# PARTOGRAPH CHART USE AMONG OBSTETRIC CAREGIVERS IN PUBLIC HEALTH INSTITUTIONS OF WEST SHEWA ZONE, OROMIA REGIONAL STATE, ETHIOPIA, 2015

*Wakeshi Willi*[1], *MitikeMolla*[2]
[1]*Department of Public Health, College of Medicine and Health Sciences, Ambo University, Ethiopia*
[2]*School of Public Health, College of Health Sciences, Addis Ababa University Ethiopia*

## ABSTRACT

**BACKGROUND:** Partograph chart is recommended by WHO for developing countries to be used as an early warning system to identify prolonged labour and allow timely transfer. In Ethiopia, although most health institutions have been using partograph chart, there is limited information about its proper use and challenges faced by health workers.

**OBJECTIVE:** The aim of this study was to assess the magnitude of partograph use, factors that affect its use and challenges faced among obstetric caregivers in public health institutions of West Shewa Zone, Oromia Regional State, Ethiopia.

**METHODS:** The study used both quantitative and qualitative research approaches from December 2014 to February 2015. It was conducted in two randomly selected hospitals and five health centres. The study used logistic regressions model to assess independent predictors of partograph use among health providers.

**RESULT: Out of** 44 clients in the labour ward, only five items out of fifteen parameters listed on the partograph were completed. A fourth (24.7%) of all professionals did not know when to start partograph mapping and 36% had unfavourable attitude toward partograph use. Most (73%) indicated that partograph predisposes labouring women for unnecessary and untimely intervention. Midwives (AOR=13 CI=2.6-66.2), health workers who had knowledge about partograph use (AOR=7, CI= (2.8-21.8) and who work in facilities who had access to the tool (AOR=8.8 CI: 2.8-27.6), were more likely to use partograph. Health workers in higher institutions (hospitals) were less likely to use partograph (AOR=0.09, CI: 0.03-0.26).

**CONCLUSION:** Most health workers do not complete the tool properly. Lack of knowledge about the right start time of partograph plotting and its benefits has affected proper identification of the action line which will farther affect maternal and fetal outcome. In-service and pre-service training on partograph use, continuous mentoring, supervision and staff motivation could improve the proper use of the tool.

**KEY WORDS:** Partograph**,** knowledge, obstetric caregivers, public health institutions, Oromia Regional State, Ethiopia.

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## INTRODUCTION

Every day, approximately 800 women die from avoidable causes related to pregnancy and childbirth[1]. In 2015 only, an estimated 216,000 maternal deaths occurred globally. Of these, about 99% of all preventable maternal deaths occur in developing countries, while more than half of these deaths occurred in sub-Saharan Africa [(1)]. In Ethiopia, the Maternal Mortality Rate (MMR) is still high at 353/100,000 live births according to 2015 United Nations estimates[2].

The need for reduction of maternal and neonatal mortality has been recognized globally as one of the World Health Organization's Millennium Development Goals (MDGs). Interventions targeted in improving maternal health and nutrition during pregnancy through effective antenatal care, ensuring safe and clean delivery, and providing immediate postnatal care has proved to decrease about 75% of neonatal deaths, more than 50% of deaths in the first year of life, and 99% of maternal deaths. Prolonged labour is a leading cause of death among labouring women and new born in the developing world. Interventions that can prevent complications from the major causes of death are known, and can be available even in resource-poor setting [3].

A systematic way to detect and handle complication at early stage is part of assuring quality service. Partograph is one of the strongest and cost-effective tools to prevent unnecessary delay and serve as frontrunner for obstetric caregivers[3,4]. Partograph is a pre-printed paper that provides a visual display of recorded observations carried out on mother and foetus during labour[5]. It is universally used as part of Safe Motherhood Initiative for improving labour management and reducing maternal and fetal morbidity and mortality[2].

In Ethiopia, labouring women suffer the dual burden of lack of access to professional assisted delivery and complications related to poor quality of care[6-7]. A study conducted in Jimma University Specialized Hospital indicated that 45.1% of labouring women had ruptured uterus. Cephalo-pelvic disproportion was the cause of obstructed labour among 67.6% of labouring women while 27.9% were caused by mal-presentation[6]. These complications were preventable if correctly followed with partograph[8-10].

Therefore, the aim of this study was to explore the extent of utilization of the partograph and factors which inhibit skilled birth attendants from consistent utilization of partograph in West Shewa Zone public health institutions. It also delivers valuable information about the problem which helps the concerned body to take an intervention on identified gap.

## METHODS AND MATERIALS

A mixed method research combining both institutional based survey and a qualitative research was conducted among health professionals from December 2014 to March 2015. This study was conducted in West Shewa Zone Oromia regional state, Ethiopia located 114 km away from the capital Addis Ababa. The population gets health services from three hospitals (one general and two primary) 89 health centres and 506 health posts, where all health centres and hospitals provide delivery services. There were 683 health workers in these health facilities during the study period.

A two-stage random sampling was used to select two hospitals, five health centres and two hundred sixty-six obstetric health providers from each of the selected health facilities to participate in the survey.

The researchers conducted a key informant interview among 14 purposely-selected health workers. The key informants were health managers and head nurses from each health facility who did not participate in the survey.

A self-administered questionnaire adopted from similar studies [11-12] was used to collect data. The questionnaire was prepared in English and then translated into Afaan Oromo, the local language for Ormia Region and was pre-tested at Holeta Health Centre. Five data collectors and a supervisor who were native speakers of the language (Ormiffa) were trained for three days facilitated the data collection.

Forty-five delivery observations (ten cases from each hospital and five cases from each health centre) were made by the principal investigator who has a midwife background. All observations were made in obstetric wards during active first stage of labour. The observation focused on whether birth attendants used partograph and among those who used the completeness of the chart was assessed using a structured checklist.

Data were entered and cleaned using Epi info version 3.5.1 statistical software package. A double data entry was done on 10% of the collected data to control for errors and exported to SPSS version 16.0 for analysis. Following descriptive statistics, univariate, and binary logistic regressions analysis were carried out to assess associations of various factors and ascertain independent predictors of the outcome variables (knowledge and partograph use). The qualitative data, which were tape recorded, were transcribed and translated to English and analysed using narrative analysis and triangulated with the quantitative findings

## RESULTS

Out of 266 study participants, 259 completed the questioners correctly obtaining a response rate of 97.4%. About 63% of obstetric care providers were females. The median age of the caregivers was 24 years. Most 158 (61%) were working at health centres (Table-1).

All 259 (100%) participants had heard about partograph chart. However, only about a third, 91(35.1%) respondents knew the exact definition of partograph chart. Most of the participant 243 (93.8%) believed that partograph chart should be plotted for all women in active first stage of labour. Three fourth of the health provideres194 (74.9%) indicated that the right time to start plotting the partograph is 4cm cervical dilatation. About a fifth, 50 (19.3%) mentioned that plotting should start on the onset of labour while very few 4 (1.5%) indicated that plotting of partograph should start if labour is complicated.

**Table 1: Socio-demographic characteristics of obstetric care providers in West Shewa Zone, Oromia Ethiopia, 2015 (N=259).**

| Variable | No. | % |
|---|---|---|
| **Sex** | | |
| Male | 96 | 37.1 |
| Female | 163 | 62.9 |
| **Age groups** | | |
| 20-24 | 140 | 54.1 |
| 25-29 | 76 | 29.3 |
| 30-34 | 37 | 14.3 |
| 35-39 | 2 | 0.8 |
| >40 | 4 | 1.5 |
| **Place of work** | | |
| Hospital | 101 | 39.0 |
| Heath Centre | 158 | 61.0 |
| **Profession** | | |
| General practitioner (MD) | 8 | 3.1 |
| Health officer | 21 | 8.1 |
| Nurse (BSc) | 70 | 27.0 |
| Nurse (Diploma) | 77 | 29.7 |
| Midwife (BSc) | 32 | 12.4 |
| Midwife (Diploma) | 51 | 19.7 |
| **Total service year** | | |
| <5 years | 201 | 77.6 |
| 5-10 years | 36 | 13.9 |
| >10 years | 22 | 8.5 |

Our observation revealed that partograph chart was used for all labouring women. However, only five out of fifteen parameters on the partograph chart including client name, fetal heart rate, uterine contraction, parity and initial cervical dilatation were completed properly by most. In addition, time of rupture of membrane was recorded for 50% of women, status of amniotic fluid was recorded for 43.2%, and moulding of fetal head was not recorded at all (Table -2).

According to this assessment, most midwives 101(39%) mentioned that lack of commitment by obstetrics care providers was the main reason for non-use of partograph chart. On the other hand, 100(38.6%) respondents indicated that plotting on the partograph chart was difficult and 72(27.8%) of the participants reported that they never had on job training about partograph use and had never used it. Only few, 40 (15.4%) reported absence of partograph charts in the labour ward as a problem.

Most 132 (51%) of care givers agree and 119(45.9%) strongly agree that skilled birth attendants must use a partograph chart for every labouring woman. More than half, 207 (79.9%) of the respondent strongly agree that the partograph is beneficial. Most respondents, 158(61%) strongly agree that partograph is favourable as it alerts obstetric care givers of any deviation from normal and 145(56%) agree that it helps health care providers to identify problems and recognize complications early. On the other hand, 45 (17.4%) professionals strongly agree and 142(55%) agree that partograph misleads decisions as it puts labouring women's situation at alert line while the condition of labouring women and the foetus is in a stable situation.

Multivariate analysis indicated that, midwives [AOR (95% CI) =13(2.6-66.2)], those who have less than five years' service, [AOR (95% CI) = 6 (1.8-19.9)], those obstetric care providers who received on job training on partograph use were about 4 times more likely to utilize partograph than who have not received on- job training [AOR (95% CI) = 4 (0.9-21.7)] seeTable-3.

## DISCUSSION

This study found out that partograph use is almost universal in health facilities in Ambo town. However, the chart recording was mostly incomplete where only five items out of fifteen were recorded. Obstetric care providers with service year lower than five years and those who work in lower level health care units were more likely to have used partograph chart to evaluate the progress of labour. Obstetric providers who did not have access to the chart and had low knowledge about partograph chart use were less likely to evaluate the progress labour using the chart. Most obstetric care givers believed that partograph chart misleads decision of obstetric care givers as it puts a labouring woman's status at alert line (a cut of point on the chart that indicates the need for a surgical or other necessary intervention) while the woman's and the fetal condition is stable. Unlike previous studies conducted in Ethiopia and elsewhere, most obstetric care providers were using partograph to follow the progress of labour[5,11-13].

**Table 2: Knowledge of obstetric care givers about partograph in West Shewa Zone, Oromia Ethiopia, 2015 (n=259).**

| Variable | No. | % |
|---|---|---|
| **Awareness about partograph?** | | |
| Yes | 259 | 100 |
| No | 0 | 0 |
| **Partograph use in the current institution** | | |
| Yes | 219 | 84.6 |
| No | 40 | 15.4 |
| **Knowledge about the start time of plotting partograph** | | |
| When labour is diagnosed | 50 | 19.3 |
| At 4cm cervical dilatation | 194 | 74.9 |
| When complication is detected | 4 | 1.5 |
| At 3cm cervical dilatation | 11 | 4.2 |
| **Knowledge about labouring woman who should be followed using partograph** | | |
| All primigravida | 8 | 3.1 |
| All multiparus | 8 | 3.1 |
| All women in active phase of labour | 243 | 93.8 |
| **Reported challenges for partograph use*** | | |
| Lack of orientation on partograph use | | |
| Availability of other methods of observation | 64 | 24.7 |
| Lack of commitment. | 40 | 15.4 |
| Lack of supervision | 101 | 39 |
| | 86 | 33.2 |

**Table 3: Factors associated with partograph utilization among obstetric care givers in public health institution in West Showa Oromia Ethiopia; 2015**

| Variables | Partograph Utilization | | Crude OR (95%CI) | AOR (95%CI) |
|---|---|---|---|---|
| | Yes | No | | |
| | No (%) | No (%) | | |
| Services year | | | | |
| <5year | 186(71.8) | 15 (5.8) | 7(2.5-19.5) | 6(1.8-19.9) * |
| 5-10 years | 19 (7.3) | 17(6.6) | 0.6(0.22-1.9) | 0.6(0.17-2.4) |
| >10year | 8(3.1) | 14(5.4) | 1.00 | 1.00 |
| Profession | | | | |
| Midwives | 138((53.3) | 38(14.7) | 11(2.6-47.5) | 13 (2.6-66.2) * |
| Other staff | 81(31.3) | 2(0.8) | 1.00 | 1.00 |
| Work place | | | | |
| Hospital | 70(27) | 31(12) | 4(1.4-11.3) | 0.09(0.03-0.26) * |
| PHCU | 149(57.5) | 9(3.5) | 1.00 | 1.00 |
| Availability of parto-graph | | | | |
| Yes | 192(74.1) | 27(10.4) | 3.4(1.59-7.4) | 8.8(2.8-27.6) * |
| No | 27(10.4) | 13(5) | 1.00 | 1.00 |
| Knowledge | | | | |
| Yes | 85(71.4) | 31(12) | 18.(8.2-42.9) | 7(2.8-21.8) |
| No | 34(13.1) | 9(3.5) | 1.00 | 1.00 |
| Training | | | | |
| Yes | 32(12.4) | 209(80.7) | 5(1.9-14.2) | 4(0.9-21.7) |
| No | 8(3.1) | 10(3.9) | 1.00 | |

On the other hand, obstetric caregivers were recording only five indicators out of 15 such as the client's name, fetal heart rate, uterine contraction, parity and initial cervical dilatation. Indicators that are vital for the follow-up of the progress of labour such as moulding of fetal head were not recorded by all while cervical dilatation follow-up was recorded only by 50%. This suggests that caregivers are using the chart traditionally but not fully relying on it as follow-up tool. This may be related to the unfavourable attitude towards partograph chart use by a third of all caregivers in this study where they had reported that partograph misleads management as the progress of labour and the partograph alert line are not usually aligned in most labouring women. This

usually leads to unnecessary interventions while the condition of both mother and foetus are within acceptably normal condition. This discrepancy needs further studies and improvement as this has affected the use of the simple and cost-effective chart, which may save the lives of many women in developing countries such as Ethiopia. Apart from attitudes, lack of commitment, lack of supervision and lack of orientation on how to use the partograph could be traced as sources of incomplete recording. In-depth interviews with four senior clinicians and six labour ward team leaders suggested that health care providers did not use partograph consistently because of workload, lack of commitment, negligence and also some of them do not appreciate the importance of partograph. On the other hand, they indicated that lack of skills, lack of supportive and facilitative supervision were problems related to partograph use. This finding is more or less consistent with the study in West Nigeria and Addis Ababa[13,14].

Obstetrics care givers, who had knowledge about the partograph (those who score above mean on the knowledge scale), had used the partograph chart more than those who scored less in the knowledge scale. The finding was higher than a study done in Cameroon[15], and a study conducted in Amhara region[16]. A fourth of all obstetric care providers do not know the right time to start plotting of the partograph chart, this could affect the outcome the labouring woman by delaying necessary care or introducing unnecessary referral. On the same line, few participants indicated that health professionals need to have more knowledge about partograph use. Those who are using the chart correctly and consistently need encouragement.

Profession of obstetric care providers such as midwives and nurses were more likely to use the partograph chart than medical doctors and health officers. This might be due to the fact that, midwifes and nurses have more chance to be assigned in delivery wards and consequently received training on partograph use that might in turn improve their knowledge and skill of partograph use than others. This is in- line with the study done in other parts of Ethiopia[17].

In this study, health professionals working in hospitals were less likely to use partograph than those health care providers working at heath centres. This may be because health workers at health centres use partograph chart as an evidence to guide their action in case the labouring woman needs referral to higher health institution for better management. In contrast, health workers from hospitals may neglect to monitor the labouring mother using partograph tools since they can easily manage the complication at their own premises without wasting time for transporting to other facilities.

Health care providers who served less than five years were six times more likely to use partograph to monitor the progress of labour than those who served for more years. This may be related to two facts. The first one is that fresh graduates would try to avoid risk and try to function using existing procedures. The second reason may be related to the fresh memory forms their pre-service trainings. This can be supported by the fact that obstetric care providers who received on job training on partograph were about 4 times more likely to utilize partograph than those who have not received. Other studies in Africa documented similar findings[18-21].

## CONCLUSION

The study revealed that high proportion of obstetric care providers use partograph to follow the progress of labour; however, it was not properly plotted in accordance with WHO partograph parameters which will further affect the ultimate use of the partograph. The fact that, most of them do not know the time of initiation of plotting needs appropriate intervention. The fact that obstetric caregivers believe that partograph misleads decision is of concern and needs further studies and assess the sensitivity and specificity of the tool. This study assessed only use of partograph thorough observation. It would have benefit from further analysis if the survey had identified the magnitude of use.

**Corresponding Author:**

Wakeshi Willi

Department of Public Health, College of Medicine and Health Sciences, Ambo University, Ethiopia

*E-mail*: wakeshewilli@gmail.com

**REFERENCES**


1. World Health Organization, UNICEF, UNFPA, World Bank Group and the United Nations Population Division. Trends in Maternal Mortality: 1990 to 2015.
2. Mishra CK, Thomas J, Kumar R, Basavaraj T, James AJ, Mohan A, Kuruvilla S, Basavaraj S. National leadership: driving forward the updated Global Strategy for Women's, Children's and Adolescents' Health. bmj. 2015 Sep 14;351:h4282.
3. Hogan MC, Foreman KJ, Naghavi M, Ahn SY, Wang M, Makela SM, Lopez AD, Lozano R, Murracy CJ. Maternal mortality for 181 countries, 1980–2008: a systematic Analysis of progress towards Millennium Development Goal 5. The Lancet. 2010 May 14; 375(9726):1609-23.
4. Pitkin RM. Primigravid labor: a graphic statistical analysis. Obstetrics & Gynecology. 2003 Feb 1;101(2):216.
5. Kwast BE, Lennox CE, Farley TM, Olayinka I. World Health Organization partograph in management of labour. The Lancet. 1994 Jun 4;343(8910):1399.
6. Kitila SB, Gmariam A, Molla A, Nemera G. Utilization of partograph during labour and birth outcomes at Jimma University. Journal of Pregnancy and Child Health. 2014;1(101). doi: 10,4172/jpch.1000101
7. Berhan Y, Berhan A. Causes of maternal mortality in Ethiopia: a significant decline in abortion related death. Ethiopian journal of health sciences. 2014; 24:15-28.
8. Fantu S, Segni H, Alemseged F. Incidence, causes and outcome of obstructed labor in Jimma University specialized hospital. Ethiopian journal of health sciences. 2010;20(3).
9. Bulty BG, Reddy OC. Analysis of Risk factors for Maternal Death and Delivery Complications' in West Shewa Zone, Oromia Region, Ethiopia: A Retrospective Study. Global Journal of Current Research Vol. 2014;3 (1):36-9.
10. Mathai M. The partograph for the prevention of obstructed labor. Clinical obstetrics and gynecology. 2009 Jun 1;52(2):256-69.
11. Ogwang S, Karyabakabo Z, Rutebemberwa E. Assessment of partogram use during labour in rujumbura health Sub district, Rukungiri district, Uganda. African Health Sciences. 2009;9(2).
12. Wakgari N, Tessema GA, Amano A. Knowledge of partograph and its associated factors among obstetric care providers in North Shewa Zone, Central Ethiopia: a cross sectional study. BMC research notes. 2015 Sep 4;8(1):407
13. K Fawole AO, Hunyinbo KI, Adekanle DA. Knowledge and Utilization of the Partograph among obstetric

care givers in South West Nigeria. African journal of reproductive health. 2008;12(1):22-9

14. Yisma E, Dessalegn B, Astatkie A, Fesseha N. Knowledge and utilization of partograph among obstetric care givers in public health institutions of Addis Ababa, Ethiopia. BMC pregnancy and childbirth. 2013 Jan 8;137.

15. Smitha: PAMV. Effectiveness of individual teaching on knowledge regarding partograph among staff nurses working in maternity wards of selected hospitals at mangalore Cameroon. International Journal of Recent Scientific Research2013;4(7):1163 - 6.

16. Abebe F, Birhanu D, Awoke W, EjiguT. Assessment of Knowledge and Utilization of the Partograph among Health Professionals in Amhara Region, Ethiopia. Science Journal of Clinical Medicine2013;2(2):1-17.

17. Yisma E, Dessalegn B, Astatkie A, Fesseha N. Completion of the modified World Health Organization (WHO) partograph during labour in public health institutions of Addis Ababa, Ethiopia. Reproductive health. 2013 Apr 18;10(1):23.

18. Mathibe-Neke JM, Lebeko FL, Motupa B. The partograph: A labour management tool or a midwifery record? International Journal of Nursing and Midwifery. 2013 Dec 31;5(8):145-53

19. Opiah M, Ofi A, Essien E. Knowledge and utilization of partograph among Midwives in the Niger Delta Region of Nigeria. Afr J Reprod Health2012;16(1):125-32.

20. OIta B, Afiong O, Thomas OU. Evaluation of the Knowledge and Utilization of the Partogragh in Primary, Secondary, and Tertiary Care Settings in Calabar, South-South Nigeria. International Journal of Family Medicine2014.

21. Orji E.O, Fatusi A. MNOe. Impact of Training on the Use of Partograph on Maternal and Perinatal Outcome in Peripheral Health Centres, J Turkish-German Gynecol Assoc, 2007; 8(2):148-52