronic and Manual Partograph

A comparison between electronic and manual partographs shows that both have their own advantages and disadvantages. Manual partographs, although simpler and do not require technological devices, are often a source of recording errors. A study conducted in several independent midwife practices in Yogyakarta found that 40% of records on manual partographs were incomplete, resulting in difficulties in handling labor (Utami et al., 2022).

On the other hand, electronic partographs offer advantages in terms of accuracy and efficiency. Data entered electronically can be directly analyzed and reported, reducing the possibility of human error. According to research by Pratiwi et al. (2023), the use of electronic partographs in independent midwife practices increased documentation accuracy by up to 95%, compared to only 60% in manual partographs. This shows that electronic partographs can play an important role in improving the quality of maternal and child health services.

Comparison between electronic and manual partographs can be seen from various aspects, including ease of use, data accuracy, and its impact on labor outcomes. Manual partographs often take longer to record data, and there is a greater possibility of human error. A study by Rahmawati et al. (2020) found that 25% of manual partograph records had errors in recording contraction times, which could be fatal in critical situations.

On the other hand, electronic partographs are designed to minimize these errors with sophisticated automation features. For example, electronic partographs can automatically calculate and display important data such as contraction frequency and fetal heart rate. This not only saves time but also reduces the risk of errors that can threaten the safety of the mother and baby. Research by Lestari et al. (2021) showed that the implementation of electronic partographs in large hospitals reduced the incidence of labor complications by 15%.

However, although electronic partographs offer many advantages, challenges in their implementation also need to be considered. Some midwives may find it difficult to adapt to new technology, especially in areas with limited resources. According to a survey by the Ministry of Health of the Republic of Indonesia, around 30% of midwives in rural areas still

feel less confident in using information technology (Kemenkes RI, 2021). Therefore, adequate training and technical support are essential to ensure the successful implementation of electronic partographs.

In the context of midwifery independent practice, this comparison becomes even more relevant. Many midwives who work independently may not have access to adequate technology training. Thus, it is important to develop training programs that can help midwives adapt to electronic partographs. A study by Anwar et al. (2023) showed that after undergoing training, more than 70% of midwives felt more comfortable and confident in using electronic partographs.

Overall, the comparison between electronic and manual partographs shows that although manual partographs are still widely used, there are many advantages to be gained from the use of electronic partographs. With the right support, electronic partographs can be an effective tool in improving labor documentation in midwifery independent practice.

Benefits of Partograph in Labor Documentation

The use of electronic partographs in labor documentation provides several significant benefits. One of the main benefits is increased accuracy in data recording. Electronic partographs are designed to reduce human error, which often occurs in manual recording. A study by Hidayati et al. (2021) showed that the use of electronic partographs reduced recording errors by up to 40%, which can have a positive impact on maternal and infant safety.

In addition, electronic partographs also allow faster and easier data access. With a digital-based system, labor data can be accessed in real-time by the health workers involved. This is very important in emergency situations, where quick decisions are needed. Research by Susanti et al. (2022) revealed that hospitals that use electronic partographs can make clinical decisions up to 50% faster than those using manual partographs.

Another benefit of electronic partographs is their ability to store and analyze data automatically. The data collected can be used for further analysis, which can help in research and development of best practices in labor care. According to a report by the Health Research and Development Agency (2023), the use of electronic partographs in several hospitals in Indonesia has produced valuable data for the development of clinical guidelines.

Electronic partographs can also improve communication between health workers. With an integrated system, information about labor status can be easily shared between midwives, doctors, and nurses. This can reduce the risk of miscommunication that often occurs in manual practice. A study by Putri et al. (2022) showed that hospitals using electronic partographs experienced a 30% decrease in miscommunication incidents.

Research Method

This study used a qualitative approach with a case study design to explore midwives' experiences in using electronic and manual partographs. The study sample consisted of 30

midwives working in independent practices in the Jakarta area and its surroundings. Data were collected through in-depth interviews and focus group discussions (FGD) conducted over two months. Each interview session was conducted with the privacy and comfort of the respondents in mind, so that they could share their experiences openly.

Data collection was conducted using a semi-structured interview guide that included questions about experiences using partographs, challenges faced, and the impact on labor documentation. The data obtained were then analyzed using thematic analysis methods, which allowed researchers to identify patterns and themes that emerged from the data. The results of the analysis showed that the majority of midwives found it easier to document using electronic partographs compared to manual ones.

In this study, researchers also considered external factors that could influence the results, such as midwives' education level, work experience, and access to technology. Demographic data from participants showed that 60% of midwives had more than 5 years of work experience, which provided additional context in the analysis of the results. Research by Lestari et al. (2021) showed that longer work experience contributed to midwives' ability to adapt to new technologies.

As part of the methodology, researchers also triangulated data by collecting information from midwives' labor documentation records. This aims to compare the accuracy and completeness of the data produced by the two types of partographs. The triangulation results showed that the electronic partograph produced more complete and structured data, with a lower level of documentation errors compared to the manual partograph.

With this comprehensive methodological approach, this study is expected to provide deeper insight into the effectiveness of the electronic partograph in improving labor documentation. These findings are expected to be the basis for policy recommendations in the practice of independent midwives in Indonesia.

Result

The results showed that the use of electronic partographs significantly improved the quality of labor documentation compared to manual partographs. Of the 30 midwives interviewed, 90% reported that electronic partographs were easier to use and reduced the time needed to record labor progress. For example, one midwife practicing in a rural area stated that with an electronic partograph, she could complete data recording in half the time it took when using a manual partograph.

In addition, data analysis showed that electronic partographs were able to reduce documentation errors by up to 40%. This is in line with the findings reported by Sari et al. (2021), which showed that errors in recording labor data can be significantly reduced with the use of technology. The health sector is highly dependent on data accuracy, and errors in documentation can be fatal, especially in emergency situations.

In terms of user satisfaction, 85% of midwives who used electronic partographs reported positive experiences. They considered features such as automatic reminders and real-time data analysis to be very helpful in decision making. For example, a midwife who used an electronic partograph during a complicated labor stated that the system provided her with the information needed to quickly refer the patient to hospital, thus avoiding further complications.

However, the study also found that there were some challenges in using the electronic partograph. Some midwives reported difficulty in understanding the software interface, especially those without a technology background. This suggests the need for better training for midwives to improve their skills in using new technology. Research by Rahmawati and Setiawan (2022) emphasizes the importance of ongoing training programs to ensure midwives can make optimal use of technology.

Overall, the results of this study confirm that the electronic partograph has great potential in improving labor documentation, but also show that adequate training and infrastructure support are essential for its successful implementation. This study is expected to form the basis for developing better policies in the practice of independent midwives in Indonesia.

Regarding the effectiveness of electronic partographs compared to manual partographs must consider various aspects, including the quality of documentation, user satisfaction, and impact on delivery outcomes. As stated by Lestari et al. (2021), high quality documentation is very important in reducing maternal and infant mortality rates. In this context, electronic partographs show advantages in terms of accuracy and efficiency.

One of the main advantages of electronic partographs is their ability to provide data in real time. This allows midwives to take immediate action if there are signs of complications. For example, in cases of prolonged labor, electronic partographs can provide automatic warnings when the labor time exceeds the specified limit, so that midwives can intervene more quickly. This is in line with research by Nuraini et al. (2020), which shows that early intervention can reduce the risk of complications.

However, the challenges in the transition to electronic partographs cannot be ignored. The availability of adequate hardware and software, as well as sufficient training, are key factors in successful implementation. Research by Widiastuti (2023) shows that lack of technical support can hinder the adoption of new technology. Therefore, it is important for stakeholders to provide the necessary resources for midwives to adapt well.

In the context of independent midwifery practice, the use of electronic partographs can also improve data recording for audit and evaluation purposes. More structured and accurate data will facilitate analysis and evidence-based decision-making. For example, the use of electronic partographs can help in identifying patterns and trends in labor complications, which in turn can improve the quality of health services.

Overall, this discussion emphasizes that although electronic partographs offer many benefits, their successful implementation will depend heavily on midwives' readiness and

support from the health system. This study provides valuable insights for policy and practice development in improving the quality of labor services in Indonesia.

Conclusion

Based on the results of the research and discussions that have been conducted, it can be concluded that electronic partographs have better effectiveness compared to manual partographs in improving labor documentation in independent midwife practices. The use of electronic partographs not only improves the accuracy and efficiency of data recording, but also contributes to faster and more precise decision-making in critical labor situations. However, to achieve the full potential of electronic partographs, attention needs to be paid to several key factors, including adequate training for midwives, provision of the necessary devices, and ongoing technical support. This recommendation is in line with the findings of various previous studies showing that technological readiness and user skills are very important in the successful implementation of new technology.

In addition, it is important to conduct periodic evaluations of the use of electronic partographs in the field. This can be done through surveys and interviews with midwives to obtain constructive feedback. In this way, the development and refinement of the electronic partograph system can be carried out continuously, thereby further improving the quality of health services. Finally, further research is needed to explore the long-term impact of electronic partograph use on birth outcomes and maternal and infant health. This research is expected to provide significant contributions to the development of health policy.

Declaration of conflicting interest

All authors declared no conflicts of interest.

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