Knowledge and Utilization of the Partograph among obstetric care givers in South West Nigeria

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Abstract

This cross-sectional study assessed knowledge and utilization of the partograph among health care workers in south-western Nigeria. Respondents were selected by multi-stage sampling method from primary, secondary and tertiary levels of care. 719 respondents comprising of CHEWS - 110 (15.3%), Auxiliary Nurses - 148 (20.6%), Nurse/Midwives - 365 (50.6%), Physicians – 96 (13.4%) were selected from primary (38.2%), secondary (39.1%) and tertiary levels (22.7%). Only 32.3% used the partograph to monitor women in labour. Partograph use was reported significantly more frequently by respondents in tertiary level compared with respondents from primary/secondary levels of care (82.4% vs. 19.3%; $X^2 = 214.6$, $p < 0.0001$). Only 37.3% of respondents who were predominantly from the tertiary level of care could correctly mention at least one component of the partograph ($X^2 = 139.1$, $p < 0.0001$).

The partograph is utilized mainly in tertiary health facilities; knowledge about the partograph is poor. Though affordable, the partograph is commonly not used to monitor the Nigerian woman in labour. (*Afr Reprod Health* 2008; 12[1]:22-29).

Résumé

Connaissance et utilisation du partographe chez les dispensateurs des soin obstétriques au sud-ouest du Nigeria. Cette étude transvasale a évalué la connaissance et l'utilisation du partographe parmi les membres du personnel soignant au sud-ouest du Nigéria. Les personnes interrogées ont été sélectionnées à l'aide d'une méthode d'échantillon à plusieurs étapes à partir des niveaux de soin primaire, secondaire et tertiaire. Au total 719 personnes ont été interrogées, y compris les travailleurs communautaires pour l'extension des services de santé 110 (15,3%), des infirmières auxillaires – 148 (20,6%), les infirmières / sages–femmes – 365 (50,6%), les médecins – 96 (13,4%) ont été sélectionnées à partir des niveaux primaire (38,2%), secondaire (39,1%) et tertiaire (22,7%). Seuls 32,3% se sont servis du partographe pour surveiller les femmes au travail. L'utilisation du partographe a été plus fréquent chez les interrogés qui appartiennent au niveau tertiaire par rapport aux intérrogés des niveaux primaire et secondaire de soin (82,4% vs 19,3% ; $X^2 = 214,6$ $p < 0,0001$). Seules 37,3% des intérrogés qui appartenaient en majorité au niveau tertiaire de soin pouvaient mentionner au juste au moins un constituent du partographe ($X^2 = 139$, $p < 0,0001$). Le partographe est utilisé surtout dans les établissement de santé tertiaire ; la connaissance du partographe est faible. Bien qu'il soit abordable, le partographe n'est pas communément utilisé pour surveiller la femme nigériane au travail. (*Rev Afr Santé Reprod* 2008; 12[1]:22-29).

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Introduction

Maternal mortality ratio continues to be the major index of the widening discrepancy in the level of care and the outcome of reproductive health between the advanced and developing countries.[1, 2] This observation is supported by the global maternal mortality pattern in which annual losses of more than 515 000 maternal deaths from complications of pregnancy and childbirth, occur in developing countries[3]. Among those who survive childbirth, at least 8 million develop serious morbidities and a further 50 million suffer minor complications[4]. The tragedy of maternal mortality in Nigeria is that despite the recognition of maternal mortality as a major public health issue, maternal mortality figures continue to rise, inspite of the apparent commitment by stake-holders.[5] The majority of the deaths and complications could be prevented by cost-effective and affordable health interventions like the partograph[6] and indeed the same measures that would prevent maternal deaths would also prevent morbidity and improve neonatal outcome.[7] The partograph is an effective tool for monitoring labour, and when used effectively, will prevent prolonged or obstructed labour, which accounts for about 8% of maternal deaths.[8,9] The partograph thus serves as an 'early warning system' and assists in early decision on transfer, intervention decisions in hospitals and ongoing evaluation of the effect of interventions. The partograph as a tool for intra-partum management is a mandatory component of care in all health facilities providing maternity services in the new Women and Children Friendly Services (WCFHS) Initiative from the Federal Ministry of Health in Nigeria and UNICEF.[10]

This study, designed in the broad context of understanding why the problem of maternal mortality persists in Nigeria, was undertaken to assess the level of utilization of the partograph to monitor labour, and the attitude and knowledge of the partograph by health care workers providing maternity services in south-western Nigeria. Recognizing the value of the partograph as a cheap, affordable and effective tool, the study explored the question of its use in the management of the parturient woman.

Methodology

The study was conducted among health care providers in selected health facilities providing maternity services in Ogun, Oyo and Osun States all in south-western Nigeria. Health care delivery in the region is provided at the primary, secondary and tertiary levels. The state capitals, Abeokuta, Ibadan and Osogbo are municipalities with between two and five local governments each respectively. Each city has a rich network of health facilities comprising of primary health centres (including privately-owned maternities and hospitals), secondary health facilities and at least one tertiary hospital providing maternity service. The study was conducted as a collaborative effort between researchers at the Department of Obstetrics & Gynaecology, University College Hospital, Ibadan, the Department of Obstetrics & Gynaecology, Federal Medical Centre, Abeokuta, and the Department of Obstetrics & Gynaecology, Ladoke Akintola University of Technology (LAUTECH) Teaching Hospital, Oshogbo. It was designed as a descriptive cross sectional study amongst health care providers in health care facilities at all levels of the health care system in the three states, utilizing a multi-stage sampling method. In each state, two local government areas were selected. The local government in the capital city in which the seat of the state government was based was selected. A second local government located in a rural area was randomly selected. This measure was to accommodate potential urban-rural disparities in health infrastructure and personnel distribution. Using a sampling frame derived from the list of health care facilities in each level of care obtained from the Ministry of Health in each state, a systematic random sampling was done to select 5 primary health care centres, 10 private health

care facilities and 1 public secondary level health care facility in each local government. Where there were fewer health facilities at any level as indicated, all available health facilities were selected. One tertiary level facility was also included in each capital city regardless of its location. At each study centre, systematic sampling was employed to select the sample to be interviewed ensuring adequate representation for doctors and nurses/midwives. In each health care facility, at least five doctors and five nurses selected from units within the health facility providing maternal health care were interviewed. When the number of each cadre in the health care facility was less than five, all the available personnel were interviewed. All health care providers who supervise care during labour were eligible to participate in this study including Community Health Extension Workers (CHEWS) and Auxiliary Nurses. CHEWS are individuals with minimal education who have received some basic formal training in conducting labour and deliveries; they are employed in Primary Health Centres and provide maternity care. Auxiliary Nurses are individuals with minimal education who are employed in private health facilities. They are given minimal training by individual Physicians to conduct labour and delivery and therefore provide maternity care.

Sample size for the study was determined using the Statcalc software of EPI-INFO version 6. With a power of 80% and 95% confidence level, we assumed an expected ratio of 1:1 between respondents who were not knowledgeable about the partograph and did not use it to those who were knowledgeable about the partograph and used it. Given a percentage of respondents not knowledgeable about the partograph and not currently using the partograph projected as 20.0% and the percentage of respondents not knowledgeable about the partograph but currently using the partograph projected to be 10.0%, a sample size of 438 was thus calculated.

A semi-structured questionnaire containing 25 questions was pre-tested at all levels of care and evaluated before commencement of the study. The questionnaire documented the respondents' biodata, professional status and experience. Specific questions explored the availability of the partograph in the health facility, respondent's knowledge about the partograph and also his/her use of the partograph. Respondents' knowledge score was determined by converting the number of correct component parts or items recordable on the partograph listed into a percentage (given a maximum of 10 items). The questionnaires were administered by research assistants who had received prior training to familiarize them with the instrument before commencement of data collection. During data collection, the study team at each site met regularly to review progress and re-train the research assistants.

Ethical approval for the study was given by the Joint University of Ibadan/University College Hospital Institutional Review Committee and the Ethical Review Committee of the Federal Medical Centre, Abeokuta and LAUTECH Teaching Hospital, Osogbo respectively. Permission to conduct the study was also obtained from the supervising authorities of all selected health facilities. A written informed consent was also obtained from each participant.

Data entry and analysis were performed with the EPI-INFO software. We utilized the chi-squared test and analysis of variance as appropriate.

Results

A total of 750 questionnaires were completed. Thirty one questionnaires were excluded from the analysis because the respondents did not provide care for parturient women. The remaining 719 respondents comprised of 76 CHEWS (10.6%), 150 Auxiliary Nurses (20.9%), 392 Nurses/Midwives (54.5%) and 101 Physicians (14.0%). The distribution of respondents by level of care was primary 346 (48.1%), secondary 225 (31.3%) and tertiary level 148 (20.6%). Public and private health facilities were represented by 356

(49.5%) and 363 (50.5%) respondents respectively. Only 232 (32.3%) respondents used the partograph to monitor women in labour. The use of partograph was reported significantly more frequently by respondents in tertiary level compared with respondents from primary/ secondary levels of care (82.4% vs. 19.3%; $X^2 = 214.6$, degrees of freedom (df) = 1, $p < 0.0001$); only about one-tenth and one-third of respondents used the partograph at the primary and secondary levels of care respectively. Respondents from the tertiary level of care were significantly more knowledgeable about the assessments that could be inferred from the partograph (Table 1).

Three hundred and twenty eight (45.6%) of all respondents had received previous training on the partograph. More respondents from tertiary level had received prior training, and also exhibited better knowledge (Table 2). Prior training was associated with the respondent giving at least one correct response about the component parts of the partograph ($X^2 = 248.2$, df = 1, $p < 0.0001$).

More respondents from public health facilities had also received prior training and displayed better knowledge compared with respondents from private health facilities ($X^2 = 22.4$, df = 1, $p < 0.0001$).

Only 268 respondents (37.3%) could correctly mention at least one component of the partograph. Respondents from tertiary facilities were significantly more likely to correctly mention at least one component of the partograph ($X^2 = 139.1$, df = 1, $p < 0.0001$).

Formal training of respondents was also reflected in their knowledge. Auxiliary nurses had the least mean score when the number of partograph parts mentioned was converted into a percentage score (3.0% $\pm$ 9.6); CHEWs, trained Nurses and Physicians scored 4.0% $\pm$ 11.0, 17.7% $\pm$ 24.0 and 38.3% $\pm$ 23.5 respectively. These differences were significantly different (F-statistic = 59.1, $p < 0.0001$). The modal score for Auxiliary Nurses, CHEWS and trained Nurses was 0% while modal score for Physicians was 60%.

Knowledge about the function of both the alert and action lines was generally poor. Only 119 respondents (16.6%) could explain the function of the alert line while 175 (24.3%) could explain the function of the action line. Working in a public health facility was significantly associated with correct explanation of the function of the action line, but not with function of the alert line. More respondents from the tertiary level could correctly mention at least one component of the partograph, explain the function of the alert and action lines compared with respondents at the primary and secondary levels of care (Table 2). Although few auxiliary nurses and CHEWS gave correct responses, those from secondary health facilities provided more correct responses than their counterparts at the primary level of care More tertiary level respondents correctly explained the function of the alert line compared with respondents from the primary and secondary levels of care (61.1% vs. 44.9%; $X^2 = 77.7$, df = 1, $p < 0.05$), but there was no difference in their understanding of the function of the action line ($X^2 = 81.4$, df = 1, $p > 0.05$).

The respondents' perceptions about the value of the partograph were also explored. More respondents at the tertiary level rated the partograph highly regarding its potential for reducing maternal/perinatal morbidity and mortality as well as improving the quality of care compared with respondents at the primary and secondary levels of care (Table 3); respondents at the primary level rated the partograph least. The respondents knowledge of the characteristics of labour was also assessed (Table 4). There was a similar trend in the knowledge displayed by respondents from the primary and secondary levels; more than half of all respondents from these levels were deficient in the characteristics of normal labour and assessment during labour. The relationship between years of experience and respondents' knowledge about the partograph

Table 1: **Respondents' knowledge of assessment with the partograph**

	Primary (%)				Secondary (%)				Tertiary (%)	
	Auxiliary Nurse	CHEW	Trained Nurse /Midwife	Physician	Auxiliary Nurse	CHEW	Trained Nurse /Midwife	Physician	Trained Nurse /Midwife	Physician
Prolonged labour	23.1	31.3	45.2	82.4	35.0	41.7	56.4	94.6	84.2	93.6
Obstructed labour	13.9	29.7	42.2	58.8	25.0	25.0	44.9	89.2	67.3	80.9
Poor progress of labour	16.2	23.4	43.7	76.5	50.0	41.7	53.2	94.6	85.2	97.9
Inefficient uterine contraction	16.9	25.0	43.0	70.6	40.0	33.3	50.6	91.9	80.2	100.0
Suspected fetal distress	18.5	23.4	41.5	70.6	50.0	41.7	46.8	91.9	80.2	93.6
Abnormal fetal heart rate	18.5	28.1	40.7	64.7	40.0	25.0	48.1	89.2	77.2	97.9
Satisfactory progress of	20.8	25.0	33.3	76.5	50.0	41.7	55.1	89.2	78.2	93.6
labour Need for augmentation of labour	17.7	21.9	33.3	70.6	50.0	25.0	46.8	94.6	76.2	100.0
Need for caesarean section	10.8	31.3	43.0	64.7	30.0	25.0	46.8	89.2	77.2	91.5
Dehydration in mother	16.9	17.2	37.0	35.3	30.0	16.8	35.3	51.4	44.6	53.2

Table 2: **Previous training and knowledge about the partograph**

	Primary (%)				Secondary (%)				Tertiary (%)	
	Auxiliary Nurse	CHEW	Trained Nurse	Physician	Auxiliary Nurse	CHEW	Trained Nurse	Physician	Trained Nurse	Physician
Prior training on the partograph	17.7	12.5	31.1	76.5	30.0	25.0	53.9	89.2	72.3	91.5
Correct knowledge of at least one component part of the partograph	9.2	10.9	16.3	52.9	25.0	33.3	42.3	70.3	71.3	95.7
Correct explanation of function of the Alert line	6.9	3.1	5.9	23.5	5.0	16.8	11.5	40.5	30.7	61.7
Correct explanation of function of the Action line	6.9	4.7	10.4	47.1	5.0	8.3	21.8	73.0	40.6	78.7

Table 3: **Respondents' perceptions of the value of the partograph**

	Primary (%)				Secondary (%)				Tertiary (%)	
	Auxiliary Nurse	CHEW	Trained Nurse	Physician	Auxiliary Nurse	CHEW	Trained Nurse	Physician	Trained Nurse	Physician
Will reduce maternal deaths	28.5	39.1	66.7	82.4	45.0	58.3	63.5	94.6	88.1	97.9
Will reduce maternal morbidity	18.5	35.9	61.5	82.4	30.0	50.0	50.6	86.5	77.2	93.6
Will reduce newborn deaths	20.0	31.3	57.0	82.4	40.0	58.3	58.3	94.6	79.2	93.6
Will reduce perinatal morbidity	19.2	34.4	50.4	82.4	30.0	33.3	38.5	86.5	71.3	80.9
Will increase efficiency of maternity staff	16.2	29.7	63.0	88.2	25.0	58.3	57.1	89.2	81.2	93.6
Is mandatory to improve quality of care in labour	20.8	31.3	62.2	64.7	35.0	58.3	57.1	86.5	78.2	89.4

Table 4: **Correct knowledge of characteristics of normal labour**

	Primary (%)				Secondary (%)				Tertiary (%)	
	Auxiliary Nurse	CHEW	Trained Nurse	Physician	Auxiliary Nurse	CHEW	Trained Nurse	Physician	Trained Nurse	Physician
Frequency of uterine contractions	40.8	35.9	65.3	82.4	50.0	50.0	50.6	91.9	71.3	87.2
Normal duration of uterine contractions	37.7	31.3	38.5	70.6	25.0	25.0	42.3	70.3	64.4	85.1
Assessment of uterine contractions	30.0	28.1	50.4	52.9	40.0	16.7	44.2	83.8	65.4	74.5
Assessment of progress during labour	40.0	43.8	57.0	88.2	40.0	50.0	59.6	89.2	74.3	89.4
Prolonged labour	42.3	37.5	52.6	52.9	40.0	41.7	46.2	62.2	55.5	66.0

was also explored. For each cadre of respondents, those with 5 years or less were compared with respondents with over 5 years working experience in relation to their knowledge. The few significant associations were observed only among Auxiliary Nurses and Physicians. Auxiliary Nurses with over 5 years experience were significantly more likely to mention at least one correct component of the partograph ($X^2 = 13.7$, df = 1, p = 0.0002) and to correctly explain the function of the Action line ($X^2 = 7.4$, df = 1, p = 0.007). However, those with experience of 5 years or less were significantly more likely to know the minimum duration of a contraction ($X^2 = 4.5$, df = 1, p = 0.03) and what constitutes prolonged labour ($X^2 = 9.1$, df = 1, p = 0.0025). More Physicians with less experience (5 years or less) correctly described the assessment of uterine contractions during labour ($X^2 = 4.5$, df = 1, p = 0.04) compared with those with more than 5 years

experience. Thus, experience did not show a consistent trend.

Discussion

The study participants were selected from the three levels of care in six local governments in three states from south western Nigeria. Participant selection also took cognizance of the contribution of private and public sectors to the health care workforce. Findings from this study may therefore be regarded as a window that provides a glimpse into the current knowledge base, attitude and the quality of obstetric practice within the study area. Although about half of all respondents admitted to previous training on the partograph, only about one third utilized the partograph in monitoring during labour. However, partograph use appears to be mainly at the tertiary level of care. This finding is corroborated by a recent survey among health care providers in peripheral maternity centres in Ogun State, Nigeria which revealed low levels of utilization and poor knowledge of the partograph.[11] A similar survey among doctors and midwives at the primary and secondary levels of care in Enugu, Nigeria showed lack of depth in knowledge.[12] The situation may partly explain the high prevalence of prolonged obstructed labour in our environment. It may also contribute to the unbooked patients being the major risk group for maternal deaths as reported in previous studies.[13, 14] Non-use of the partograph has also been associated with sub-optimal monitoring and care during labour and the consequent high stillbirth rates.[15] Thus the findings also reveal that the parturient may not receive quality care.

Gross deficiencies have been highlighted regarding knowledge about normal characteristics during labour. Knowledge about the frequency and duration of uterine contractions was poor in the majority of respondents from the primary and secondary levels of care. Particularly striking is the fact that respondents from the tertiary level demonstrated better knowledge in all the parameters assessed. This study indicates a strong need to turn the research search light on the quality of care at these levels of care. The study also expectedly confirms the significance of formal training. Even though participants' knowledge was generally poor, professionals who received formal training performed significantly better than those who did not. This brings into a sharp focus the need to introduce some form of training for the Auxiliary nurse who practices mainly in the private sector of the health care industry. It also puts into perspective the value and strong need for continued professional development. Though the current study did not evaluate the outcome of labour in the study area, however, given the findings, poor quality intra-partum care can only produce poor outcome for women and their infants.

Given the above findings, we therefore conclude that the partograph, though cheap and cost effective, is neither accessible nor available for the majority of parturient women in this part of Nigeria. In order to reverse the poor obstetric indices that have persisted despite almost two decades of international focus on the issue, urgent workable solutions are imperative.

Training all health care workers who supervise parturient women on the use of the partograph and enforcing its use at all levels of care will be in keeping with provision of evidence-led obstetric care. This is one of the goals of the Women and Children Friendly Services initiative.[10]

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