Assessment of the Knowledge and Utilization of the Partograph among Non-physician Obstetric Care Givers in the University of Calabar Teaching Hospital, Calabar, Nigeria

Thomas U. Agan¹*, Ubong Akpan¹, Ita B. Okokon², Afiong O. Oku³, Udeme E. Asibong², Margaret M. Opiah⁴, Ekere J. Essien² and Emmanuel Monjok²,³,⁵

¹Department of Obstetrics and Gynaecology, University of Calabar and University of Calabar Teaching Hospital, Calabar, Nigeria.
²Department of Family Medicine, University of Calabar and University of Calabar Teaching Hospital, Calabar, Nigeria.
³Department of Community Medicine, University of Calabar and University of Calabar Teaching Hospital, Calabar, Nigeria.
⁴Department of Maternal and Child Health Nursing, Faculty of Nursing, College of Health Sciences, Niger Delta University, Bayelsa State, Nigeria.
⁵University of Houston, Institute of Community Health, Texas Medical Center, Houston Texas, USA.

Authors’ contributions

This work was carried out in collaboration among all authors. Authors TUA and UA conceived and framed the questionnaire, wrote the introduction and appropriate literature search and were fully involved in the discussions. Authors IBO and UEA were involved in data collection while data analysis was handled by authors AOO and MMO were involved in data entry and drafting the manuscript. Author EM did the final editing. All the authors read and approved the manuscript before it was forwarded for publication.

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*Corresponding author: Email: evitomtu@yahoo.com;
ABSTRACT

**Background:** Obstructed labour and ruptured uterus contribute a significant proportion to the alarming maternal mortality ratio in sub-Saharan Africa. Proper management of labour by using the partograph, a simple tool that is designed to detect early signs of abnormal progress, can significantly reduce incidence and complications of prolonged labour.

**Objective:** The objective of this study was to assess the knowledge and utilization of the partograph among non-physician obstetric health care providers in University of Calabar Teaching Hospital (UCTH).

**Methods:** This was a descriptive cross-sectional survey which employed the use of a semi-structured self-administered questionnaire with purposive sampling conducted among 132 consenting non-physician obstetric health care providers in UCTH.

**Results:** The mean age of the respondents was 37.84±9.38 years. About 66% of them used partograph but only 13.6% of those who had used partograph were very confident with the tool in monitoring labour. Fifty-six percent of them had received formal training on partograph. Only 34 percent of those surveyed could correctly interpret various sections of the partograph, like the cervicogram. The main reasons for non-utilization of the partograph were inadequate knowledge (73.5%), non-availability (46.2%) and shortage of manpower (34.8%). Knowledge of the partograph ($X^2=38.1$, $P=0.00$) and partograph availability ($X^2=52.5$, $P=0.00$) significantly affected its utilization. Years of experience did not significantly influence partograph use.

**Conclusion:** The knowledge and utilization of the partograph in our hospital can be enhanced by periodic training and retraining of obstetric care givers, developing protocols, ensuring its availability, as well as increasing the staff strength in the delivery units.

Keywords: Knowledge; utilization; partograph; labour ward; prolonged labour; training.

1. INTRODUCTION

It is estimated that 530,000 women die each year as a result of pregnancy and childbirth [1,2]. The highest maternal mortality ratios are in Africa, with a lifetime risk of 1 in 16 compared to 1:2800 western countries [1,2]. Obstructed labour is said to account for 8-11 percent of these deaths and has been estimated to be the most disabling of all maternal conditions [1, 3]. An estimated 74 percent of maternal deaths could be averted if all women had access to the interventions for preventing these complications [4,5]. Early detection of abnormal progress and prevention of prolonged obstructed labour with its sequelae can significantly reduce maternal deaths [6,7].

The partograph is a simple inexpensive tool that provides a graphical overview of various events and progress in labour and its use for management of labour can play an important role in saving women’s lives and reducing mortalities and long term disabilities as well as improving perinatal outcome during childbirth [8,9]. Early detection of prolonged labour greatly contributes to prevention of obstructed labour and other related complications such as ruptured uterus, postpartum haemorrhage, puerperal sepsis, obstetric fistula, still birth and birth asphyxia [10]. Far back in 1973, John Studd [11] in his study showed that the partogram can separate normal labour from labour destined to result in an abnormal outcome. He suggested that its use would be a vital tool in delivery units both in specialist
and general practice settings. The World Health Organization recommends its use in all levels of maternal care [12].

Partograph plays various functions in different levels of health care. In the primary health care centre, where labour is mainly supervised by midwives with no facilities for operative interventions or intravenous infusions, partograph serves as a tool to detect early warning signs and take decisions on early referral to a higher level of health care. In tertiary health care centres, it is used to decide when augmentation or termination of labour is necessary. In general, it improves the quality of surveillance on the fetus and mother in labour and aids early detection of problems and timely intervention in both fetus and mother [13].

Fetal heart activity is often monitored with intermittent auscultation and charted on a partograph every 30 minutes. In a Cochrane review [14] comparing continuous electronic fetal heart rate monitoring with intermittent auscultation, in which twelve trials were included involving more than 37,000 women, there was no significant difference in overall perinatal death rate between the two. Also, continuous electronic monitoring was associated with increase in caesarean section delivery rate and instrumental vaginal delivery rate.

Effective utilization of partograph in health facilities is influenced by the awareness and skills of the health care givers as well as support and supervision by the management personnel in the center [8,10]. However, trained and competent personnel are in short supply in some hospitals.

Despite the WHO recommendation of universal use of the partograph, a previous study in South West Nigeria by Fawole et al. [15] showed that less than 50% of trained birth attendants surveyed were using partograph to monitor labour. Insufficient knowledge about the partograph was a major reason for poor utilization of this simple and inexpensive tool.

More than 2,000 deliveries annually are conducted in the University of Calabar Teaching Hospital (UCTH), the only tertiary hospital in Cross River State (CRS) of Nigeria. Published data obtained in a 10-year review of maternal mortality showed that obstructed labour accounted for 8.8 percent of the recorded maternal deaths and the facility maternal mortality ratio was 1,500 per 100,000 live births [16]. Proper use of the partograph in the labour ward can prevent a significant proportion of these disasters facing our women. However, no recent study has been done in our centre concerning the knowledge and utilization of this vital life-saving obstetric tool. This study was therefore conducted to determine the knowledge and utilization of the partograph among non-physician obstetric health care workers in the University of Calabar Teaching Hospital.

2. MATERIALS AND METHODS

2.1 Setting

This study was conducted in the University of Calabar Teaching Hospital, the only tertiary health facility in Calabar, where more than 2,000 deliveries are conducted annually. Calabar has a population of 371022 at 2006 census [17] and has an area of 406km². There are 150 trained Nurses/Midwives and a few community health extension workers (CHEW) and others serving in the maternity wing of the hospital.
2.2 Study Design

This is a descriptive cross-sectional study.

2.3 Study Population

The study population comprised of all non physician health professionals working in the maternity unit of the Hospital (purposive sampling).

2.4 Data Collection

A semi-structured self-administered questionnaire was used to illicit information from the respondents. The pilot and reliability testing of the questionnaire was done in a previous study [18]. Information on socio-demographic characteristics of the respondents was obtained. The second section of the questionnaire assessed their knowledge, usage and ability to interpret various components of the partograph. A scoring method was devised from previous studies [18,19]. A score of greater than 12 of 24 questions indicated good knowledge, while a score less than 12 indicate poor knowledge. The 3rd part assessed the factors that affected the use of the partograph.

2.5 Data Analysis

The data entry analysis was performed using SPSS version 19. Descriptive and inferential statistics were employed. Descriptive statistics were used to summarize variables including frequencies, means, and standard deviation. Inferential statistics (Chi-square) was used to determine the statistical significance of association between two categorical variables. The level of significance was set at ≤5%.

3. RESULTS

A total of one hundred and thirty two (132) consenting non-physician obstetric care workers were included in the study. The mean age of the respondents was 37.84±9.38 years and more 44(33.3%) were in the 30-39 years age group. Majority of them (87.1%) were females. Nurses/Midwives formed more than 70% of the study participants. Almost 20% of them had spent 20 years and above in this hospital service (Table 1).

About 30% of the respondents were currently serving in the labour ward and 28.2% are working in the antenatal clinic. Majority of the units surveyed had only 2 or 3 workers at each shift period (Table 2).

 Majority of the staff surveyed (65.9%) had used the partograph before but only 13.6% of them were very confident with the tool while 36.4 percent had little or no confidence on the use of the partograph. Fifty six percent (56%) of them received training on partograph in the school of midwifery (Table 3).

In assessing their knowledge on the benefits of the partograph in reducing maternal and perinatal morbidity, 94 percent of the respondents, agreed that the use of the partograph can reduce maternal morbidity and mortality (Table 4).
Assessments of their in-depth knowledge, revealed that 58.3% of them have had good knowledge of the partograph. However, step by step analysis of the characteristics of the partograph revealed that only 34% of them can interpret the cervicogram section of the partograph which shows the effective cervical dilatation and good labour progress when the rate of cervical dilatation is at least 1 cm per hour, the graph should be along or to the left of the alert line. Almost three quarters of the health workers studied knew the required frequency of uterine contractions considered adequate in active phase of labour but a little above 50% of them could actually diagnose the intensity of contraction considered adequate for labour progress (Table 5).

The availability and utilization of the partograph in the hospital were also assessed (Table 6). Overall only 46% of the respondents knew that the partograph was available in the labour wards. Eighty-eight health workers surveyed (66.7%) used the partograph to monitor labour and 80.7% of them used it routinely.

| Table 1. Frequency distribution of the socio-demographic characteristics of study participants (n=132) |
|----------------------------------------------------------|
| **Age group (years)** | Frequency | Percentage | Mean ± SD |
| < 29 | 29 | 22.0 | |
| 30-39 | 44 | 33.3 | 37.84±9.38 |
| 40-49 | 40 | 30.3 | |
| ≥50 | 19 | 14.4 | |
| Total | 132 | 100 | |
| **Sex** | | | |
| Male | 17 | 12.9 | |
| Female | 115 | 87.1 | |
| Total | 132 | 100 | |
| **Length of time in practice** | | | |
| 1-5 | 31 | 23.5 | |
| 6-10 | 30 | 22.7 | |
| 11-15 | 23 | 17.4 | |
| 16-20 | 23 | 17.4 | |
| >20 | 25 | 18.9 | |
| Total | 132 | 100 | |
| **Health worker cadre** | | | |
| Nurse/midwife | 105 | 79.5 | |
| CHEW | 4 | 3.0 | |
| Nurse aid | 6 | 4.5 | |
| Others | 12 | 9.1 | |
| Total | 132 | 100 | |
Table 2. Frequency distribution of Place of practice/number of workers per shift (n=132)

| Characteristics                              | Frequency | Percentage |
|----------------------------------------------|-----------|------------|
| **Place of practice**                        |           |            |
| ANC                                          | 37        | 28.2       |
| Labour ward                                  | 39        | 29.8       |
| Post natal ward                              | 26        | 19.8       |
| Obstetrics and Gynaecology unit              | 29        | 22.1       |
| **Total**                                    | 132       | 100        |
| **Number of workers per shift**              |           |            |
| 1 per shift                                  | 11        | 8.3        |
| 2 per shift                                  | 57        | 43.2       |
| 3 per shift                                  | 43        | 32.6       |
| 4 per shift                                  | 6         | 4.5        |
| 5 per shift                                  | 10        | 7.6        |
| 6 or more per shift                          | 5         | 3.8        |
| Non per shift sometimes                      | 0         | 0          |
| **Total**                                    | 132       | 100        |

Table 3. Frequency distribution showing partograph use, Confidence rating and midwifery school training (n=132)

| Characteristics                              | Frequency | Percentage |
|----------------------------------------------|-----------|------------|
| **Usage of partograph**                      |           |            |
| Have used it before                          | 87        | 65.9       |
| Never used it before                         | 45        | 33.8       |
| **Confidence rating on use**                 |           |            |
| Not confident                                | 48        | 36.4       |
| Fairly confident                             | 66        | 50.0       |
| Very confident                               | 18        | 13.6       |
| **Midwifery school training on partograph** |           |            |
| Training in school                           | 74        | 56.1       |
| Not trained in school                        | 58        | 43.9       |

The main reason for non-utilization of the partograph among the health care givers was little or knowledge about the tool and this accounted for 73.5 percent while 19.7 percent considered time consuming as a limiting factor. Non-availability and shortage of man-power was the other major reason for poor or non-utilization of partograph as illustrated in (Fig. 1).

Overall knowledge on the use of the partograph to detect and manage feto-maternal complications was good. (Table 7) shows that more than 70 percent of the respondents could diagnose maternal and fetal complications using the partograph.
Table 4. Frequency distribution showing benefits of use of Partograph (n=132)

| Characteristics                        | Frequency (%) |
|----------------------------------------|---------------|
| Reduces maternal morbidity              |               |
| Yes                                     | 76(57.6)      |
| No/don't know                           | 56(42.4)      |
| Reduces maternal mortality              |               |
| Yes                                     | 94(71.2)      |
| No/don't know                           | 23(28.8)      |
| Reduces child morbidity                 |               |
| Yes                                     | 74(56.0)      |
| No/don't know                           | 31(44.0)      |
| Reduces newborn mortality               |               |
| Yes                                     | 86(65.2)      |
| No/don't know                           | 11(34.8)      |

Table 5. Detail knowledge and interpretation of the partograph

| Characteristics                                           | Frequency (%) |
|-----------------------------------------------------------|---------------|
| The graph on the partograph to fall to the left of the alert line |               |
| Line                                                      |               |
| Yes                                                       | 49(37.1)      |
| No                                                        | 36(27.3)      |
| Don't know                                                | 47(35.6)      |
| The graph on the partograph to fall on the alert line     |               |
| Yes                                                       | 34(25.8)      |
| No                                                        | 36(27.3)      |
| Don't know                                                | 62(47.0)      |
| The graph on the partograph to fall to the right of the alert line |           |
| Yes                                                       | 41(31.1)      |
| No                                                        | 41(31.1)      |
| Don't know                                                | 50(37.9)      |
| During labour 3 contractions are observed every 10 minutes |               |
| Yes                                                       | 74(56.1)      |
| No                                                        | 14(10.6)      |
| Don't know                                                | 44(33.3)      |
| Minimum duration of a strong contraction is 40 seconds    |               |
| Yes                                                       | 53(40.2)      |
| No                                                        | 25(18.9)      |
| Don't know                                                | 54(40.9)      |
| 10 minutes is required to adequately assess contractions  |               |
| Yes                                                       | 66(12.1)      |
| No                                                        | 16(12.1)      |
| Don't know                                                | 50(37.9)      |
Table 6. Partograph utilization and availability among health workers in UCTH

| Characteristics                                      | Frequency | Percentage |
|------------------------------------------------------|-----------|------------|
| **Availability of partograph in health facility**     |           |            |
| Yes                                                  | 80        | 46         |
| No/don’t know                                        | 52        | 39.4       |
| Total                                                | 132       | 100        |
| **Is the partograph used to monitor patients in your HF** |           |            |
| Yes                                                  | 88        | 66.7       |
| No                                                   | 44        | 33.3       |
| Total                                                | 132       | 100        |
| **Partograph utilization in HF (n=65)**               |           |            |
| Rarely                                               | 8         | 9.1        |
| Occasionally                                         | 9         | 10.2       |
| Routinely                                            | 71        | 80.7       |
| Total                                                | 132       | 100        |

Fig. 1. Factors affecting use of partograph (UCTH)

The influence of knowledge, years of experience and partograph availability on its utilization was also assessed (Table 8). Knowledge ($X^2=38.1$, $P=0.00$) and partograph availability ($X^2=52.5$, $P=0.00$) significantly affected its utilization. Years of experience did not significantly influence partograph use.
(Table 9) below shows that significant higher proportion of respondents who were in the nurse or midwife cadre, aged at least 35 years or less and received prior training on the use of partograph were more likely to have better knowledge of the partograph (p<0.05).

The independent risk factors/predictors for partograph utilization in University of Calabar teaching Hospital as shown below (Table 10) were; Being female (OR 7.67; 95% CI; 1.61-36.6), and received previous training on the use of partograph (OR 2.36; 95% CI; 13.51-7.72).

Table 7. Partograph knowledge on detection of feto-maternal complications: (N=132)

| Characteristics                     | Frequency (%) |
|-------------------------------------|---------------|
| **Prolonged labour**                |               |
| Yes                                 | 92 (69.7)     |
| No                                  | 40 (30.3)     |
| **Obstructed labour**               |               |
| Yes                                 | 70 (53.0)     |
| No                                  | 62 (47.0)     |
| **Poor progress of labour**         |               |
| Yes                                 | 83 (62.9)     |
| No                                  | 49 (37.1)     |
| **Inefficient uterine contraction** |               |
| Yes                                 | 75 (56.8)     |
| No                                  | 57 (43.2)     |
| **Suspected fetal distress**        |               |
| Yes                                 | 70 (53.0)     |
| No                                  | 62 (47.0)     |
| **Abnormal FHR**                    |               |
| Yes                                 | 70 (53.0)     |
| No                                  | 62 (47.0)     |
| **Satisfactory progress of labour** |               |
| Yes                                 | 78 (59.1)     |
| No                                  | 54 (40.9)     |
| **Need for labour augmentation**    |               |
| Yes                                 | 79 (59.8)     |
| No                                  | 53 (40.2)     |
| **Need for caesarean section**      |               |
| Yes                                 | 74 (56.1)     |
| No                                  | 58 (43.9)     |
| **Dehydration in mother**           |               |
| Yes                                 | 45 (34.1)     |
| No                                  | 87 (65.9)     |
Table 8. Relationship between knowledge, years of experience and partograph availability and partograph utilization

| Characteristics               | Utilization of partograph N=130 | Test statistic | p-value  |
|------------------------------|---------------------------------|----------------|----------|
|                              | Yes (N=88) | No (N=44) | X^2 |          |
| Knowledge of partograph      | frequency (%) | frequency (%) |     |          |
| Good                         | 68(88.3)  | 9(11.7)  | 38.1 | <0.0001 |
| Poor                         | 20(36.4)  | 35(63.6) |     |          |
| Years of experience          |               |            |      |          |
| <15                          | 45(73.8)  | 16(26.2) | 0.11 | 2.58    |
| ≥15                          | 43(60.6)  | 28(39.4) |     |          |
| Partograph availability      |               |            |      |          |
| No                           | 15(28.8)  | 37(71.2) | 52.5 | <0.0001 |
| Yes                          | 73(91.3)  | 7(8.7)   |     |          |

Table 9. Factors associated with knowledge of partograph

| Characteristics               | Knowledge of Partograph n=130 | Test statistic | p-value |
|------------------------------|--------------------------------|----------------|---------|
|                              | good (n=77) | Poor (n=55) | X^2  |       |
| Sex                          |               |              |      |       |
| Female                       | 72(62.6)      | 43(37.4)      | 6.72 | 1.00   |
| Male                         | 5(29.4)       | 12(70.6)      |     |       |
| Total                        | 77(58.3)      | 55(41.7)      |     |       |
| Cadre                        |               |              |      |       |
| Nurse/midwife               | 73(69.5)      | 32(30.5)      |     |       |
| Other HCW                    | 4(14.8)       | 23(85.2)      | <0.0001 |       |
| Total                        | 77(58.3)      | 55(41.7)      |     |       |
| Age (years)                  |               |              |      |       |
| ≤35                          | 40(70.2)      | 17(29.8)      | 5.79 | 0.016  |
| >35                          | 37(49.3)      | 38(50.7)      |     |       |
| Total                        | 77(58.3)      | 55(41.7)      |     |       |
| Previous training            |               |              |      |       |
| No                           | 28(48.3)      | 30(51.7)      | 4.31 | 0.04   |
| Yes                          | 49(66.2)      | 25(33.8)      |     |       |
| Total                        | 77(58.3)      | 55(41.7)      |     |       |
| Years of experience          |               |              |      |       |
| 5 years and less             | 21(67.7)      | 10(32.3)      | 1.48 | 0.22   |
| Over 5 years                 | 56(55.4)      | 45(44.6)      |     |       |
|                              | 77(58.3)      | 55(41.7)      |     |       |
Table 10. Predictors of utilization of partograph

| Variable               | OR   | p-value | 95% CI     |
|------------------------|------|---------|------------|
| Sex                    |      |         |            |
| Female                 | 7.67 | 0.01    | 1.61-36.6  |
| Male                   | 1    |         |            |
| Age                    |      |         |            |
| ≤ 35                   | 1.03 | 0.95    | 0.38-2.83  |
| >35                    | 1    |         |            |
| Years of experience    |      |         |            |
| >5                     | 1.05 |         |            |
| <5                     | 1    | 0.96    | 0.30-3.66  |
| Previous training      |      |         |            |
| Yes                    | 2.36 |         |            |
| No                     | 1    | 0.004   | 3.51-7.72  |
| Assessment of knowledge|      |         |            |
| Good                   | 1.65 |         |            |
| Poor                   | 1    | 0.42    | 0.50-5.56  |

Being in the midwife/nurse health cadre (OR 1.98; 95% CI 0.29-0.42) and the use of the partograph during labour monitoring (OR 9.17; 95% CI; 3.55-5.56) were found to be significant predictors of knowledge of partograph amongst the study population (Table 11).

Table 11. Predictors of knowledge

| Variable               | OR   | p-value | 95% CI     |
|------------------------|------|---------|------------|
| Sex                    |      |         |            |
| Female                 | 1.60 | 0.55    | 0.34-7.55  |
| Male                   | 1    |         |            |
| Age                    |      |         |            |
| ≤ 35                   | 0.55 | 0.22    | 0.21-1.43  |
| >35                    | 1    |         |            |
| Years of experience    |      |         |            |
| >5                     | 0.73 |         |            |
| <5                     | 1    | 0.58    | 0.23-2.32  |
| Previous training      |      |         |            |
| Yes                    | 1.27 |         |            |
| No                     | 1    | 0.62    | 0.50-3.21  |
| HW cadre               |      |         |            |
| Midwife/ nurse         | 1.98 |         |            |
| Others                 | 1    | 0.001   | 0.29-0.42  |
| Utilization            |      |         |            |
| Yes                    | 9.17 |         |            |
| No                     | 1    | <0.001  | 3.55-5.56  |

4. DISCUSSION

Out of the 132 respondents, 87.1 percent of them were females. This situation is the true reflection of the gender work-force distribution not only in this hospital studied, but generally in all delivery units in Cross River State of Nigeria. It is well known that enrollment of men in
school of midwifery rarely occur in Nigeria. The traditional assumption that women are more likely to render motherly care during childbirth may be responsible for the scarcity of males in this vital area of health care delivery. The average age of 37 years in the respondents studied means that in a service of 60 years retirement age, many others still have more than 20 years to remain in active service. Consequently, intended training received on application of obstetric tools like the partograph at this stage would have a long lasting impact in improving health care delivery as there are many years for application/utilization of the knowledge gained. It is therefore, cost effective for Health system managers to invest in training and re-training of health providers in basic obstetric skills.

In this study, only 2 workers were allocated on shift at each time in 60% of the units surveyed. In a tertiary health institution with overwhelming delivery rate, there is need to increase the number of qualified skilled birth attendants. This shortage of staff is also responsible for non-utilization of the partograph because of the time needed to fill out the chart.

The partograph utilization rate of 65.9% among the respondents in this study is a little higher than 57.4% recorded by Yisma et al. [19] in a public health institution in Addis Ababa, Ethiopia and 54.5% recorded by another study in Nigeria by Oladapo [20]. In their studies, the participants were selected from peripheral delivery units while our study focused on tertiary hospital personnel. Only 13.6% of the health care givers surveyed were very confident in the use of the partograph. Similar findings were obtained by Opiah et al. [18] in tertiary health institutions in the Niger Delta region of Nigeria.

The wide disparity in the in-depth knowledge on such a reliable inexpensive obstetric tool could be related to lack of tutorials and regular drills on basic obstetric tools and care in our hospital. Health workers should be encouraged and sponsored where possible to attend workshops on labour management. Also assessments should be conducted regularly to evaluate the application of this knowledge in the delivery units. Furthermore, training on proper use of non electronic intrapartum fetal monitoring tool may be effective in reducing perinatal death rates particularly in countries with erratic power supply. Intermittent auscultation is as effective as continuous electronic method, which requires power supply, in reducing perinatal death rate [14].

In assessing their awareness of benefits of the partograph in preventing feto-maternal complications, an impressive 94 percent of the respondents knew about its roles in this aspect. The design of the partogram is to assist the various cadres of staff involved in labour management to recognize abnormal labour course for appropriate corrective measures to prevent adverse maternal and perinatal outcome. For example, the action line, when crossed is an indication for intervention by obstetricians and this may involve operative delivery.

Although 58.3% of our respondents claimed to have good knowledge on the partograph, in-depth analysis revealed that interpretation of various sections of the tool was not satisfactory. For instance only one-third (34%) knew of the significance of alert and action lines and the expected labour progress. Similar finding was obtained by Fawole et al. [21]. In his study only 30% of the respondents could correctly explain the function of the action line. This could be the reason for high incidence of prolonged obstructed labour even in public hospitals as the action line usually serves as a point for intervention of labour. Failure to recognize this component of this tool means that incidence of abnormal labour and its sequelae may not be significantly reduced even when qualified personnel are involved in
conduct of labour. There is need to develop protocols and regular assessment of individual staff deployed to the labour wards.

Also, not recognizing the contraction frequency and intensity considered adequate for good labour progress means that uterine inertia or uterine hyper contraction may not be recognized by a significant number of health care givers surveyed; as such early sign of prolonged labour and impending uterine rupture and obstetrics haemorrhage might be missed. As regulations and monitoring of oxytocin infusion for augmentation of labour is usually performed by this cadre of staff surveyed in our hospital, it therefore calls for close inter-professional interactions where the obstetrician could help impact basic knowledge on the other components of maternity work-force.

Utilization of the partograph is influenced by several factors. One of the important determinants is being confident with the instrument. This is reflected in this study where alarming 73.5% of the respondents did not use partograph routinely because they were not conversant with it. This has also been cited by other studies [18,20]. Formulating standard management protocols and regular review may increase uptake [22]. The issue of shortages of staff in the delivery unit should be addressed by health facility management as this study showed that few health workers in a busy delivery unit considered completing the partograph an additional time consuming task and as such have little or no understanding of its role in preventing maternal and fetal complications.

5. SUMMARY AND RECOMMENDATIONS

In general, good intrapartum care targeting at early detection of abnormal progress of labour and timely intervention would enhance safe motherhood. Adequate utilization of vital obstetric tool like partograph is therefore an important factor in improving maternal health. As this study reveals that prior training and awareness on the instrument improves its usage, regular training and retraining as well as developing protocols will improve obstetrics care. More skilled midwives should be recruited to increase the magnitude of workforce that man delivery units. Innovations which would make the partograph easier to use by the lower cadre of care givers is strongly recommended. Health professionals need to know more about effective methods of training, supervision and maintaining the clinical skills of providers. Future research should focus on improving implementation of the partograph.

CONSENT

All authors declare that a written informed consent was obtained from the 132 non-physician obstetrics care workers in the University of Calabar Teaching Hospital for the purpose of this study.

ETHICAL CONSIDERATION

The Health Research Ethics Committee of the University of Calabar Teaching Hospital gave approval for this study.

COMPETING INTERESTS

Authors have declared that no competing interests exist.
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