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## UTILIZATION OF THE PARTOGRAPH AMONG NURSE-MIDWIVES AT A COUNTY REFERRAL HOSPITAL IN KENYA

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### ABSTRACT

**Introduction:** The Partograph is a tool that monitors active stages of labour. This enables skilled birth attendants, who are largely midwives, to monitor progress of labour, the mother and the fetus regularly. It provides a clear means of tracking labour progress with 'alert' and 'action' lines that signal when labour has become complicated. It helps in the management of labour by providing information to identify women who are or not likely to have a normal delivery.

**Objective:** To assess partograph utilization among nurse-midwives in the maternity unit of Coast General Hospital, Mombasa.

**Methods:** This was a descriptive study among midwives and nurse-midwives working in the Maternity unit of Coast general hospital, Mombasa. All 59 nurse-midwives who were working in the unit during the study period were included in the study with an eventual response rate of 86% (51). Data was collected using a self-administered semi-structured questionnaire. Qualitative data was cleaned, coded and analyzed thematically while quantitative data was entered in an excel worksheet and analyzed for descriptive statistics.

**Results:** The majority of the nurse-midwives (N= 98%) had used the partograph. The study found that, nurse-midwives' knowledge has positive significance with utilization of partograph P-value= 0.000. Level of Partograph utilization was found to be significant with a p-value= 0.000< 0.05. High perception of nurse-midwives' on utilization of partograph was significant with a p-value=0.000<0.05.

**Conclusion:** The study found that all of the nurse-midwives had used a partograph and agreed with most aspects regarding assessment on the usage. Training institutions and hospitals have to improve on training on partograph to enhance knowledge and practice

**Keywords:** Partograph, nurse-midwives, knowledge, utilization, and perception.

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## Introduction

Partograph is a monitoring tool for active stage of labor, which allows the trained birth attendant to monitor the progress of labor, the mother, and the fetus, and to have a clear means of tracking labor progress with 'alert' and 'action lines signaling when a labor is complicated (World health organization, 2013). WHO (2007) indicates that the partograph consists of three parameters namely fetal condition, maternal condition and the progress of labor. The aim of the partograph is to provide a pictorial overview of labor, to alert midwives and obstetricians to deviations in maternal or fetal well-being and labor progress (Lavender, Hart & Smyth, 2009). Walsh (2004) documented that partograph could constitute a legal document and also act as an avenue for identifying accountability in midwifery practice.

As a result of the belief that partograph usage was applicable in both the developed and developing nations, its use was introduced worldwide by the World Health Organization (Lavender, 2006). Partograph use can be highly effective in reducing complications arising from prolonged labor for the mother (postpartum hemorrhage, sepsis, uterine rupture and its sequelae) and the newborn (death, asphyxia, and infections) (Fawole, Adekanle, and Hunyinbo, 2010)

The outcome of any pregnancy is largely dependent, on intrapartum care. Poor intrapartum care remains the major cause of maternal morbidity and mortality worldwide (Fawole et al., 2008). Since 1987, global efforts have been focused on reducing maternal and neonatal mortality and

morbidity associated with intrapartum care, particularly in the developing countries. Many programs and tools have been developed to monitor and manage women in labor, one of which is the use of the partograph that was developed by Philpott in 1971 and was later modified by the World Health Organization (Mathibe-Neke, Lebeko, and Motupa, 2013).

Globally, it is of paramount importance that all pregnant women in labor be monitored by a skilled birth attendant utilizing a partograph to ensure birth without any complications (Ratchliffe, 2001). A clinical audit of intrapartum care at the Delek Tibetan Hospital in North India found 50% reduced incidences of postpartum hemorrhages following an introduction of the routine use of the partograph in the management of labor (Mercer, Sevar, Sadutshan, 2006).

In Nigeria, a training program designed to improve partograph use was evaluated. The training emphasized the use of the partograph for early detection of high-risk pregnancies so that patients could be referred to appropriate facilities when needed. The researcher found that primary health care workers with little or no formal education can be effectively trained to use the partograph (Fatusi et al., 2008). However, one-time training did not show a long-term impact on partograph use. Several other studies have shown that it is necessary to provide ongoing education, supervision, and quality assurance measures to have a lasting impact on partograph completion and quality (Fahdhy & Chongsuvivatwong, 2005).

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The Kenya Demographic Health Survey (2008/09) indicates that the maternal mortality ratio in Kenya has remained unacceptably high at 488/100,000 live births, despite the positive reports of improved maternal outcomes resulting from correct partograph use (Lavender, Omoni, Lee, Wakasiaka, Watiti, 2013). Several recent studies in Kenya have reported underuse and incorrect use of the partograph at all levels of maternity care, and have reported a significant gap between partograph knowledge and practice among the nurses and midwives. One study in Nairobi showed that while 88.2% of the 1057 evaluated patient records contained a partograph, only 23.8% of the forms had been used correctly (Lavender et al., 2011). A study conducted in 2007 in the Western Province of Kenya showed that the Safe Motherhood training program for nurse-midwives increased partograph use by 4%, with a corresponding improvement in record keeping and labor management (Wamwana et al., 2007).

## **Methodology**

A cross-sectional descriptive study design was used to assess the level of partograph utilization among nurse-midwives in Coast general hospital, Mombasa.

The target population included all nurse-midwives working in the maternity unit in the Coast Provincial General Hospital, and the selected case files of mothers who had delivered through spontaneous vaginal delivery (SVD) between April 2015 and June 2015.

The sample size was determined using Fishers et al., (1998). Thus a total 65 nurse-midwives and 262 files were used.

Systematic sampling technique was used to obtain the sample size of 59 participants and 262 files from medical records. The researcher used the duty Rota as the sampling frame and took the  $k^{\text{th}}$  number until the sample was achieved, and for the files, every 3rd file was audited till sample was achieved. We then sought and obtained written consent from the selected nurse-midwives who were then issued with study questionnaire to complete.

A self-administered semi-structured questionnaire was used and was organized in sections. Section 'A' covered demographic information; section 'B' covered knowledge on partograph use, while section 'C' level of utilization. A five point Likert scale to obtain information on nurse-midwives' perception on the partograph was section 'D' of the questionnaire. The reliability of the instrument was tested and a coefficient of reliability of .79 was obtained. Content validity of the instrument was ascertained by pre-testing with nurse-midwives from Likoni Hospital who were not part of the target population.

The data collected was cleaned, coded and analyzed using Statistical Package for Social Sciences, SPSS-software Version 20. Inferential statistics specifically Chi-square and Pearson correlation were used to test for association between variables on partograph utilization. A P-value of less than 0.05 was considered to be statistically significant.

Ethical clearance was obtained from the Kenya Methodist University's Ethical

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Research Committee (ERC) and respective institution's administration where the study was carried out. In addition, a written informed consent was sought.

## Findings

Data obtained from the questionnaire which included the demographic characteristics of the respondents, knowledge, and perception of nurse-midwives among others. The questionnaire was completed and returned by 51 out of 59 (86%) of the respondents who were working in the study areas at the time of the study. A total of 8 (14%) respondents did not complete the questionnaire because they failed to return the questionnaire.

51% (26) respondents were in age group of 31-40 years, 27% (14) were in the age group of below 41-50 > 51 years of age, while 22% (11) were in the age group below 30 years.

The study found that, a significant number 84% (43) of the respondents were female and 16% (8) were male.

Out of the respondents, 49% (25) had 10-15 years of experience, 25% (13) had 5-10 years of experience, and 16% (8) had over 15 years of experience, while 10% (5) had below 5 years of experience.

Eighty six percent (44) of the respondents indicated that there are 3-4 nurse-midwives per shift, 10% (5) indicated that there are more than 6 or more nurse-midwives per shift while 4% (2) indicated that there are five nurse-midwives per shift. The results are as shown in figure 4.5.

The findings from the files indicated that demographic data of the patients were well captured as required and this was also supported by information from key informants who indicated that the respondents capture the data about partograph utilization properly.

The results from the table 1 show that 73% (37) of respondents agreed that partograph is one of the tools for implementing safe motherhood while 27% (14) disagreed. 88% (45) agreed that you require 10 minutes to effectively assess the adequacy of contractions while 61% (31) agreed that in the normal progress of labor, the graph plot should fall on the left of the alert line. Respondents, representing 76% (39) agreed that in normal labor, a minimum duration of an intense contraction is 40 seconds. Less than half 47% (24) of the respondents agreed that in the normal progress of labor, the graph/plot on the partograph should fall on the alert line.

The results from the files showed that the respondents had the high knowledge to be able to use the partograph properly and this was proofed by the level of data capturing and recording of the files.

**Table 1: Knowledge on Partograph**

Questions		Yes		No	
a)	The partograph is one of the tools for implementing safe motherhood	37	73%	14	27%
b)	The partograph will reduce maternal deaths	16	31%	35	69%
c)	The partograph will reduce neonatal deaths	33	65%	18	35%
d)	In normal progress of labor, the graph/plot on the partograph should fall on the alert line	24	47%	27	53%
e)	In the normal progress of labor, the graph/plot should fall on the left of the alert line	31	61%	20	39%
f)	In the normal progress of labor, the graph/plot should fall on the right of the alert line	43	84%	8	16%
g)	In normal labor, a woman has got 3 contractions in 10 minutes	35	69%	16	31%
h)	In normal labor, minimum duration of a strong contraction is 40 sec	39	76%	12	24%
I)	You require 10 minutes to effectively assess adequacy of contractions	45	88%	6	12%
j)	A progress of labor is assessed by the degree of cervical dilatation and descend of presenting part	36	71%	15	29%
k)	labor is prolonged when it lasts more than 12 hours	34	67%	17	33%

The results from respondents indicated that the respondents have the right competencies to perform their jobs and on the job training is being conducted by the experienced staff and plans for ongoing training are underway. Nurse-midwives have the right knowledge to use partograph, and they are encouraged to advance in their studies.

All respondents 100% (51) agreed that diagnosis of prolonged labour can be made on the partograph, obstructed labour, poor progress of labour and inefficient uterine contractions  $\chi^2= 342.236$ ,  $p<0.005$ . There was a significant majority 92% (47) who agreed that suspected fetal distress can be made on the partograph while the rest 4% (8) disagreed  $\chi^2 = 297.231$ ,  $p<0.005$ . Significantly 90% (46) agreed that abnormal fetal heart can be diagnosed on the

partograph while 10% (6) disagreed,  $\chi^2=306.904$ ,  $p<0.005$ . The majority of respondents 80% (41) agreed to satisfactory progress of labour while 20% (10) disagreed  $\chi^2=341.515$ ,  $p<0.005$ . On need for augmentation with oxytocin majority of the respondents 90% (46) agreed, 6% (3) disagreed while 4% (2) were not aware  $\chi^2=351.316$ ,  $p<0.005$ .

The majority of the respondents 88% (45) agreed that the need for caesarean section can be made on the partograph, 10% (5) disagreed while 2% (1) were not aware,  $\chi^2=316.732$ ,  $p<0.005$ . On dehydration of the mother, 86% (44) agreed, while 14% (7) disagreed,  $\chi^2=293.431$ ,  $p<0.005$  while on medication used in labour, 76% (39) agreed, while 24% (12) disagreed,  $\chi^2=286.747$ ,  $p<0.005$ .

**Table 2: Diagnosis made on the partograph**

Diagnosis	Yes		No		I don't know	
	Freq.	%	Freq.	%	Freq.	%
Prolonged labor	51	100%	0	0%	0	0%
Obstructed labor	51	100%	0	0%	0	0%
Poor progress of labor	51	100%	0	0%	0	0%
Inefficient uterine contractions	51	100%	0	0%	0	0%
Suspected fetal distress	47	92%	4	8%	0	0%
Abnormal fetal heart rate	46	90%	5	10%	0	0%
Satisfactory progress of labor	41	80%	10	20%	0	0%
Need for augmentation with oxytocin	46	90%	3	6%	2	4%
Need for Caesarian section	45	88%	5	10%	1	2%
Dehydration of the mother	44	86%	7	14%	0	0%
Medications used in labor	39	76%	12	24%	0	0%

**Table 3: Chi-square test on knowledge**

Nurse-midwives' Knowledge					
The partograph will reduce maternal deaths	16	31	$\chi^2 = 3.419$	P-value= 0.343	
The partograph will reduce neonatal deaths	33	65	$\chi^2 = 153.289$	P-value= 0.002	
In normal progress of labour, the graph/plot on the partograph should fall on the alert line	24	47	$\chi^2 = 0.286$	P-value= 0.417	
Labour is prolonged when it lasts more than 12 hours	34	67	$\chi^2 = 427.152$	P-value= 0.000	

### Correlation of Variables

To identify factors that affect the use of the partograph, a chi-square test for independence was used. The level of significance was set to be 95% confidence interval. This means that any p-value less than 0.05 indicated that there is a significant statistical association between the variables under study. Correlations were computed between the dependent variable which is the utilization of partograph and independent

variables under study (socio-demographic characteristics, knowledge, and level of partograph usage and perception of nurse-midwives on the use of partograph). The results indicated that among the factors under study that affect the use of partograph, all the factors were found to have a significant association with utilization of partograph by nurse-midwives in coast general hospital.

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With regards to knowledge, almost all the factors were found to be significant with utilization of partograph  $\chi^2 = 131.474$ ; P-value =  $0.000 < 0.05$ , however, there was no significance association between utilization of partograph and nurse-midwives understanding the role of partograph in terms of reducing maternal deaths  $\chi^2 = 3.419$ ; P-value =  $0.343 > 0.05$  as well as understanding whether in normal progress of labour, the graph/plot on the partograph should fall on the alert line  $\chi^2 = 0.286$ ; P-value =  $0.417 > 0.05$ . Regarding level of partograph utilization all factors were also significant  $\chi^2 = 232.400$ ; P-value =  $0.000 < 0.05$ . The results on the association between the utilization of partograph by nurse-midwives and other selected variables are as shown in the above table.

## Discussion

The results on the usage of the partograph showed that significantly majority of respondents 98% had used partograph and there was only one respondent who had never used the partograph, 2%. The results also show that 73% agreed that partograph is one of the tools for implementing safe motherhood while 27% disagreed. 88% agreed that you require 10 minutes to effectively assess the adequacy of contractions while 84% agreed that in the normal progress of labor, the graph plot should fall on the right of the alert line. Respondents, representing 76% agreed that in normal labor, the minimum duration of an intense contraction is 40 seconds.

Less than half 47% agreed that in the normal progress of labor, the graph/plot on the partograph should fall on the alert line.

According to Fawole et al., (2008), there was a great significance between the use of partograph and the knowledge, thus the need for formal training and in-service training on partograph. It was also stipulated that the effective use of partograph requires underlying clinical competence in labor management and resulting complications (Beenu et al., 2013). Badjie (2013) found that the difference in knowledge levels among the midwives in Gambia showed a significant difference in its effective use.

Knowledge on use of partograph is a pre-requisite for its use (WHO, 1994). This statement supported the findings of Umezulike, (1999) which concluded that lack of understanding of the relevance of the partograph in preventing obstructed labor was what hindered its effective use in Nigeria. Poor knowledge and lack of skills about partograph use are associated with its ineffective use, leading to poor maternal-fetal outcomes (Chhabra et al., 2000). This was further supported by the findings of the research done by Azendegbe (2004), which revealed, nearly half of the partograph used in the study were inaccurately filled and decisions taken by midwives were wrong due to lack of knowledge.

## Conclusion and Recommendations

The study aimed at assessing the use of the partograph among nurse-midwives in Coast General Hospital. The study considered the nurse-midwives' socio-demographic characteristics, knowledge, perception on proper partograph utilization.

This was a cross-sectional descriptive study. A sample size of 58 nurse-midwives was used, and 262 files were audited. Data was

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collected using self-administered questionnaire and a checklist for the sampled file was used. Although partographs were available in women's files, the partograph data was not completed adequately. While the progress of labor was frequently documented, maternal and fetal condition were incompletely documented.

Based on the study findings regarding knowledge on the utilization of the partograph, the study found that there is a gap in knowledge. Statistical tests showed a significant relationship between knowledge and additional formal training. The results on the usage of the partograph showed that significantly majority of respondents had used partograph. The results also show that, agreed that partograph is one of the tools for implementing safe motherhood.

Recommendation for on-going training and in-service should be done more regularly, at least monthly to every quarter since the respondents who benefitted most were those who had worked less duration. There is also need to evaluate education and training from the training institution on the use of the partograph, for example, the curricula and strategies on teaching and evaluation.

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