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Original Research Article

Utilisation of the Partograph by Midwives in Relation to Birth Outcomes at Selected Health Facilities in Solwezi District, Zambia

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Abstract: ***Background:*** Zambia has seen a decline of maternal mortality rate (MMR) from 213 per 100,000 live births to 183 per 100,000 live births and the infant mortality rate (IMR) from 45 per 1,000 live births to 43 per 1,000 live births (United Nations, 2020). In spite of this, the ministry of health (MoH) has continued advocating for the use of the partograph in preventing negative birth outcomes. Nevertheless, most available research nationally and internationaly show that it is unclear whether there is a relationship between utilisation of the partograph and birth outcomes. ***Objective:*** The study aimed at investigating the relationship between utilisation of the partograph and birth outcomes. ***Methods and Materials:*** A cross-sectional quantitative study design was used. The systematic random sampling was used to select 183 partographs and convenience sampling was used to select 20 midwives. The materials used were self-administered questionnaire/ partograph checklists, Statistical Package for Social Sciences (SPSS) version 22 and the Chi square test. ***Results:*** The study has indicated that use of the partograph in monitoring women in labour has the potential to influence birth outcome which could be appropriate or inappropriate. The cross tabulation showed no correlation between utilisation of the partograph birth outcomes as most partographs with bad utilisation still had a p value of 0.045. ***Conclusion:*** There is no relationship between utilisation of the partograph and birth outcomes.

Keywords: Utilisationof partograph, Midwives's knowledge, Birth outcomes.

1.0 INTRODUCTION

A partograph is defined as a pre-printed paper that provides a visual display of recorded observations carried out on a mother and foetus during labour (Abdallah, 2017). The tool is used to measure the foetal wellbeing, the maternal wellbeing and the progress of labour.

However, despite the reported usefulness of this monitoring tool, a number of studies have revealed that most parameters on the partograph are not being monitored, and most health care workers do not document their findings on the partograph after reviewing women in labour.

Some countries such as Colombia revealed that inefficient referral linkage and lack of functioning referral mechanisms resulted into Maternal Deaths and not really poor utilisation of the partograph (Mendoza, 2016). Additionally countries like Ghana placed more emphasis on midwifery notes rather than partographic documentation to the extent that the partograph was often being completed in retrospect to correspond with midwifery notes (Laytey *et al.*, 2016). The reason put across by Ghana is that the partograph has no correlation with various birth outcomes, and instead it has actually led to unnecessary interventions such as oxytocin use. In Zambia, Mwiinga *et al.*, (2017) in their study on the use of the partograph among midwives at University Teaching Hospital (UTH), Lusaka, Zambia indicates that some parameters on the partograph are not monitored, and most health care workers do not document their findings on the partograph after reviewing a woman in labour. Hence, this study aimed at exploring if there is a relationship between utilisation of the partograpgh and birth outcomes.

2.0 OBJECTIVES

The general objective of this study was to establish if there is a relationship between utilisation of

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the partograph by midwives at Solwezi General Hospital and Urban clinic and birth outcomes. The specific objectives of the study were to assess midwives at Solwezi General Hospital and Urban clinic's knowledge on utilisation of the partograph, evaluate utilisation of the partograph by midwives at Solwezi General Hospital and Urban clinic and identify factors contributing to outcomes of labour at Solwezi General Hospital and Urban clinic.

3.0 METHODS

A descriptive cross-sectional study design was utilised to scrutinize partographs of mothers who were giving birth at the two study sites and midwives who were working in maternity wards from 4th to 25th August, 2019. Partographs check list and self-administered questionnaire were used to collect data where as additional information was collected from delivery record registers at Solwezi General Hospital and Urban clinic in Solwezi District of North- Western province of Zambia. Purposive sampling was used to select the study settings on the basis that Solwezi General Hospital is the referral centre for the province, while the urban clinic is the main referral centre to Solwezi General Hospital. Further-more, both health facilities are reportedly the busiest in the province; they had reports of poor utilisation of the partograph by midwives, as well as recorded high numbers of Ceaserian sections (C/S) and Maternal Deaths (MDs). A total of 138 clinics refer their patients to Solwezi General Hospital, which has a 32 bed capacity in maternity ward; and the hospital has a catchment population of 727,044, with a total number of 430 deliveries per month (Solwezi General Hospital, 2017).

Hundred and eighty-three (183) partographs were selected randomly. The inclusion criteria included partographs for women aged 18 – 35 years, those who were diagnosed to be in normal labour with no antenatal risks or predisposing factors, and cervical dilatation of 4cm on admission. Exclusion criteria included partographs for women who had taken traditional medicine to accelerate labour. The inclusion criterion for midwives included having worked in the maternity wards at the two study sites for a period of six months or more whereas midwives who were working on part time basis were excluded.

3.1 Data Collection Techniques

On the first day of collecting data at each facility, the researcher, introduced himself and explained the purpose of the study to the ward in-charges. Participant information sheets were given to the midwives who were willing to participate in the study so that they could have more detailed information. Before filling in the questionnaire, each respondent was asked to sign an informed consent form and filled in questionares were collected withinin three days. Data from partographs were collected at the end each day for a period of three weeks until the required sample size was reached. The collected data was stored under lock and key, as well as using adequate technological resources such as the computer, flush discs and online storage. Transcribed material was kept in a password protected computer. Identifiable data was anonymised as no names were mentioned or pseudonymised where possible as only numbers were used to identify the partograph. Validity of the instrument was ensured by using the validated World Health Organization (WHO) self-structured administered questionnaire and partograph check lists. Experts in the field were also consulted. Reliability of the instrument was ensured by conducting a pilot study.

3.2 Data Analysis

Data were analysed using SPSS version 22. Descriptive statistics were used to summarize demographic characteristics whereas Chi-square test was used to test associations between utilization of the partogragh and birth outcome with the level of significance put at 0.05. To summarise the data, the findings have been presented using tables.

3.3 Ethical Considerations

Ethical clearance was sought from the University of Zambia Biomedical Research Ethics Committee (UNZABREC) (kindly indicate the reference number from ethics). Permission to collect data was obtained from the Medical Superintendent for Solwezi General Hospital and the in-charge of the urban clinic. Informed written consents were obtained from each participant, and confidentiality was maintained at all levels. A participant information sheet was given to all participants so that the study was clear. Participation in the study was voluntary, without coercion, and each participant had the right to withdraw from the study anytime withoutrepurcations or prejudice treatment.

4.0 RESULTS

4.1 Demographic Data of the Women (Partographs) and Midwives

A total of 183 partographs were sampled of which the majority, 140 (76.5%) were for clients who were aged between 26 - 30 years. Out of 151 clients who were Christians, 56 clients (30.6%) belonged to the Roman Catholic Church. Four (20%) midwives were males, while 16 (80%) were females, 11 midwives (55%) were less than 35 years of age; 6 (30%) were between 35 and 45 years; while 3 (15%) were above 45 years and the all of them (100%) were Christians. Eight (40%) midwives were trained from Lusaka School of Midwifery, 3 (15%) from Kitwe School of Midwifery, 2 (10%) from Mufulira School of Midwifery, 3 (15%) from Nchanga School of Midwifery and 1 (5%) from Kabwe School of Midwifery. A total of 109 (59.6%) reviewed partographs were for clients who had been referred to Solwezi General Hospital and Urban clinic from other centres within the province, while 72 (39.3%) had sought delivery services directly from the

two study sites. A total of 2 (1.1%) had no documented information concerning their referral status.

A total of 18 (90%) midwives stated the correct normal range for foetal heart rate of 100 to 180 beats/minute, 20 (100%) correctly stated the frequency for monitoring foetal heart rate as well as for moulding; 17 (85%) correctly explained the significance of monitoring foetal heart rate, 12(60%) gave correct information on how to record moulding as well as the symbols used for amniotic fluids (Table 1).

4.2 Knowledge on use of the Partograph

Table 1: Foetal wellbeing, progress of labour & matetnal wellbeing

Fetal well-being characteristics		**Proportion (n)**	**Percentage (%)**
1	Normal FHR range	18	90
2	Frequency FHR	20	100
3	Significance of FHR	17	85
4	Frequency of moulding	20	100
5	Recording of moulding	12	60
6	Symbols for amniotic fluids	12	60
Progress of labour characteristics		**Proportion (n)**	**Percentage (%)**
1	Frequency of uterine contractions	20	100
2	Recording of contractions	15	75
3	Frequency for descent	16	80
4	Frequency of vaginal examination	20	100
5	Frequency for station of presenting part	12	60
Maternal wellbeing			**Percent (%)**
Parameters on the partograph(n=5)			
No	**Score out of 5**	**Frequency (n)**	
1	5/5	4	20.0
2	4/5	9	45.0
3	3/5	5	25.0
4	2/5	2	10.0
Total		20	100.0
Recording of drugs			
No	**Score out of 2**	**Frequency**	**Percent**
1	2/2	10	50.0
2	½	10	50.0
Total		**20**	**100.0**

4.3 Utilisation of the Partograph

The most observed parameter was the foetal heart rate. A total of 119 (65%) of the partographs had the foetal heart rates checked, followed by cervical dilatation at 96 (52.5 Recording of membranes parameter was very good in 72 (39.3%) partographs Whereas the recording of the foetal heart was very good in 119 (65%) partographs Recording of descent was very good in 13 (7.1%) partographs, good in 72 (39.3%) partographs, and bad in 96 (52%) partographs.

The recording of cervical dilatation was very good in 96 (52.5%) partographs, good in 81 (44.3%) partographs, and bad in 6 (3.3%) partographs.

Moulding – The recording of moulding was very good in 10 (52.5%) partographs, good in 119 (65%) partographs, and bad in 54 (29.5%) partographs.

Out u of 147 partographs with SVD records; 100 partographs were correctly/completely filled in while 47 partographs were incompletely filled, out of 5 partographs with FSB records; 1 partograph was correctly/completely filled in while 4 partographs were incompletely filled in, out of 8 partographs with birth asphyxia records; 5 were correctly/completely filled while 3 partographs were incompletely filled in, out of 20 partographs with C/S records: 12 partographs were correctly/completely filled in while 8 partographs were incompletely filled and out of 3 partographs with records of PPH; 2 partographs were correctly and completely filled in while 1 partograph was incompletely filled in (Table 2).

Table 2: Birth outcome in relation to the state of the partograph

	Correctly/Completely filled in partograph	Incomplete partograph	Total
Spontanous Vaginal Delivery (SVD)	100	47	147
Fresh still birth (FSB)	1	4	5
Birth asphyxia	5	3	8
Ceaserian sections(C/S)	12	8	20
Post-partum haemorrhage (PPH)	2	1	3
TOTAL	**120**	**63**	**183**

There was no significant association between birth outcomes and the high level of knowledge (p value = 0.727) where as there was a significant association between utilisation of the partograph and birth outcomes (p value 0.034) (Table 3).

Table 3: Association between birth outcomes and 'knowledge and utilisation of the partograpgh'

Knowledge on the partograph by midwives		
	Frequency (%)	**P value**
High	17(85%)	0.727
Average	03(15%)	0.023
Low	00(005)	-
Total	20(100%)	-
Utilisation of the partographs		
Very good	119(65%)	0.034
Good	36(19.7%)	0.567
Bad	28(15.3%)	0.045
Total	183(100%)	-

5.0 DISCUSSION

5.1 Demographic Data of the Women (partographs) and Midwives

In this study, the majority of the midwives were females. This points to less negative impact this could have on women in labour as women in most societies of Zambia especially in rural areas would prefer to be assisted to deliver by female midwives to male midwives (MoH) 2017). The sex of the midwife monitoring the woman in labour would impact the psychological status of the woman and this would affect the progress of labour (MoH, 2017). The majority of midwives were trained from well experienced schools such as Lusaka school of nursing and midwifery implying these midwives was well invested with knowledge and skill on mornitoring a woman in labour. According to studies carried out Nababan (2017), adequate knowledge and skill on the partograph has a great potential to save many women in labour from dying.

5.2 Midwives' Knowledge of the Partograph

The study has showed that midwives expressed a lower index of knowledge on how to record moulding despite knowing how often it should be indicated The researcher assumed that most midwives who were sampled had graduated from training schools in the previous five years and could have forgoten the theory part of the partograph or had gained less knowledge during training but were still able to give skilled midwifery care using the partograph since the skill was gained during practice. For example, in India, Kushwah (2015) conducted a study, which revealed that nursing and midwifery curricula did not provide sufficient knowledge on the utilisation of the partograph by students though he did not indicate whether there was a relationship between inadequate knowledge during training and birth outcomes.

The results highlight that the midwives had high knowledge on montoring the progress of labour and therefore this could have reduced the risks of complications for the women in labour. These study findings are supported by the study carried out in China by Barclay (2016) who observed that poor knowledge of the partograph by midwives contributed to rupture of the uterus and maternal deaths and increased number of prolonged labour. However, in contrast to the findings of the study, Bernitz (2017) carried out a study which exhibited reduced number of caesearian sections despite poor knowledge of the partograph by midwives.

The midwives at two study sites showed good knowledge on the wellbeing of the women in labour. The midwives with good knowledge can easily translate it into skill that is needed during daily practice in labour ward in order to monitor labouring women successfully. The expectation of the researcher was that a knowledgeable midwife would use the partograph correctly to prevent maternal problems during labour. The previous studies have supported these findings such as a study conducted in Indonesisby Fahdhy (2017) which exposed that the introduction of the partograph in that country significantly increased referral rate, and reduced maternal deaths.

5.3 Utilisation of the Partograph

The partographs were assessed for degree of completeness and the findings of the study are as in Foetal heart rate-The study showed that the assessment of foetal heart rate on the partographs was good (Table 2). The authors therefore could conclude that most foetal distress, fresh still births (FSB) and foetal deaths recorded during the period under study could be related to other factors other than poor monitoring of the foetal heart rate. With regard to membranes and birth outcome, the study findings have shown that generally, midwives at two study sites do not pay much attention to checking the status of membranes. Lack of checking of the status of the membranes during labour could result into undetected cord presentation and cord prolapse which could have led to foetal distress, neonatal asphysia and FSB recorded in this study. The findings are supported by studies in other countries such as in Burkina Faso conducted by Millogo (2016) which revealed that use of the partograph in labour has potential to save the lives of many fetuses.

The study has pointed that midwives at two study sites did not pay much attention to recording of uterine contractions. The poor monitoring of uterine contractions by midwives at these two study sites could have contributed to complicated birth outcomes that were recorded. However, in contrary to the above findings, studies in other countries such as Angola showed statistically significant improvements in birth outcomes due to increase in the utilisation of the partograph (Petterson, 2017).

Though the study has showed poor documentation of the uterine contractions, which can be directly interpreted as care not given; it is also argued that completion of the partograph is not a standard part of intrapartum care (Millogo, 2016). The assessment of cervical dilatation on the partograph was carried out on most partographs. The data is supported by a study conducted locally by Fujita *et al.,* (2015) who carried out a retrospective review of 200 partographs at Kalingalinga health centre in Zambia, to examine the quality and compliance for each monitoring item. The outcomes were that cervical moniroting was well done despite that there was a wide variation in monitoring the parameter. The assessment showed that the measurement of blood pressure on the partograph was below average out (Figure1. This, therefore, entails that at these study sites misdiagnosing or mismanagement of pre-eclampsia and eclampsia were likely to be missed as a result of improper monitoring of blood pressure. Millogo T (2016). The assessment of pulse and temperature on the partograph was poorly carried out. The pulse and foetal heart rate are ideally recorded at the sametime but the records obtained have indicated that the midwives paid less attention to pulse as compared to foetal heart rate. The reason could be that the midwives through their daily practice did not see the need for measuring pulse/temperature and birth outcomes. The midwives could have good reasons for paying less attention to pulse and temperature such as having no serious direct impact on birth outcomes. This finding is supported by Millogo (2016) as he pointed out that in many areas of Nigerian hospitals midwives pay more attention to foetal heart rate, uterine contractios and blood pressure.

5.4 Birth Outcome in Relation to the State of the Partograph

There was no major difference in birth outcomes for partographs correctly or incorrectly filled in indicating that the use of the partograph has no direct impact on birth outcomes (Table 3). The relationship between birth outcome and knowledge of the midwives on partographs use showed that the majority of the midwives had high knowledge on the partographs (Table 1). However, there was no relationship between birth outcome and knowledge of the midwives (Table 3)). Studies in other countries such as Angola statistically showed significant improvements in birth outcomes with babies having good apgar scores due to high knowledge of the partograph by midwives (Petterson, 2017).

6.0 Limitations

The methodology used in this study to assess the extent of use, generated data that could not asses the quality in documenting the partograph. The study conducted a retrospective review of the partographs in which some findings were difficult to understand. However, the results of this study still stand valid that the utiisation of partograph to monitor women in labour has confounding effects on birth outcomes.

7.0 CONCLUSION

The study has shown there is no relationship between the utilisation of the partograph by midwives in relation to birth outcomes at Solwezi General Hospital and urban clinic in Solwezi District of Northwestern province of Zambia. The study has further showed that the use of the partograph in monitoring women in labour has the potential to influence birth outcome which could be appropriate or inappropriate.

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