

## **BASIC INDICES FOR LABOUR AND DELIVERY MANAGEMENT IN NIGERIA**

*Ochejele Silas*

*Department of Obstetrics and Gynaecology Federal medical center markudi, Nigeria.*

### **ABSTRACT**

**Background:** One of the key challenges of labour management is the delayed involvement of senior medical personnel due to weak knowledge of basic labour and delivery indices in the health facilities in this environment.

**Objectives:** To determine the mean cervical dilatation at presentation, the mean presentation-delivery interval and the mean cervical dilatation rate of women who presented in active labour at the health facilities.

**Materials and Methods:** This was a 6 year prospective cross-sectional study of deliveries in 60 secondary health facilities in Nigeria from 1<sup>st</sup> July, 2003- 31<sup>st</sup> July, 2008 using the Emergency Obstetric care Register.

**Results:** Out of the 1,176 deliveries, 909 (77.3%), 120 (10.2%) and 147 (12.5%) were spontaneous vaginal deliveries, dystocic vaginal deliveries and Caesarean sections respectively. The mean cervical dilatation, presentation-delivery interval and the cervical dilatation rate were 7.05cm, 3 hours 29 minutes and 1.36cm/hr respectively. The mean cervical dilatation rate for spontaneous deliveries, assisted deliveries, and caesarean sections were 1.6, 0.7 and 0.5 cm/h respectively.

**Conclusion:** Adequate labour monitoring by the junior obstetric team for early detection/management of slow progress and review of all women that have not delivered within 6 hours of labour by the experienced obstetric staff will prevent prolonged labour.

**Keywords:** Labour, Basic delivery indices, Nigeria.

### **INTRODUCTION**

Clinicians previously accepted labour as subject to wide natural variation and largely outside medical control. Management was delegated to resident nursing staff until secondary complications developed several hours after admission. In the 1950s, Emanuel Friedman described the first comprehensive method of evaluating labour in clinical practice. In this landmark work, which has been fundamental to a logical approach to labour management, he described: the relationship between the duration of labour and cervical dilation, the phases of labour according to the rate of cervical dilatation and outlined a tool for following labour progression and for identifying abnormal labour

<sup>1-2</sup>. This made it possible to describe aberrant patterns, namely prolonged latent phase, primary dysfunctional labour (labour in which the active phase progresses at a rate of less than 1cm/hour before a normal active phase slope) and secondary arrest (when cervical dilatation ceases after a normal portion of active phase dilatation). Friedman suggested that the latent phase was less than 20 hours in primigravida and 14 hours in multipara <sup>3</sup>. Friedman's view was that: Patient with prolonged latent phase should be sedated and prevaricated and that

---

#### **Correspondence Author:**

Email: silasfriday@yahoo.com

PHONE: +2348038759701

Oxytocin did not help primary dysfunctional labour. WHO considers prolonged latent phase as that, exceeding 8 hours<sup>4</sup> from the normal patterns. These limits have been criticized on the basis that his record of the onset of labour was retrospective, relying on the patient's memory, and from a dilatation of 0cm which is rarely seen in patients admitted in labour<sup>5-6</sup>. Based on the idea of graphic representation of cervical dilatation, a number of cervicograms have been produced<sup>7-10</sup>. Active management of labour (AML) was originally introduced by O'Driscoll et al. (1969) in the National Maternity Hospital in Dublin to avoid dystocia (prolonged labour), which at the time was defined as labour lasting more than 24 hours<sup>11-15</sup>. Philpott's cervicogram was devised to select those patients who should be transferred for delivery to a properly equipped hospital. In 1987, Arulkumaran introduced further modification to the Active management of labour protocol. This was (a) the individual Alert line by which the admission cervical os dilatation of the parturient was used to construct the Alert line for her on a slope of 1 cm per hour until delivery and a consequential action line. (b) The advocated separation between the Alert and Action line was 2 hours and not four at the centres where there would be no transfer of the women for further treatment as in tertiary unit. The oxytocin augmentation was for a duration of 8 hours instead of 4 hours as advocated by O'Driscoll or 6 hours as advocated by Philpott. By these modifications much improved results were obtained for reduced prolonged labour and caesarean section rates and low perinatal mortality rate<sup>16-17</sup>. The WHO in 1987, promoted the universal use of the partograph during the Safe Motherhood Initiative Nairobi Conference and in 2000 revised the partograph omitting

latent phase and commencing active phase at 4 cm dilatation<sup>4</sup>. At the referral centres where there would be no transfer of the women for further treatment as in tertiary unit, Orhue advocated the use of a partograph with an individualized Alert line based on – slope of 1 cm per hour till delivery and the Action line drawn 2 hours to the right and parallel to the individualized Alert line. He recommended that the next vaginal examination should be performed after 4 hours and plotted on the partograph for the labour progress to be interpreted with reference to the Alert and Action line. Subsequent vaginal examination is repeated every 2 hours till delivery<sup>18-19</sup>.

Obstructed labor is an important cause of maternal and perinatal mortality and morbidity. The goal of labour monitoring is early detection of slow progress, prompt management and prevention of Maternal/ fetal morbidity and mortality. The partograph graphically represents key events in labour and provides an early warning system. The World Health Organization partogram provides the best means for monitoring labour progress in low resource settings. Experiences with The World Health Organization and other types of partogram in low resource settings suggest that when used with defined management protocols, this inexpensive tool can effectively monitor labour and prevent obstructed labor. However, challenges to implementation exist and these should be addressed urgently<sup>20-22</sup>. One of the key challenges is non utilization of the partogram in labour management and delayed involvement of senior medical personnel to take appropriate action during slow progress of labour due to weak knowledge of basic labour and delivery indices in the health facilities.

In the secondary health facilities in this part of

the world, labour management protocols are designed in such a way that the midwife takes care of women in labour and calls the doctor when she subjectively feels that labour is prolonged or when the alert or action lines are crossed if she is using the partograph to monitor labour progress. Most studies on labour management have focused on active management of labour, the partograph and the timing of the action line with very few studies addressing labour and delivery indices that could guide health workers to take the appropriate actions when labour progression seems to be deviating from the expected path. This study was therefore conducted to determine the basic labour and delivery indices in our secondary health facilities to enable health workers make an informed decision on labour and delivery management. The objective of the study was to determine the mean cervical dilatation at presentation, the mean presentation-delivery interval and the mean cervical dilatation rate of women who presented in active phase of labour at the secondary health facilities in UNICEF A Field Office (AFO) states of operation (Akwa Ibom, Anambra, Abia, Bayelsa, Benue, Cross River, Enugu, Ebonyi Imo and River States).

**Materials and Methods:** This was a 6 year prospective cross sectional study of deliveries in secondary health facilities from 2003-2008 using the Emergency Obstetric care Register by 240 Medical Officers trained in Emergency Obstetric care at the Federal Medical Centre Makurdi. Each Medical Officer was given an Emergency Obstetric care Register after the training and encouraged to participate more actively in Labour and delivery management in his centre. Good documentation of all the deliveries was stressed. The deliveries

conducted in the participants centre within the first two weeks of implementation of the Emergency Obstetric care training experience was sent to the training institution for analysis and appropriate back up support after obtaining ethical approval. The finding from these registers was used for this study. Statistical analysis was done using Epi-Info version 3.5.1, CDC Atlanta, USA.

## RESULTS

During the 6 year study period (2003-2008) 240 medical officers were trained from 60 health facilities in 10 states. At the end of the study we recorded 1176 deliveries out of which 909 (77.3%) were spontaneous vaginal deliveries, 120(10.2%) were dystocic vaginal deliveries and 147 (12.5%) were Caesarean sections. Of the 120 women that had dystocic vaginal deliveries, 94 (78%) had Oxytocin augmentation while 26 (22%) had vacuum delivery.

Table 1. Basic Labour and delivery indices in Nigeria.

	Spontaneous vaginal delivery	Dystocic labour	Caesarean section	All deliveries
Mean cervical dilatation at presentation	7.1cm	5.4cm	4.8cm	7.05cm
Mean presentation delivery interval	3hours 12 minutes	6.0 hours	10 hours 11 minutes	3 hours 29 minutes
Mean Cervical dilatation rate	1.6cm/hr	0.7cm/hr	0.5cm/hr	1.36cm/hr

## **DISCUSSION**

**Main Findings:** Women who delivered in our secondary health facilities presented in advanced labour at a mean cervical dilatation of 7.05cm and delivered within 3 hours 29 minutes of admission at a mean cervical dilatation rate of 1.36cm/hr. Those who dilate at less than 1cm/hr were more likely to have vaginal delivery within 6 hours if they receive oxytocin augmentation and caesarean section if they labour beyond 6 hours. Women who had caesarean section had the lowest mean cervical dilatation at presentation (4.8cm) and slowest rate of labour progress (0.5cm/hr).

**Significance of the findings:** Hendricks' suggestion that labour should be measured from the time of admission was adopted by O'Driscoll in designing the concept of active management of labour<sup>23</sup>. In this concept O'Driscoll chose 12 hours arbitrarily to be the maximum safe duration of spontaneous labor, and if delivery was not eminent after artificial rupture of membranes and oxytocin administration, cesarean section was considered<sup>24</sup>. The mean cervical dilatation on presentation of 7.05cm from this study is similar to 6.12 cm reported from Ilorin Nigeria<sup>25</sup>. The mean cervical dilatation rate for spontaneous deliveries, assisted deliveries, and cesarean sections of 1.6, 0.7 and 0.5 cm/h respectively, were similar to findings of 1.53, 0.67, and 0.46 cm/h respectively from Israel where no significant differences were observed among different population groups<sup>26</sup>. The overall mean cervical dilatation rate of 1.36cm/hr in this study is less than the 1.8cm/h for all deliveries, reported from Ilorin Nigeria<sup>25</sup>. This difference could be due to the inclusion of rate of progress of caesarean deliveries in this study. The mean

presentation delivery interval of 3 hours 29 minutes from this study differs from that of low risk women in the USA, where the mean length of active-phase, first-stage labor varies from 7.7 hours for nulliparas and 5.7 hours for multiparas with no differences according to ethnic group and the mean length of second stage was 53 minutes for nulliparas and 17 minutes for multiparas. The difference could be due to earlier presentation of the women in the USA in labour. This finding is however similar to the mean presentation delivery interval of 4.2 hours (nulliparas 4.80 hours and multiparas 3.60 hours respectively) in Ilorin<sup>25,27</sup>. Most women presented in advanced spontaneous labour and delivered within 4 hours of presentation. Early identification and oxytocin augmentation of slow labour progress results in assisted/vaginal delivery within 6 hours of admission. Women who have not delivered within 6 hours of admission despite oxytocin augmentation for slow labour progress should be assessed for caesarean section.

**Implications of the findings:** The study highlights the importance of adequate labour monitoring to detect slow progress, early intervention (oxytocin augmentation or caesarean section as appropriate) by the obstetric staff to prevent prolonged labour. The first six hours of labour in the health facility is critical for good decision making. To achieve this objective we recommend the use of a partograph with an action line drawn 2 hours to the right and parallel to the Alert line, a second vaginal examination should be performed 4 hours after the first and 2 hourly vaginal examination subsequently as advocated by Orhue in our secondary and tertiary health facilities.

**Limitations of the study:** This study is limited by the use of two weeks data from the secondary level facilities. Support for data collection for longer period from these facilities were weak and the Medical officers trained on Emergency Obstetric Care were frequently transferred from these facilities.

## CONCLUSION

The study highlights the need for the junior obstetric team to accurately determine the progress and the need for augmentation of labour within the first four hours of admission. The more experienced obstetric staff should review all women that have not delivered within 6 hours of labour and take appropriate action.

## Declaration of interest

No conflict of interest

## REFERENCES

1. Friedman E.A. The graphic analysis of labor. *Am J Obstet Gynecol* 1954; 68: 1568-1575
2. Friedman E.A. Primigravid labor. A graphicostatistical analysis. *Obstet Gynecol* 1955; 6: 567 - 589.
3. Friedman E.A., Sachtleben MR. Dysfunctional labor. Prolonged latent phase in the nullipara. *Obstet Gynecol* 1961; 17: 135-148.
4. World Health Organization. The application of W.H.O. Partograph in the management of labor. W.H.O Geneva: 1994 (WHO/IHE/MSM94.4).
5. Hendricks CH, Brenner WE, Kraus G Normal cervical dilatation pattern in late pregnancy and labor. *AMJ Obstet Gynecol* 1970; 106; 1065-1082.
6. Cardozo L, Studd J. Abnormal labour patterns. In Studd J, ed. *The Management of labour*. Oxford: Blackwell scientific publications, 1985 : pp 171-187.
7. Philpott RH, Castle WM. Cervicographs in the management of labour in primigravidae, 11. The action-line and treatment of abnormal labour. *J Obstet Gynaecol Br Commonwealth* 1972;79:592-598
8. Philpott RH. Graphic records in labour. *Br Med J* 1972;4:163-165
9. Studd J. Partograms and normograms of cervical dilatation in management of primigravid labour. *Br Med J* 1973;4:451-455
10. Beazley Jim, Kurjak A. Influence of a partogram on the active management of labour. *Lancet* 1972;11:348-351
11. Duignan N. Active management of labour. In Studd J, ed. *The management of labour*. Oxford: Blackwell Scientific Publications, 1985; pp 146-158.
12. O'Driscoll K, Stronge JM, Minogue M. Active Management of Labour. *British Medical journal*, 1973, 3, 135-137
13. O'Driscoll K, Jackson RJ, Callagher JT. Prevention of prolonged labor. *Br Med J* 1969;2:477-80.
14. O'Driscoll K, Jackson RJ, Callagher JT. Active management of labor and cephalopelvic disproportion. *J Obstet Gynaecol Br Commonwealth* 1970;24:38-9.
15. O'Driscoll K, Stronge JM. Active management of labor. *Clin Obstet Gynaecol* 1975;1:3-19.
16. Arulkumaran S et al. Augmentation of labour mode of delivery related to cervimetric progress. *Australian and New Zealand Journal of obstetrics and Gynaecology*, 1987, 27:304-308.
17. Arulkumaran S, Ingemarsson I. New

- concepts in the management of spontaneous labour. *Singapore Journal of Obstetrics and Gynaecology*, 1985, 16 (3): 163-172.
18. Orhue AA. Active management of labor: A five years experience from a university hospital in a developing country. *J Obstet Gynaecol* 1997;17(suppl-11): S40.
19. Orhue A, Aziken ME, Osemwenkha AP. Partograph as a tool for team work management of spontaneous labor. *Niger J Clin Pract* 2012;15:1-8
20. Fawole AO, Hunyinbo KI, Adekunle DA. Knowledge and utilization of the Partograph among obstetric care givers in South West Nigeria. *Afr J Reprod Health* 2008;12:22-9.