

NURSES AND MIDWIVES KNOWLEDGE ASSESSMENT ON COMPLETION OF THE PATOGRAPH WITHIN SELECTED FACILITIES IN KENYA.

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Abstract

Globally, the top five causes of maternal mortality in women of all ages include hemorrhage, hypertensive disorders, abortions and sepsis, accounting for over 75% of all maternal fatalities. The partograph is a simple, low-cost tool recommended by the World Health Organization (WHO) for monitoring labor and identifying potential complications. The World Health Organization (WHO) recommends universal use of the partograph during labor to support decision-making in diagnosing and managing prolonged or obstructed labor. Despite its simplicity and low cost, studies conducted in many developing countries have shown that the use of the partograph remains limited. This study aimed to assess the knowledge of nurses and midwives regarding completion and use of the partograph in managing labor. The study was conducted in maternity units within selected facilities in Meru County, Kenya. This study employed a mixed-methods approach, incorporating both qualitative and quantitative techniques. A case study design was used to evaluate the knowledge and skills of participants during the intrapartum period, through completion of partographs. The sample consisted of 78 nurses and midwives. Data was collected using case-based partograph scenarios, with quantitative data analyzed using SPSS version 26 to generate descriptive statistics, while qualitative data was analyzed thematically. Despite availability of Basic Emergency Obstetric and Newborn Care (BEmONC) guidelines, significant gaps were identified in the accuracy of completing the partograph (mean score = 1.7). Participants demonstrated limited knowledge and skills, as evidenced by incorrect charting of fetal parameters and inaccurate documentation. A number of participants experienced difficulty in using the partograph, citing challenges such as staff shortages. One participant stated, "We are very few staff during the shifts, so I don't think it will be possible to fill this partograph." Other reported barriers included lack of training, inadequate staffing, and unavailability of partographs. Although efforts have been made to maintain clinical competence, the study revealed persistent gaps in correct use and completion of the partograph. There is need for continuous training and capacity-building initiatives to improve quality of care and strengthen clinical practice among nurses and midwives.

Keywords: Patograph, Completion, Nurses and Midwives.

Introduction

The top five causes of maternal mortality in women of all ages globally include hemorrhage, hypertensive disorders, abortions and sepsis, accounting for over 75% of all maternal fatalities [1]. The Maternal Mortality Rate (MMR) was 223 for every 100, 000 live births in 2021 globally for every 100000 live births in Sub-Saharan Africa and 378 for every 100, 000 live births in Kenya greatly exceed the SDG goal of 70 maternal mortalities for every 100,000 live births. The global Neonatal Mortality rate (NMR) was 17 for every 1000 live births; In Sub-Saharan Africa, the neonatal mortality rate (NMR) was 24 per 1,000 live births. In Kenya, the NMR stood at 16 per 1,000 live births in Kenya, well above the Sustainable Development Goal (SDG) target of 12 per 1,000 live births by 2030. The "Three Delays" model continues to be a major contributor to these outcomes. These outcomes result from delays in deciding to seek care, reaching appropriate healthcare facility, and delays in receiving adequate care upon arrival. In this context, timely and accurate interpretation of labor progress is critical, and nurses and midwives play a vital role in this process.

The partograph is a simple, low-cost tool endorsed by the World Health Organization (WHO), designed to monitor labor and detect complications such as prolonged or obstructed labor. WHO recommends its use universally to support better informed clinical decision-making during labor. However, despite its proven benefits, studies from many developing countries have reported limited use of the partograph in routine practice^[2]. The partograph serves as a vital tool that visually tracks the progress of labor and monitors the health status of both the mother and the fetus. It is structured into four main sections: maternal information, fetal well-being, labor progression, and maternal condition. The fetal well-being section includes monitoring of the fetal heart rate, the condition of the amniotic fluid, and the presence of cranial molding. Labor progress is documented through cervical dilation and fetal head descent, which are assessed in relation to the "alert" and "action" lines to guide timely interventions. The maternal condition section records key indicators such as uterine contractions, blood pressure, pulse, urine output, temperature, and any medications given, including those used to stimulate labor ³.

The partograph can significantly improve birth outcomes by enabling early detection and management of labor complications. Although, its consistent use remains low in many developing countries across Africa, strengthening routine use for labor monitoring at a national level is crucial to reducing perinatal mortality and enhancing quality of maternal care⁴. It has been reported that 50% of midwives do not regularly use partographs, citing the challenges of monitoring them, as they find it time-consuming and difficult. They also believe that identifying labor complications requires experience, leading them to view partograph use as a time-wasting activity that does not impact their responsibilities or professional growth⁵.

In Kenya, an estimated 140 million births occur each year, and more qualified nursing staff are needed to provide skilled care ^[6]. Baloyi and Jarvis ^[7] asserted that healthcare consumers have a right to excellent, timely healthcare by qualified nurses and midwives in accordance with the Sustainable Development Goal number three ^[8]. The objective of this study was to assess the nurses and midwives' knowledge on completion of the partograph. Delivery of essential obstetric care to women continues to be one of the crucial initiatives that must be carefully adopted to meet the third Sustainable Development Goal by 2030 ^[9]. This study will guide the Ministry of Health, Nursing Council of Kenya (NCK), Midwifery Regulators and Ministry of Education on the knowledge and clinical skills gaps existing among nurses and midwives pertaining management during labour.

Methods

The study was conducted in maternity units in selected facilities in Meru County, Kenya. The study used both qualitative and quantitative techniques (Mixed methods). A case study design was used to assess participants' level of knowledge and skills during the intrapartum period, through completion of a partograph case scenario. The target population comprised 98 nurses and midwives, who consented to participate in the study and had minimum working experience of at least 6 months within the maternity units.

The formula for Taro Yamane (Yamane, 2019) was used to compute the sample size, as follows,

$$n = \frac{N}{1 + Ne^2}$$

n – The sample size

N – The target population size: 98

e – The acceptable margin of error or level of precision= 0.05.

Therefore:

$$n = \frac{98}{1 + 98(0.05)^2}$$

n=78 respondents.

Table 1: Target & Sample Population of Different Hospitals.

No.	Hospital Name	N- Target population Reference. (Maternity Units staff database records.)	n- Sample size
1	Kanyakine Sub-county Hospital	23	18
2	Githongo Sub-county hospital	27	21
3	Muthara Sub-County Hospital	18	15
4	Nyambene sub County Hospital	30	24
	Total	98	78

Purposive sampling, which targets a specific group depending on the rationale for conducting the study ^[10], was used to select facilities within Meru County, which recorded high maternal mortality rate (291/100000 live births). Systematic random sampling technique was used to select participants from the facilities using the formula $i=N/n$, to obtain the sampling interval. The justification for using this method was to ensure statistical generalization and data representation, ensuring valid conclusions about the population under study. ^[10]

The patograph, was administered and completed as a case scenario, using the case study design, which is analytical and provides in-depth exploration of the intrapartum mother. Through the monitoring and follow-up period of using a patograph, the nurses and midwives were able to make diagnoses through identification of abnormal findings and to take appropriate actions or decisions to manage the client, noting that active phase of labour should be less than 18 hours.

A pre-test study was performed to strengthen the quality of the research with particular emphasis placed on its significance for boosting the study's reliability and validity ^[11]. All the consenting nurses and midwives were taken through the data collection process, which involved completion of the patographs.

Data was revised, coded, and uploaded on excel spreadsheets for computation before analysis commenced. Data was cleaned to remove any inaccuracies, then both qualitative and quantitative analysis was performed. SPSS version 26 was used to analyse quantitative data ^[12], with use of descriptive statistics. Thematic analysis was employed for qualitative data, after which the information was grouped into themes for easy analysis.

The study was approved by the Chuka University research, Ethics and Review Committee. The ethics committee number is **NACOSTI/NBC/AC-0812**. Permission was also sought from the specific Sub-County hospitals and from the Meru County Government. Potential participants were taken through informed consent procedures. Participation in the study was voluntary and confidentiality, privacy, and participants right to withdraw from the study assured. The researcher linked to coded data only on a paper participant tracking form which was stored in a locked file cabinet at the study site accessible only by study investigators and study clinician,

after which they were transferred to the research office. After instruments were checked for precision and comprehensiveness, data was prepared for upload. Reserve copies, including electronic sets of all data files were safely stored, and any extra information saved in hard disk drives.

Results

A total of 70 participants completed the data collection process, resulting in a 90% response rate. The sample consisted of 77.1% females (n=54) and 22.9% males (n=16). 42.9% (n=30) of participants were aged between 32 and 36 years. 72.9% (n=51) of nurses and midwives were KRCHNs, and the labor ward was the most common deployment area (37.1%, n=26).

Knowledge on Complete Documentation of the Patograph

To assess the knowledge on charting the patograph, respondents were required to complete a patograph case scenario. A clear case scenario of a mother in labour was given, who was admitted in first stage of labour for monitoring; these included charting the general baseline information, fetal parameters, maternal parameters and other details. Results were presented in form of mean and standard deviation in the Table below.

Table 2: Knowledge on completing the patograph

	N	Mean	Std. Deviation
knowledge on charting baseline data	70	1.20	.403
knowledge on starting the partogram_active phase	70	1.31	.468
outline priority care during active phase	70	1.56	.500
advice during active phase	70	1.51	.503
expected results at 1 pm	70	1.77	.423
knowledge on charting FHR	70	1.29	.455
knowledge on charting amniotic fluid	70	1.37	.487
knowledge on charting molding	70	1.36	.483
knowledge on charting decent	70	1.70	.462
cervical diletation	70	1.29	.455
knowledge on charting time	70	1.24	.432
knowledge on charting contractions	70	1.37	.487
knowledge on charting Maternal pulse & BP	70	1.43	.498
knowledge on charting temperature	70	1.51	.503
knowledge on charting urinalysis parameters	70	1.41	.496
describe the care that will be given at 1pm	69	1.55	.501
what was the duration during active phase of the first stage	69	1.32	.469

what was the duration during the second stage	69	1.38	.488
impressions derived from the plotted patograph	69	1.54	.502

Results on Table 10 shows the mean scores ranging from 1.20 to 1.77 across different aspects of knowledge related to charting the patograph. Regarding the knowledge on charting the patograph the data was coded using 1 and 2, where 1 was yes and 2 represented no. Higher mean scores suggested a lower level of understanding regarding the specific knowledge area. For instance, a lower mean of 1.2 indicated that most respondents demonstrated knowledge on charting baseline data. However, the highest mean score of 1.77 was observed for expected results at 1 pm, indicating a relatively weak understanding in this aspect. Further knowledge on charting decent had a mean of 1.70 which gave an impression of inadequate knowledge.

Gaps were observed in the process of accurately completing the parameters on the patograph. It was observed that some respondents were not keen to correctly fill the fetal parameters, while many more respondents were not sure how to complete it.

Qualitative Findings: Positive Perspectives of the Patograph

The nurses and midwives demonstrated basic knowledge in using the patograph. They were able to chart the baseline data and clearly understood how to interpret the duration of active phase of labor.

“The duration of first stage of labour is 4hours while the duration of second stage of labour is 20minutes”- nurses and midwives

Negative Perspectives of the Patograph

Six themes were identified as negative observations in utilization of the patograph. Some themes identified during analysis of data from the patograph included, documentation on completeness and accuracy, timely charting and interpretation, impact on clinical decision-making, challenges and barriers to effective use, communication and collaboration. Figures 1-4 below show information as filled on the respondent’s patograph. Although Figure 1 demonstrates satisfactory completion with all parameters correctly displayed, figures 2, 3 and 4 were incorrectly completed by some of the respondents.

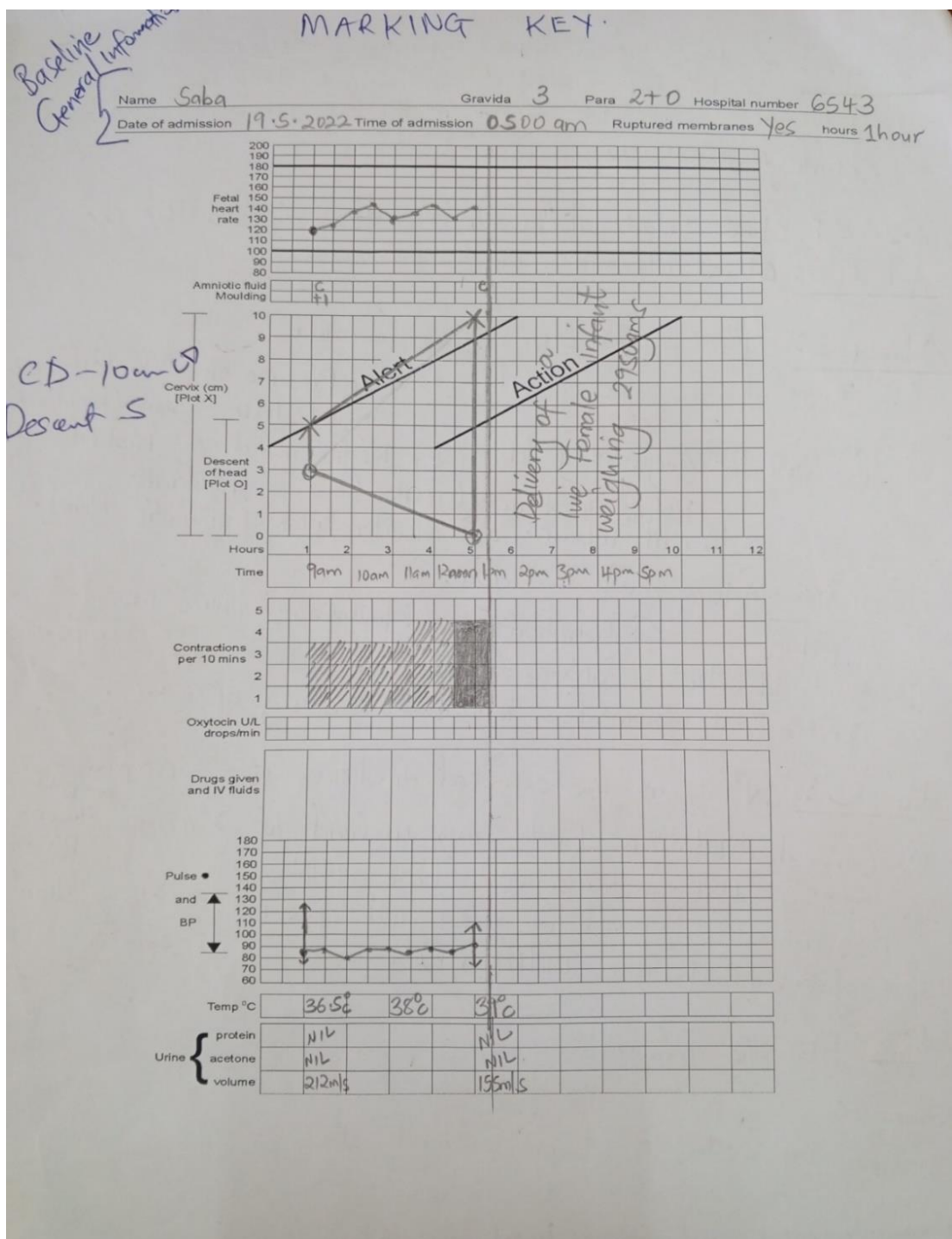


Figure 1: Complete partograph

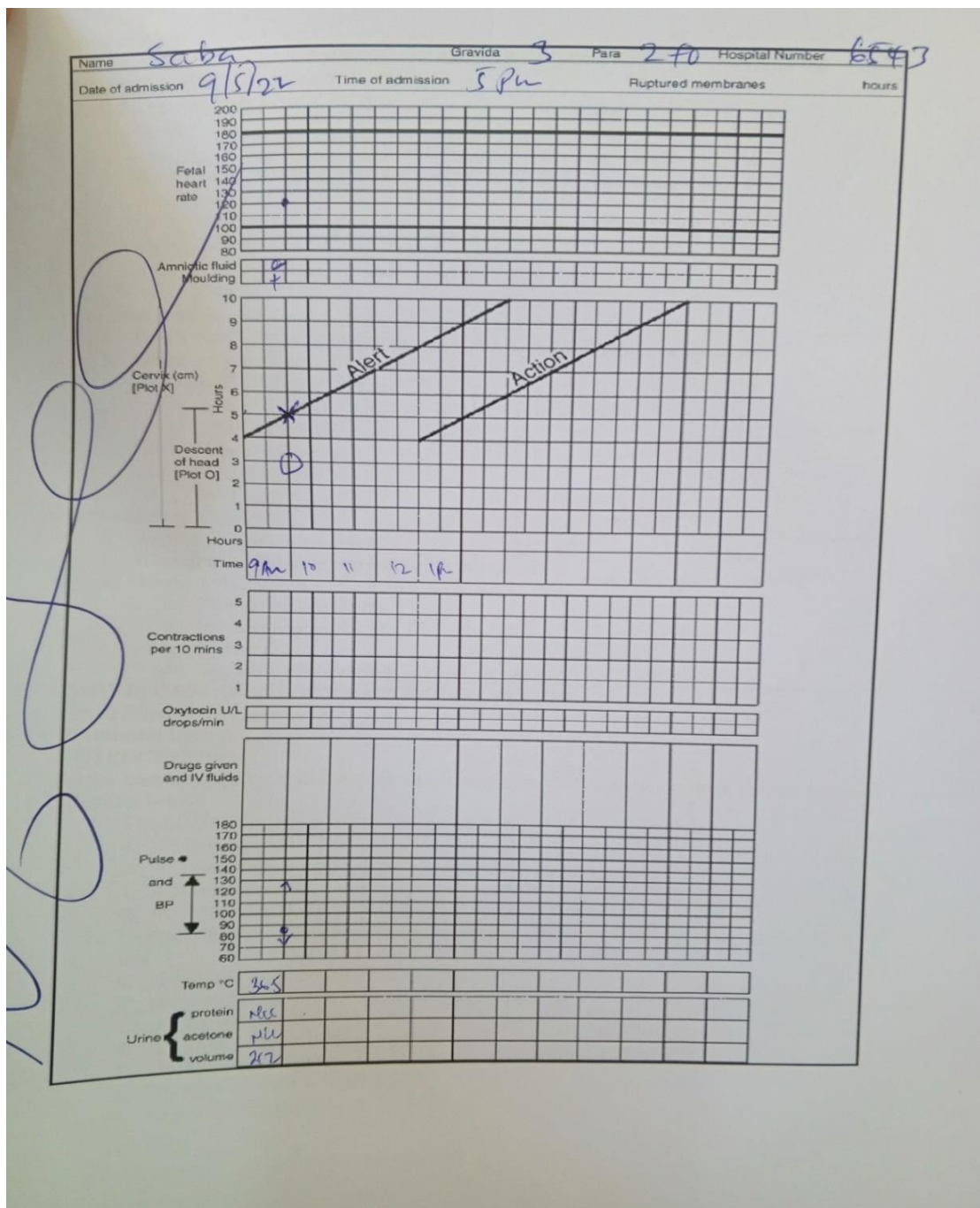


Figure 2: Incomplete partograph 1

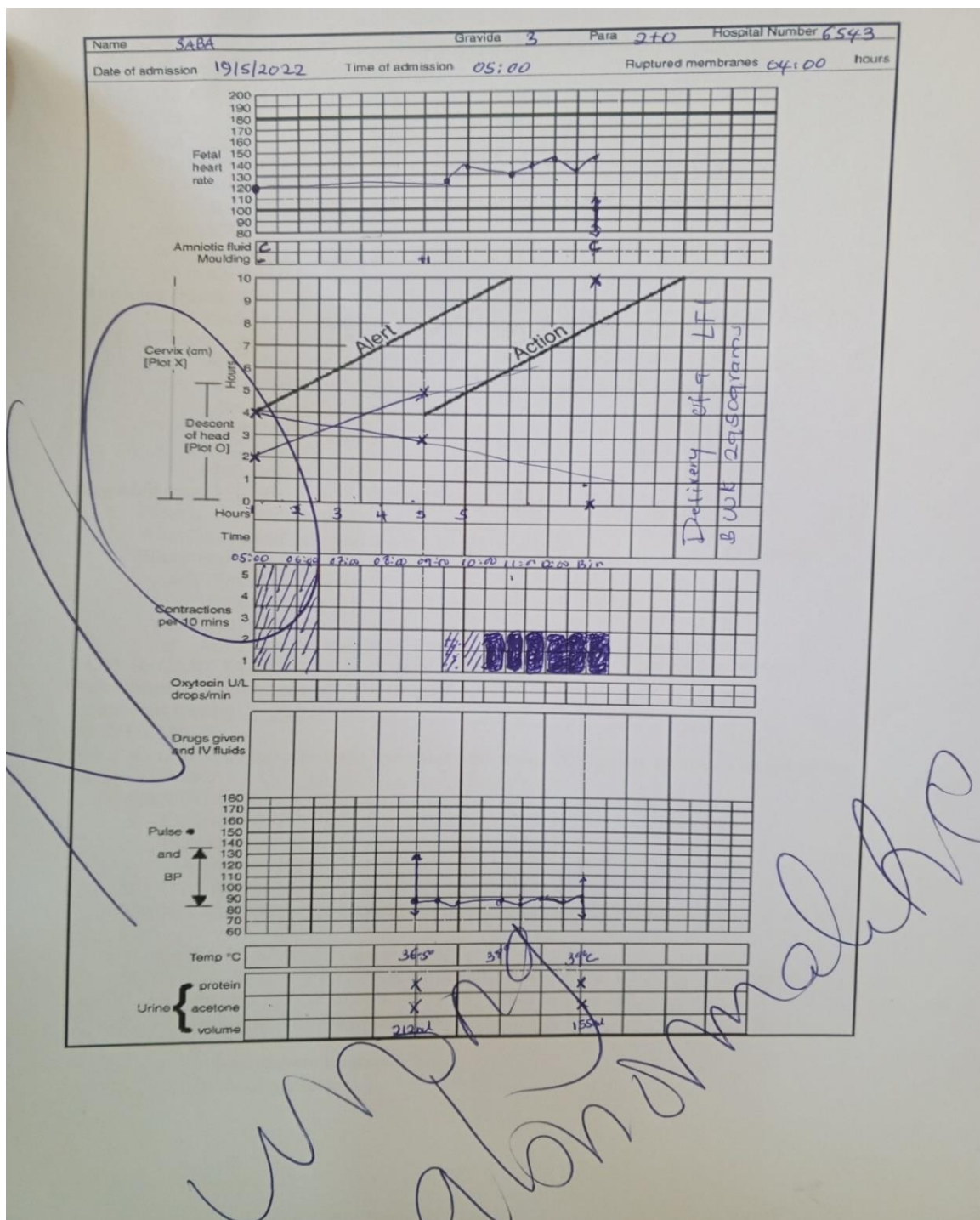


Figure 3: Incomplete patograph 2

i. Documentation on Completeness and Accuracy

The gaps identified in completeness and accuracy through observation included; partograph halfway filled; lack of knowledge in the initial charting especially of the cervical dilatation and time allocation; inconsistency in charting the different parameters; wrong charting of the different parameters i.e. descent is charted using an 'X' instead of 'O'. Uncertainty was depicted in charting the contractions where mild contractions were charted together with moderate contractions. These inconsistencies demonstrated lack of knowledge in completing the partograph making the information hard to interpret and make conclusive decision as pertaining to management of women in labour.

i. Timely Charting and Interpretation

There were gaps identified through observation in the timeliness of charting the partograph which affected the interpretation. The gaps include; wrong allocation of time when starting the partograph, this led to wrong interpretation of all the available information documented on the partograph. Hence, timing of when to perform vaginal examination was a great concern.

ii. Impact on Clinical Decision-Making

Inconsistencies observed in some of the partograph filled by the respondents made the interpretation difficult hence lack of proper decision making on the next course of action in management of the mother in labor. This implies that the nurses and midwives could easily make a wrong diagnosis for the client, which will lead to wrong management actions, for example, deciding on the mode of delivery where no clear complication is observed, the respondents were asked, in one of the poorly done questions, to give the expected results at 1pm. Most of the respondents did not answer this question, while those who answered did not give conclusive responses enough to guide in the next course of action for management of the woman. Below are a few sampled responses.

"Mother is far from second stage of labour"- nurses and midwives

"Contractions are not good"- nurses and midwives

"Mother needs more time before birth"-nurses and midwives

The responses above are not very clear, because at 1pm, the mother should be approaching second stage of labour, cervical dilatation and descent should also be progressive hence birth is imminent. The information charted on the patograph is so crucial, because it gives direction on the next course of action to be taken, this must be a serious activity for the staff.

iii. Challenges and Barriers to Effective Use

The case study completion by the respondents presented various challenges. For the participants who were unable to either complete its documentation stated;

"I have no time to fill the patograph" - nurses and midwives

"There is too much work I don't think I can complete this work" - nurses and midwives

"We are very few staff during the shifts so I don't think it will be possible to fill this patograph" - nurses and midwives

"Filling the patograph is very tedious, as long as the mother delivered well, I can just complete them at the last minute, I don't have to give a lot of details" - nurses and midwives

"I am not sure I know how to complete this tool, if we were trained on how to do it, maybe I will have more confidence, we shall ask those who understand better to do it instead" - nurses and midwives

This being the reason for some of the nurses and midwives handing in incomplete sections of the patograph.

iv. Communication and Collaboration

There are respondents who left the patograph blank, while others started filling and did not complete the whole process of documenting the information, from observation, this could suggest that they were neither keen nor interested to consult on how to do it.

Discussion

The partograph, which is a visual tool designed to track labour progress and monitor maternal and fetal conditions over time, is majorly used to offer a visual overview of labour and to notify obstetric care providers of any changes in maternal or fetal conditions or deviations in labour progress ^[13]. The World Health Organization (WHO) recommends universal use of the partograph during labour. Its routine use aids in making informed decisions for diagnosing and managing prolonged or obstructed labour ^[14]. Worldwide, prolonged and obstructed labour contributes to 8% of maternal deaths, which can be mitigated through the appropriate use of partographs. Employing the partograph effectively during labour is a crucial intervention for decreasing both maternal and perinatal morbidity and mortality ^[13].

In this study, major inconsistencies were observed in charting the various parameters, to include; baseline data, fetal and maternal parameters. Evidently, most respondents did not correctly chart the fetal descent (mean 1.70). The lack of knowledge here is what could lead to complication during labour. These findings are consistent with other reports which indicate that prolonged and obstructed labour, along with delays in decision-making, are significant contributors to maternal and fetal mortality. These complications encompass severe hemorrhage, infections, hypertensive disorders, and obstructed labour^[15]. Hence, effective use of the partograph positively influences maternal and neonatal delivery outcomes. This underscores the importance of proficiently in using the partograph to monitor labour progress.

The thematic areas developed also expounded further on the realized gaps. Hence, the qualitative perspectives from the study outlined negative aspects of the partograph revealing gaps in completeness and accuracy through observation which included; partograph halfway filled; lack of knowledge in the initial charting especially of the cervical dilatation and time allocation; inconsistency in charting the different parameters; wrong charting of the different parameters for instance, descent is charted using an 'X' instead of 'O', unclear charting of the contractions was observed where mild contractions are charted together with moderate contractions. Similarly, another study¹⁶ addressed the same gap in knowledge of correctly charting and interpreting the information on the partograph.

Additional themes explaining the gaps included wrong timing and interpretation during charting hence a good number (mean 1.31), still were unable to initiate the partograph during the active phase of labour. The expectation of the respondents was for them to have a basic understanding on using the partograph bearing in mind that they must have the least standard knowledge to operate and offer up-to-date services for the pregnant mothers. Another setback observed was indicated by the highest mean score of 1.77 theoretical interpretation for expected results at 1 pm, this indicated a relatively weak understanding in interpretation. This finding is similar to another study¹⁷ that emphasized on the need for correct interpretation and prompt action taken in order to minimize unnecessary interventions to the mother.

Evidently, the inconsistencies in correct charting would impact on prompt clinical decision making, because incorrect diagnoses are likely to be derived. Weakness was also observed from the theme developed on communication and collaboration among the nurses and midwives. This could imply that the nurses and midwives are either not keen, or may be disinterested, or they have a negative attitude towards completion of the partograph. Compounding this fact is also the fact that the nurses and midwives did not seem to attach importance to communicate difficulties and consult on the correct way to complete the process. This explains why some of the partographs were incomplete. Agreeably, study ^[18] done in Dar-es-Salaam found that only slightly over 40% of the WHO standard Partograph parameters were completed, a finding consistent with similar studies in Kenya and Western Uganda. In Nigeria and the Southwest Region of Cameroon, some midwives viewed completing the partograph as a time-consuming task and did not fully understand its life-saving potential, leading to negative attitudes. This discrepancy may have been due to staff shortages, increased workloads, or a lack of awareness about the partograph's benefits^[19]. These findings align with observations in another study ^[20] that reported that only 24.6% (88/355) of partographs were fully completed with all three parameters (fetal, maternal, and labour monitoring), indicating that over 60% of the reviewed partographs were inadequate.

The participants were issued with the partographs to complete, though some of them stated that they had challenges in completing the process. Some of the statements were as follows:

“There is too much work I don’t think I can complete this work” - nurses and midwives

“We are very few staff during the shifts so I don’t think it will be possible to fill this partograph” - nurses and midwives

“Filling the partograph is very tedious, as long as the mother delivered well, I can just complete them at the last minute, I don’t have to give a lot of details” - nurses and midwives

“I am not sure I know how to complete this tool, if we were trained on how to do it, maybe I will have more confidence, we shall ask those who understand better to do it instead” - nurses and midwives

These statements are consistent with a study ^[15] that was conducted which identified several constraints that hindered the effective use of the partograph during labour, including staff shortages, lack of training, inadequate skills, and insufficient knowledge about the partograph itself. These challenges compromised the quality of care provided. Similar findings were observed at Mulago Referral Hospital, where healthcare workers cited a heavy workload due to understaffing, the unavailability of partographs in patient charts, lack of equipment, insufficient skills, and poor attitudes towards using the partograph as reasons for its low completion rate. A related study conducted in Malawi ^[16] also highlighted key factors contributing to the underutilization of the partograph, such as staff shortages, negligence, a lack of appreciation for the partograph's importance, ineffective and inadequate supervision, lack of recognition or motivation, and skill incompetency. The statement from the study's phase one addressing the need for further training is in line with other studies that focused on creating awareness on partograph utilization ^[15]. Accordingly, a similar study ^[13] found that healthcare providers had low awareness on utilization of the partograph, along with significant skill and knowledge gaps in maternity care. Additional barriers to using the partograph included negative attitudes among health providers, limited confidence, inconsistent commitment, and poor interaction with the delivering mother.

Conclusion

This study highlights significant gaps in the knowledge and use of the partograph among nurses and midwives, which can adversely impact maternal and fetal outcomes during labor. Inconsistencies in charting, lack of training, poor communication, and inadequate staffing were identified as key barriers to effective partograph utilization. These issues contribute to delays in decision-making, incorrect diagnoses, and negative attitudes toward the tool, which undermine its potential to improve clinical outcomes. Addressing these challenges through enhanced training, better staffing, and fostering positive attitudes toward the partograph is essential to ensuring its effective use, especially through participation in CPD. Ultimately, this will lead to improvement of maternal and neonatal care. Considering the gaps identified, effectiveness of CPD in clinical practice for the nurses and midwives is still wanting. Hence the need for continuous training.

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