

Partograph Utilization and Its Determinant Factors among health care workers in Public health facilities, Dessie town, North East Ethiopia

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ARTICLE INFO	ABSTRACT
<p><i>Article type:</i> Original article</p>	<p>Background & aim: The usage of the Partograph assists to identify deviations from normal labour progression and supports prompt and effective intervention, which is crucial to help saving the lives of women. This study assessed Partograph utilization and its determinants among health care workers in Dessie town, North East Ethiopia.</p> <p>Methods: A cross-sectional study with an institutional focus was conducted in Dessie Town from December 2016 to March 2017. 267 healthcare workers were selected by systematic random sampling method. Data analysis was performed by SPSS software (version 25.0) using bivariate and multivariate logistic regression.</p> <p>Results: Despite the fact that 64% of respondents reported that they routinely used a partograph to monitor the progress of labour, actual partograph usage in the study area was quite low (29%) and fell below the WHO standard by one third. In this study, level of specialization (MSc/specialist) (AOR = 3.52, 95% CI=1.03, 11.98), training on partograph (AOR = 3.63, 95% CI=1.45, 9.09), number of staffs assigned per shift (>2) (AOR=2.12, 95% CI=1.58, 4.11), having good knowledge (AOR = 1.68, 95%CI = 1.21, 3.02) and favourable attitude towards partograph utilization (AOR = 2.00, 95%CI = 1.25, 5.31) were significantly associated with utilization of partograph at p<0.05.</p> <p>Conclusion: Compared to WHO recommendation, the actual use of partograph in the research area was extremely low. Health care organizations and other responsible parties should strictly enforce partograph usage for every woman, set up training for all obstetric health care professionals, and assign enough obstetric health care professionals per shift.</p>
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Introduction

The Partograph is a tool that graphically depicts significant labor-related events and is adaptable for use all over the world. When utilized properly, it has been demonstrated to improve outcomes and is intended to provide a constant graphical overview of labour. It aids in predicting labour progress divergence from the norm and encourages prompt, effective intervention (1-4).

In 2013, there were around 300,000 maternal deaths worldwide, 98% of which happened in underdeveloped nations. In poor nations, there are 230 maternal deaths for every 100,000 live births annually. A half million women pass away

each year as a result of issues associated to pregnancy. Up to 70% of maternal deaths are due to obstructed labour and uterine rupture. It can be considerably reduced by early recognition of aberrant progress and prevention of protracted labour (4-6).

It is thought that for millions of women giving birth, receiving high-quality treatment might be the difference between life and death or permanent disability. However, many developing African nations, especially Ethiopia, where the rate of skilled birth attendance is 10%, have very limited access to and utilisation of skilled care during childbirth (7, 8).

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Early detection of abnormal labour progression through the use of a partograph will eliminate obstructed labour, uterine rupture, and its associated sequelae, which are all major contributors to maternal mortality and morbidity in our society. Prolonged labour and its associated risks of postpartum haemorrhage and sepsis will also be avoided (9, 10).

Whether used properly, the partograph enables healthcare professionals to spot prolonged labour and determine whether to take the necessary action. However, few health care professionals record their observations on partographs after examining a woman in labour, and the majority of partograph parameters are not monitored. Additionally, experienced providers frequently believe that filling out the partograph requires additional time and are not always aware of how it can save women's lives. In the South Wollo Zone, including the government health institutions in Dessie, the extent of partograph use and its contributing causes are not well understood (3, 11–13). Therefore, the purpose of this study was to evaluate the use of Partograph and its influencing factors in Dessie Public Health Facilities, Dessie Town, North East Ethiopia, in 2016.

Materials and Methods

The institution-based cross-sectional study was conducted in Dessie Town, North East Ethiopia from December 2016 to March 2017. Dessie Town, one of the oldest towns in Ethiopia, is the sole capital of the South Wollo zone and is located in the south-east of the Amhara Region, 523 kilometers from Bahir Dar and 401 kilometers from Addis Ababa. According to the health profile of the Dessie City Health Department, the town has eight health centers with ten health posts, including one district and one zonal referral government hospital, three private junior general hospitals, three specialized junior clinics, five private medium clinics, two NGO medium clinics, fifteen private junior clinics (for profit and nonprofit), pharmacies, and drug stores that provide the general public with regular preventive and curative healthcare services.

In Dessie Town public health institutions, a cross-sectional study design based on institutions was used to assess partograph

utilisation and its determinants among obstetric health care providers. The study population included healthcare professionals who were available during the data collection period, and volunteered to take part in the study; including midwives, nurses, general practitioners, and health officers working in maternity wards of governmental health institutions in Dessie town.

Sample size was calculated using EpiInfo version 7.2 statically software, taking into account the 275 total healthcare workers who operate in delivery rooms, 57% utilisation of the partograph (1), 95% degree of confidence, and 5% marginal error. The ultimate sample size was estimated equal to 175 after 10% non-responses are added. However, we manipulate the margin of error to 1%, which results in 267, to make the sample size appropriate.

A unique sampling frame was created for each healthcare facility where the study was done. Then, using a systematic random sampling method, a sample of healthcare workers was chosen in proportion to their size. The first sample was collected using the lottery approach after K value ($K=N/n$) had been computed. Following that, a representative sample of workers was chosen at random intervals of K.

Structured questionnaires that were self-administered and based on document reviews were used to obtain the data. The survey was initially written in English before being translated into Amharic (the local language). Ten data collectors, one in each healthcare facility, gathered the data. Data collectors received a one-day training on the purpose of the study, the questionnaire and the depth of the explanations, as well as how to maintain privacy and confidentiality, in order to ensure the quality of the data. The questionnaire was pre-tested by the researchers at the Kombolcha health center to gauge its consistency and clarity before adjustments were made. As part of their oversight of the fieldwork, the lead investigators checked the questions' completeness.

The collected data was entered into EpiData 3.1. After that, everything was cleaned up and checked for mistakes and completeness. Data was exported to SPSS version 25 for additional analysis. Descriptive statistics including frequency distribution tables, graphs, and summary statistics were produced to explain

the research population in relation to the pertinent variables. The first bivariate analysis was conducted for each independent variable to outcome variable independently in order to detect statistically significant associated factors. Additionally, variables from bivariate logistic regressions with p values less than 0.25 were added to multivariate logistic regressions. In multivariate logistic regressions, variables with a P value 0.05 were regarded as statistically significant variables and were shown with a 95% confidence interval (CI), an area under the curve (AOR), and a P value.

The Wollo University, College of Medicine and Health Sciences' Research Ethical Review committee granted approval to conduct the research. The goal, benefits, confidentiality, discomforts (interview time), and right to withdraw or stop answering the questions were all explained to and addressed with each eligible study participant. Only those who verbally consented to participate in the study and gave their consent were included in it.

Results

Socio-demographic characteristics of study participants

All 267 respondents, yielding a 100% response rate, completed the interview. The participants' average age was 28.85 years (SD: 4.73), and 65.50 percent of them were between the ages of 26 and 35. Regarding respondents' gender, there were 173 (64.79%) more men than women. The bulk of those with professional qualifications were midwives, with 169 (63.30%), followed by nurses, with 61 (22.85%). 183 (68.54%) of the total participants had a first degree. On the other hand, the bulk of participants—214 or 80.15 percent—worked in hospitals. The majority of responders (79.4%) had attended partograph usage training. There were more than two obstetric health care providers assigned every shift, according to nearly all responders (98.5%). While the minimum and maximum years of work experience range from one year to thirty-one years, more than one-third of respondents

(35.58%) have worked for less than or equal to three years (Table 1).

Table 1. Socio-demographic characteristics among health care providers in Dessie Public health facilities, Dessie town, North East Ethiopia, 2016 (N = 267)

Variable	N (%)
Sex	
Male	173(64.79)
Female	94(35.21)
Age	
18-25	67(25.10)
26-35	175(65.50)
≥36	25(9.40)
Type of Health facility	
Hospital	214(80.15)
Health center	53(19.85)
Professional qualification	
Midwife	169(63.30)
Nurse	61(22.85)
Health officer	31(11.61)
Medical doctor	6(2.25)
Level of specialization	
Diploma	69(25.84)
BSc/GP	183(68.54)
MSc/specialist	15(5.62)
Working experience (in years)	
1-3	95(35.58)
4-6	91(34.08)
≥7	81(30.34)
Number of staffs assigned per shift	
>2	263(98.50)
≤2	4(1.5)
Trained on partograph/BEmONC	
Yes	212(79.40)
No	55(20.60)

Partograph Utilization

Only 77 (28.84%) of the total respondents who worked in labour wards were using the partograph on observation at the time of data collection, and nearly three-quarters, 190 (71.16%), of them were not. However, more than half (62.55%) of healthcare professionals claimed to have regularly used the partograph. 34% of respondents cited work overload as a reason they hadn't regularly used the partograph (Figure 1).

Knowledge and Attitude of obstetric health care providers towards partograph utilization

More than half of the respondents (58.43%) knew that partograph should be present in labour wards, and the majority of respondents (87.64%) properly defined the partograph. On the other hand, almost a third (34.83%), 63.29%, 52.06%, 57.68%, and 69.29% of the respondents reported that it is a policy to monitor pregnant women in labour using the partograph, identified partograph components,

correctly responded that cervical dilatation should be plotted on the partograph every four hours, knew that the partograph helps to detect deviations from normal labour, and understood that the partograph should be used for all labouring mothers in the active labouring stage. In terms of general knowledge, 79.4% of medical professionals had good knowledge.

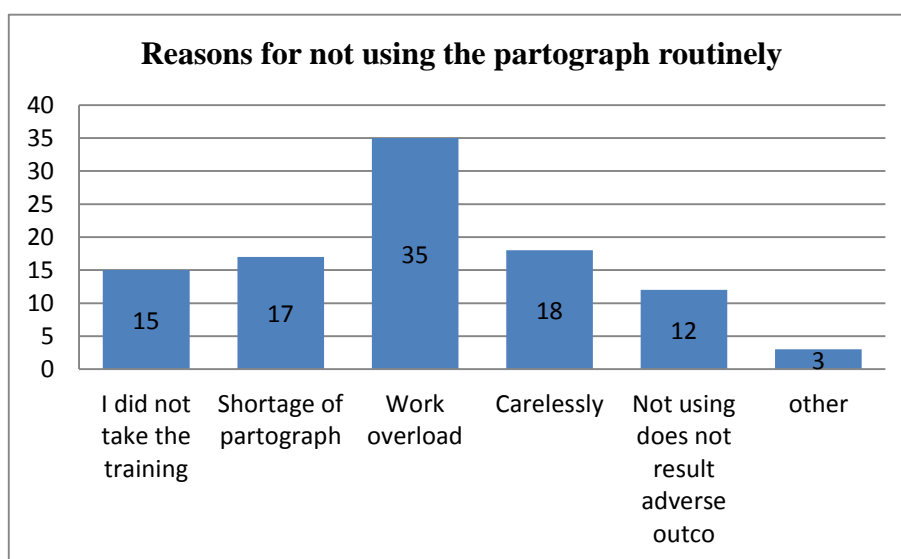


Figure 1. Self-reported reasons for not using the partograph, routinely, among health care providers in Dessie Public health facilities, Dessie town, North East Ethiopia, 2016

Regarding attitudes, 100% of respondents and 88.39% of respondents, respectively, agreed that utilising Partograph could lower maternal and newborn fatalities. The majority of healthcare professionals (65%) said that in a normal progression of labour, the plot on the partograph should fall on the left of the alert line, while nearly three-fourths (74%) agreed that the partograph is used to implement the safe motherhood program. The majority of respondents (96%) said that 10 minutes were necessary to properly evaluate the sufficiency of contractions. Overall, 159 participants, or 59.6%, have positive attitudes toward using the partograph (Table 2, 3).

Factors associated with partograph Utilization

To determine the relationship between the outcome and the explanatory variables,

bivariate and multivariate logistic regression analysis was used.

Table 2. Knowledge of health care providers on partograph in Dessie Public health facilities, Dessie town, North East Ethiopia, 2016 (n = 267)

Variable	N (%)
Partograph is a simple graphic recording of progress of labour and salient conditions of mother and fetus against time in hrs	
Yes*	234(87.64)
No	33(12.36)
Partograph should be available in labour ward	
Yes*	156(58.43)
No	111(41.57)
It is a policy to monitor pregnant mothers in labour using the	

Variable	N (%)
partograph?	
Yes*	93(34.83)
No	174(65.17)
Components of partograph: identification, assessment of fetal and maternal wellbeing, and assessment of labor progress	
Yes*	169(63.29)
No	98(36.71)
Cervical dilatation should be plotted on partograph every 4 hrs	
Yes*	139(52.06)
No	128(47.94)
Partograph is used to detect deviation from normal delivery that develop as labor progress	
Yes*	154(57.68)
No	113(42.32)
Types of client that needs partograph use: all mothers in active phase of labor	
Yes*	185(69.29)
No	82(30.71)
Overall Knowledge	
Good	212(79.4)
Poor	55(20.6)

Partograph availability in labour ward (yes) (COR=2.2, 95% CI =1.25, 3.89), level of specialisation (MSc/specialist) (COR = 4.11, 95% CI =1.28, 13.18), training on partograph (yes) (COR = 4.11, 95% CI =1.68, 10.06), having good knowledge (COR = 1.90, 95% CI = 1.02, 3.54) and a positive attitude towards partograph (COR = 1.8, 95%CI = 1.05, 3.08) were all factors significantly associated with the outcome variable at p<0.25 in the bivariate analysis.

Those variables that had a bivariate probability level of less than 25% (p<0.25) were added to the multivariate logistic regression model. In the multivariate logistic regression, Level of specialisation (MSc/specialist) (AOR = 3.52, 95% CI=1.03, 11.98), training on partograph

(Yes) (AOR = 3.63, 95% CI=1.45, 9.09), number of staffs assigned per shift(>2) (AOR=2.12, 95% CI=1.58-4.11), having good knowledge (AOR = 1.68, 95%CI = 1.21, 3.02) and favourable attitude towards partograph utilisation (AOR = 2.00, 95%CI = 1.25, 5.31) were declared to be predictors of partograph utilisation at p<0.05 (Table 4).

Table 3. Attitude of health care providers towards partograph utilization in Dessie Public health facilities, Dessie town, North East Ethiopia, 2016 (n = 267)

Variable	N (%)
Partograph is used to implement the safe motherhood program	
Agree	197(73.78)
Disagree	70(26.22)
Partograph Reduces maternal deaths	
Agree	267(100.0)
Disagree	0(00.0)
Partograph Reduces new born deaths	
Agree	236(88.39)
Disagree	31(11.61)
In a normal progress of labour, the graph/plot on Partograph should fall on the left of alert line	
Agree	173(64.79)
Disagree	94(35.21)
In normal labour, minimum duration of a strong contraction is 40 seconds	
Agree	184(68.91)
Disagree	83(31.09)
10 minutes are required to effectively assess adequacy of contractions	
Agree	255(95.51)
Disagree	12(4.49)
Overall attitude	
Agree	159(59.6)
Disagree	108(40.4)

Table 4. Bivariate and multivariable analysis of factors associated with partograph utilization among health care providers in Dessie Public health facilities, Dessie town, North East Ethiopia, 2016 (N = 267)

Variables	Partograph utilization		COR(95% CI)	AOR (95%CI)	p-value
	Yes	No			
Level of specialization					
Diploma	15(21.7%)	54(78.3%)	1	1	
BSc/GP	54(29.5%)	129(70.5%)	1.51(0.78, 2.89)	1.31(0.66, 2.58)	0.44
MSc/specialist	8(53.3%)	7(46.7%)	4.11(1.28, 13.18)	3.52(1.03, 11.98)	0.04*
Training on partograph					
Yes	71(33.5%)	141(66.5%)	4.11(1.68, 10.06)	3.63(1.45, 9.09)	0.006**
No	6(10.9%)	49(89.1%)	1	1	
Partograph is available in labor ward					
Yes	55(35.3%)	101(64.7%)	2.20(1.25, 3.89)	1.44(0.74, 2.79)	0.28
No	22(19.8%)	89(80.2%)	1	1	
Number of staffs assigned per shift					
>2	77(29.3%)	186(70.7%)	1.92(1.55, 2.16)	2.12 (1.58-4.11)	0.001***
≤2	0	4(100%)	1	1	
Knowledge of health care providers					
Good knowledge	55(25.9%)	157(74.1%)	1.90(1.02, 3.54)	1.68(1.21, 3.02)	0.01*
Poor knowledge	22(40.0%)	33(60.0%)	1	1	
Attitude of health care providers					
Favorable attitude	38(23.9%)	121(76.1%)	1.8(1.05 – 3.08)	2.00(1.25 – 5.31)	0.000***
Unfavorable attitude	39(36.1%)	69(63.9%)	1	1	

Significant at *p-value≤0.05, **p-value ≤0.01 and ***p-value ≤0.001

Discussion

The overall partograph utilisation rate of 28.9% , which obtained in this study, was lower than studies carried out in the Somali towns of Jigjiga and Degehabur (41%), Addis Abeba (69%), Southwest Ethiopia (43%), Eastern Tigray Zone (83%), Central Tigray Zone (73.3%), Hadiya Zone of Southern Ethiopia (54.4%), Baghdad (58%) and Ghana (54%). The mismatch may result from variations in the sample size, study duration, and sociodemographic features of study participants. The second and perhaps more crucial factor is that in the current study, the percentage of partograph usage was assessed through direct observation, whereas in other studies, data were collected through respondents' verbal responses, which could lead to biased results. However, this result is in line with research from the West Shoa zone of Ethiopia (31.1%) and the Assela referral and

teaching hospital of Ethiopia (26%) (1, 8, 9, 11, 14-20).

In the current study, participants with an MSc or higher level of education were 3.52 times more likely to use partographs than participants with a diploma. This may be due to the fact that obstetric healthcare professionals with higher levels of education have a better understanding, can comprehend the usefulness of a partograph in detecting an irregular birth process, and do not have difficulty completing the partograph form.

In addition, this study found that health care providers who had received partograph training were 3.63 times more likely to use the partograph than their counterparts. This finding is supported by other studies conducted in the Somali cities of Jigjiga and Degehabur, Addis Ababa City, southwestern Ethiopia, Central Tigray Zone, and Hadiya Zone in southern Ethiopia (1, 9, 16-17, 19). The rationale that may

be offered is that training might enhance the understanding and attitudes of obstetric health care workers toward the use of partographs.

The results of this study showed that having two or more obstetric health care practitioners assigned to each shift doubles the likelihood that the partograph will be used (AOR=2.12, 95% CI 1.58-4.11). The findings of this study are consistent with a study conducted by the Addis Ababa Municipality, which found that when there are two or fewer midwives assigned to each shift, the use of partograph is 89.9% less likely than when there are eight midwives per shift (8). This result is in line with the research conducted in the West Shoa zone of Ethiopia (21). This could be explained by the fact that if enough obstetric health care providers are assigned to each shift, they will not be overburdened with cases and will have enough time to fill out the partograph in addition to being able to impart their knowledge to less-experienced and less-trained providers.

When compared to respondents with less knowledge, respondents with good knowledge have odds of using partograph that are almost two times higher.

Studies in Southwest Ethiopia, Jigjiga and Degehabur towns in Somalia, Assela referral hospital, and Hadiya zone in southern Ethiopia as well as Littoral Region in Cameroon all reported similar results (8-9, 14, 16, 19, 22-23). Additionally, this study found that respondents with a positive attitude were twice as likely to use partographs as respondents with a negative attitude. This result is consistent with research conducted in the Somalian cities of Jigjiga and Degehabur, the Ethiopian West Shoa zone, and the Hadiya zone (9, 16, 21). This is because proper utilisation of the partograph depends on knowing when to use it, how to fill it out, and how to interpret the results, as well as having a positive outlook.

The limitation of cross-sectional research apply to this study as well. Comparatively small sample size could have an impact on the test's power and parameter estimate. A complete picture and the ability to make generalizations would have been provided if private healthcare providers were included. However, the results of this study can be viewed as a snapshot of the

state of the art in terms of partograph usage in the study area.

Emanating from the findings of this study, the following recommendations were forwarded.

To health care providers: All obstetric healthcare professionals who work in the labour ward should routinely use the partograph and recognise that it is their duty to do so.

To health institutions: Managers of all healthcare facilities should strictly enforce the usage of partograph by obstetric healthcare professionals and take appropriate action against those who don't use it frequently. Additionally, managers need to ensure that there are enough obstetric healthcare professionals working each shift and that partograph is always available in labour wards.

To Ministry of Health: All obstetric care providers should receive training, according to the plans made by ministry of health officials.

To future researchers: Additional research should be conducted using robust designs that cover a wide range of locations, including private healthcare facilities.

Conclusion

Despite the fact that 64% of respondents said (on self-report) they regularly use partographs to monitor the progress of labour, actual usage in the study area was very low (below one third of WHO recommendations which is nearly 29%). In this study Level of specialization (MSc/specialist), training on partograph (Yes), number of staffs assigned per shift (>2), having good knowledge and favorable attitude towards partograph utilization were significantly associated with utilization of partograph.

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Conflicts of interest

Authors declared no conflicts of interest.

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