

**ADDIS ABABA UNIVERSITY
COLLEGE HEALTH SCIENCES
SCHOOL OF ALLIED HEALTH SCIENCE
DEPARTMENT OF NURSING AND MIDWIFERY**

**PARTOGRAPH UTILIZATION AND ASSOCIATED FACTORS AMONG
OBSTETRIC CARE PROVIDERS IN PUBLIC HEALTH INSTITUTIONS
OF WOLAITA ZONE, SNNPR, ETHIOPIA, 2017.**

BY MESFIN MARKOS (BSc)

**A THESIS TO BE SUBMITTED TO ADDIS ABABA UNIVERSITY
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Approved by the board of examiners

This thesis by Mesfin Markos is accepted in its present form by the board of examiners as satisfying thesis requirement for the degree of master's in Maternity nursing and Reproductive Health.

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List of acronyms and abbreviations

AD	Advisor
BEmONC	Basic Emergency and Obstetric Care
EDHS	Ethiopian Demographic and Health Survey
FMOH	Federal Ministry of Health
HEWs	Health Extension Workers
IRB	Institutional Review Board
MDGs	Millennium Development Goals
MNH	Maternal and Neonatal Health
MMR	Maternal Mortality Rate
NGO	Non-Government Organization
OCGs	Obstetric Care Givers
PHCU	Primary Health Care Unit
PI	Principal Investigator
SNNPR	Southern Nation Nationalities and Peoples Region
SU	Supervisor
UNICEF	United Nation Children Fund
WHO	World Health Organization

Abstract

Background: Globally, prolonged and obstructed labor contributed to 13% of maternal deaths which can be reduced by proper utilization of partograph during labor. Professional assisted delivery using a partograph during labor has paramount importance in identifying any deviation during labor, Even though; partograph use is influenced by different factors as obtained from the literatures, magnitude of partograph utilization and associated factors is not well determined in the study area.

Objective: To assess the magnitude of partograph utilization and factors that affect its utilization among obstetric caregivers in public health institutions of Wolaita Zone, SNNPR, Ethiopia 2017.

Methods: An Institution based cross-sectional study was conducted on obstetric care providers. A pre-tested and structured questionnaire was used to collect data. Data was collected by trained data collectors. Data was entered to EpiInfo version 3.5.1 statistical package and exported to SPSS version 23.0 for further analysis. Logistic regression analyses were used to see the association of different variables.

Result: A total of 269 (97.8%) obstetric care givers participated in the study. Of those who were utilizing partograph 193 (71.1%) used, routinely for all laboring mothers and 76(28.3%) of participants reported that they don't utilize routinely. Service year (AOR=4.9, 95% CI: 1.53-15.8), on- job training (AOR=0.161, 95% CI: 0.060-0.432), knowledge (AOR=3.35, 95% CI: 1.614-6.96), and attitude (AOR=2.997, 95% CI: 1.278- 7.029) were significantly associated with partograph utilization.

Conclusion and recommendation: The study revealed that higher proportion of obstetric care providers use partograph to follow the progress of labor than previously conducted study. Service year (year of work experience), on job training, knowledge of partograph and attitude of obstetric care providers towards partograph and significantly associated with partograph utilization. Provision of on-job training to make obstetric care givers knowledgeable on partograph, maintaining providers' retention to decrease turnover and establishing favorable attitude could improve the proper use of the tool.

Keywords: utilization, partograph, obstetric care providers, public health institution, SNNPR, Ethiopia.

1. Introduction

1.1 Background

A partograph is a pre-printed paper that provides a visual display of recorded observations carried out on mother and fetus during labor. It is universally used as part of Safe Motherhood Initiative for improving labor management and reducing maternal and fetal morbidity and mortality(1). Globally, there were an estimated number of 303,000 maternal deaths in 2015. This means, every day, approximately 830 women die from avoidable causes related to pregnancy and childbirth. About 99% of maternal deaths occur in developing countries, while more than half of these deaths occur in sub-Saharan Africa, most could have been preventable(2). According to EDHS 2016 in Ethiopia, the ratio of maternal mortality in Ethiopia is also, 412/100,000 live births according to UN estimation 2016(3).

The major causes of maternal deaths in Ethiopia are similar to most developing countries: obstructed labor, infection, hemorrhage, abortion and hypertension in pregnancy. The proportion ascribed to the different causes varies from year to year. The majority of maternal deaths and complications attributable to obstructed and prolonged labor (4).

Early detection and timely intervention of obstetric complications are the most important activities to prevent maternal and perinatal mortality and morbidity (5). Interventions that can prevent complications from the major causes of death are known, and can be made available even in resource-poor settings. A systematically detecting and handling complication at early stage is part of guaranteeing quality service. Among these, partograph is one of the strongest and cost-effective tools to prevent unnecessary delay and serve as frontrunner for obstetric caregivers (6). The World Health Organization (WHO) recommends using the partograph to follow labor and delivery, with the objective to improve health care and reduce maternal and fetal morbidity and death. The partograph consists of a graphic representation of labor and is an excellent visual resource to analyze cervix, uterine contraction and fetal presentation in relation to time. However, poor utilization of the partograph was found in the public health institutions which reflect poor monitoring of mothers in labor and/or poor pregnancy outcome(5).

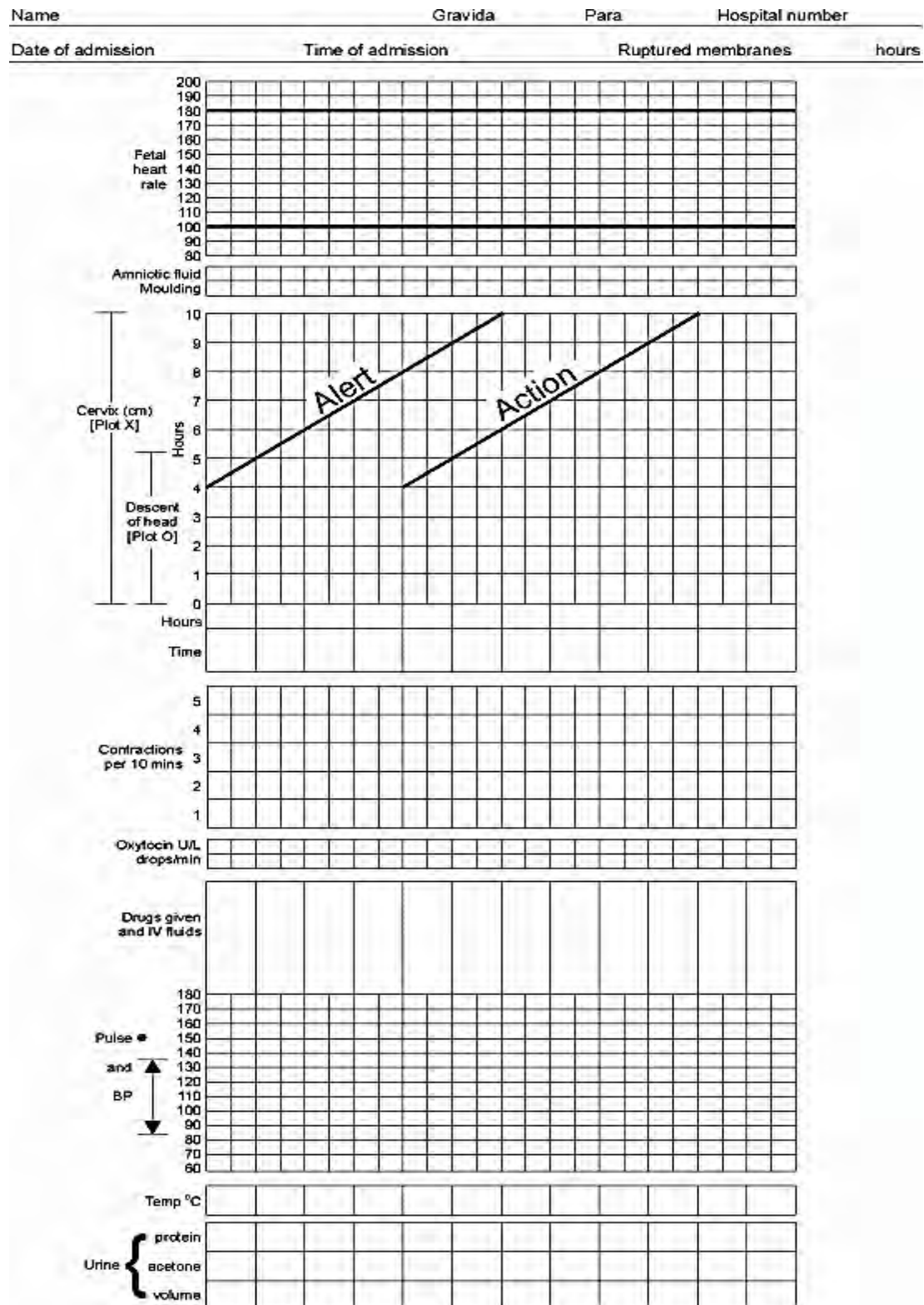


Figure-1: Schematic presentation of Partograph

1.2 Statement of the problem

The global lifetime risk of maternal mortality is approximately 1 in 180. The overall MMR in developing regions is 239, which is roughly 20 times higher than that of developed regions. Sub-Saharan Africa has a very high MMR with a point-estimate of 546. Maternal death is the main health problem of developing countries. Developing regions account for approximately 99% of the estimated global maternal deaths in 2015, with sub-Saharan Africa alone accounting for roughly 66% (201 000), followed by Southern Asia (66 000) (2).

In spite of, government commitment in reduction of maternal death by more than three-quarters over the period of 1990 to 2016, maternal mortality ratio is remained high, estimated at 412 per 100,000 live births in Ethiopia(3). As the other developing countries, also in Ethiopia maternal death mostly related with obstructed labor. In Ethiopia obstructed or prolonged labor accounted for 13% of maternal deaths (7). The women who experience obstructed labor usually suffer from postpartum hemorrhage, uterine rupture, puerperal sepsis and obstetric fistula(8). Furthermore, it is highly associated with birth trauma, birth asphyxia, stillbirths, neonatal sepsis, and neonatal deaths (8).

In absence of early detection and monitoring the progress of labor due to poor utilization of partograph might results in obstructed labor and other obstetric complications. According to study across different regions of Ethiopian reveals that the cause of maternal death was obstructed labor. A study conducted in Jimma University Specialized Hospital on incidence, causes and outcome of obstructed labor revealed that regard to causes of obstructed labor, cephalo-pelvic disproportion (CPD) was the main cause in (67.6%) followed by mal-presentation in (27.9%) of the cases which in turn leads to uterine rupture (45.1%) the commonest complication of obstructed labor(9). Study of Prevalence and Risk Factors Associated with Maternal Mortality in Mizan-Aman Hospital, Bench Maji, South west Ethiopia showed over three months, 13(3.39%) of mothers were passed away during child birth but the rest delivered safely. The diagnosis for mothers death was obstructed labor in 3(0.78%), Puerperal sepsis 2(0.52%), multi-pregnancy in 1(0. 26%), hypertensive disorder in 1(0.26%), hemorrhage in 1(0.26%), IUFD in 1(0.26%) and by non-frequent causes in 4(1.04%). These complications were preventable if correctly followed with partograph (10).

Proper use of partograph during delivery is to achieve a healthy mother and baby with the least possible level of intervention, early detection and management of complications and timely

referral. Therefore, strategies have to be invented to reduce maternal mortality by giving more attention to the most death causing risk factors in the area of these strategies the use of partograph is a vital tool for providers who need to be able to identify complications in childbirth in a timely manner and refer women to an appropriate facility for treatment (11). Besides, partograph is the best available tool but it is not widely used as it should be (8). Thus; prevention of prolonged and obstructed labor by using partograph during labor is a key intervention in the reduction of maternal and perinatal morbidity and mortality (12).

A cross sectional study which conducted in North Shoa Zone, Central Ethiopia shows that profession, on job training, knowledge and attitude of obstetric care providers towards partograph were significantly associated with partograph utilization. As this study report those who were midwives by profession were about 8 times more likely to have a consistent utilization of the partograph than general practitioners (AOR=8.13, 95% CI: 2.67, 24.78). Those obstetric care providers who received on the job training on partograph were about 3 times more likely to utilize partograph than who haven't received on- job training (AOR=2.86, 95% CI:1.69, 4.86). In addition, those who were knowledgeable on partograph were about times more likely to utilize partograph than the non-knowledgeable (AOR=3.79, 95% CI: 2.05, 7.03). Furthermore, those who had a favorable attitude towards partograph utilization were about 2 times more likely to utilize partograph than those with non-favorable attitude (AOR=2.35, 95% CI: 1.14, 4.87)(19).

Study done across African countries has shown that the utilization of partograph is poor despite preparing the tool that is simple and inexpensive for intra partum monitoring of labor(13). Similarly, different studies in Ethiopia revealed low utilization of the partograph(14). The lack of preprinted partograph in the health institutions, being a general practitioner, poor knowledge and attitude towards partograph were reason for not using partograph during labor(14, 15). However, these all challenges to the use of the partograph tried to resolve by provisions of pre-service and on job training on partograph(15). Little is known about the magnitude of partograph utilization and its associated factors; understanding this help police makers, stakeholders, program planners and obstetric care providers to improve the quality of intrapartum care. Hence, this study provides information on the level of partograph utilization and its associated factors among obstetric care providers in wolaita zone, southern Ethiopia.

1.3 Significance of the study

In Ethiopia, only 28% of births were being attended by a skilled birth provider. Out of those who get professional attention there is no record about the proportion of women who had uncomplicated labor(4).

Especially in our country where the three delays are common (Delays in recognizing problems and deciding to seek care, delays in transportation to reach appropriate care and delays in receiving appropriate care at the health facility) and where suitable instrument to detect complication is not available in most of our institution, partograph use plays indispensable role that a skilled attendant should be able to identify problems, recognize complications early to perform essential basic interventions.

Like other part of the country, Wolaita zone maternal mortality indicates that the women's are not receiving adequate obstetric care. Even though in-service training on basic emergency obstetric and neonatal care which widely include partograph utilization given by different NGOs at all level there was no study shown that how many of them utilize it. Therefore, the aim of this study was to explore the extent of utilization of the partograph and factors which influence skilled birth attendants from consistent utilization of partograph in Wolaita Zone public health institutions and delivers valuable information about the problem which helps the concerned body to take an intervention on identified gap.

So results of the study help to inform the institutions participating in this study and other obstetric care providers, about factors that affect partograph use and ways of increasing it for improvement of maternal and fetal outcomes. The results also inform on areas where supervision strategies need to be enhanced as it relates to instruction on partograph, its purpose and correct use at labor follow-up and referral from health center to hospital. Ultimately the healthcare staff was more equipped to effectively monitor the health of mother and baby.

2. Literature review

2. Introduction

The current partograph is designed to monitor not only the progress of labour, but also the condition of the mother and the fetus during labour. The partograph includes different variables (fetal heart rate, dilation of the cervix, contractions, and pulse rate of the mother) plotted on a graph. The plotted data allow the attending health-care practitioner to identify early deviations in the plotted parameters from the normal and make decisions regarding direct intervention or referral(7). The partogram has been heralded as one of the most important advances in modern obstetric care. WHO advocates its use as a necessary tool in the management of labour and recommends its universal use during labour(1).

2.1 Prevalence of partograph utilization

Study in North Shoa, Northern Ethiopia revealed that 40.2% of participants utilizes partograph routinely(19). Study done in Jimma University Specialized Hospital, Amhara region, Addis Ababa shows that (6.9%) (19), (29%) (25) and (57.3%) (26) respectively (14, 19, 27). Study from University of Calabar Teaching Hospital, Calabar, Nigeria did report that only 13.6% of those who had used partograph were very confident with the tool in monitoring labor(16). The studies across different countries shows that poor utilization of partograph. However, the factors influencing partograph utilization not clearly identified.

2.2 Factors affecting utilization of partograph

2.2.1 socio-demographic factors

A cross sectional study which conducted in North Shoa Zone, Central Ethiopia shows that profession was significantly associated with partograph utilization. As this study report those who were midwives by profession were about 8 times more likely to have a consistent utilization of the partograph than general practitioners (AOR=8.13, 95% CI: 2.67, 24.78)(19). This study reveals that the profession of providers and work experience were significantly affect the utilization of partograph. A cross sectional study done in Nigeria shows that a significant relationship existed between midwives years of experience and its utilization ($\chi^2=4.818$, Df = 4; P <0.05)(16).

2.2.2 Knowledge towards partograph utilization

Even though the partograph is a simple and inexpensive tool which prevents maternal deaths and complications due to obstructed or prolonged labour, it is not as widely implemented as it should be. After conducting a cross-sectional quantitative study in Ethiopia reported that, the use of the partograph is a well-known best practice for quality monitoring of labour and subsequent prevention of obstructed and prolonged labour. However, a number of cases of obstructed labour still occur in health facilities due to poor quality of intrapartum care(15). Study from Nigeria did report that obstetric care givers may resist using the tool if they have insufficient knowledge and do not fully understand why they have been asked to use the tool. Knowledge of the partograph one of factors affecting utilization of partograph and significantly affected its utilization ($X^2=38.1$, $P=.00$) (16). This study reveals that midwives knowledge about the partograph is a significant factor in its utilization in monitoring labor. Despite the good knowledge of the partograph, there was poor utilization in labor monitoring. Inadequate knowledge and utilization of this simple tool could be part of the reason for the high MMR in Nigeria and other developing countries(16).

A cross sectional study done in Nigeria shows that factors affecting utilization of the partograph was lack of knowledge in the use of the partograph (22.2%). A significant relationship existed between knowledge of the partograph and its utilization ($\chi^2 = 32.298$. Df = 1; $P < 0.05$). However, this study also showed that despite midwives good knowledge of the partograph, there was poor utilization in labor monitoring in both centers. Lack of detailed knowledge of the partograph and inadequate training are factors that work against the effective utilization of the partograph in the study facility(13). A cross-sectional descriptive study was conducted among 130 purposely selected and consenting OCGs working in the General Hospital, Calabar, Nigeria reveals that factors affecting utilization of the partograph in labor monitoring was little or no knowledge (85.4%).

Study in the Bamenda Health District, North-West Region, Cameroon reveals that inadequate training of the staff was found to be reason why the partograph was not used. Although 92.5% of the participants said they had formal training in the use of the partograph, 81.0% of them expressed the wish to have more training(18). Study done on assessment of knowledge and utilization of partograph Addis Ababa reveals that reasons for not routinely using it were cited as little or no knowledge of the partograph (30.66%) and lack of training (8.06%). A total of 155 (95.1%) of those who were aware of the partograph desired training(15). A cross sectional study which

conducted in North Shoa Zone, Central Ethiopia shows that knowledge of obstetric care providers towards partograph were significantly associated with partograph utilization. As this study report those who were knowledgeable on partograph were about times more likely to utilize partograph than the non-knowledgeable (AOR=3.79, 95% CI: 2.05, 7.03)(19).

2.2.3 Attitude towards use of partograph

A cross sectional study which conducted in North Shoa Zone, Central Ethiopia shows that attitude of obstetric care providers towards partograph were significantly associated with partograph utilization. In this study those who had a favorable attitude towards partograph utilization were about 2 times more likely to utilize partograph than those with non-favorable attitude (AOR=2.35, 95% CI: 1.14, 4.87)(19). Partograph utilization was significantly higher among obstetric care providers who had a favorable attitude as compared to those who had the unfavorable attitude. This could be due to the fact that, having a good attitude towards partograph utilization might come after having knowledge about partograph that may influence the utilization of partograph(19). While 282 (97.6%) participants agreed on the need for all women in labor to be assisted using the partograph, 15.6% (55) of the participants disagree with the notion that all skilled birth attendants must know about the partograph. While their overall attitude was assessed, two hundred thirty four participants (81%) were found to have a favorable attitude towards the utilization of the partograph and believe utilization of the partograph would help making timely decision and facilitate early referral to better health care. Favorable attitude by itself was inadequate to ensure use of the partograph(14).

2.2.4 Health facility challenges

2.2.4.1 Lack of resources

Study done on assessment of knowledge and utilization of partograph Addis Ababa reveals that reasons for not routinely using it were cited as time consuming (28.23%) and lack of adequate number of personnel (6%)(15). A cross sectional study done in Nigeria shows that factors affecting utilization of the partograph were:-non-availability of the partograph (30.3%), shortage of staff (19.4%), and 8.6 % indicated it was time consuming. Study done Nigeria revealed that non-availability of preprinted partograph has also been reported as a cause for no utilization(16). A cross-sectional descriptive study was conducted among 130 purposely selected and consenting OCGs working in the General Hospital, Calabar, Nigeria reveals that factors affecting utilization of the partograph in labor monitoring were; non-availability of the partograph (70%), shortage of staff (61.5%), and the fact that it is time-consuming (30%). The availability of the partograph

among OCGs showed that only 78 (60%) agreed that the instrument was available in the labor ward while 52 (40%) disagreed(17). Study in the

Bamenda Health District, North-West Region, Cameroon reveals that partograph were available in only 42.9% of the health facilities. Most (56.7%) of the participants said unavailability of the partograph meant that they could not use it to monitor women in labour(18). Despite health workers positive attitude on use of partograph, lack of resources was also one of the reasons why the partograph was not utilized. The resources include the graph paper and equipment for carrying out vital signs observations and pens. Availability of health workers to attend to women in labor is another factor(22, 23). In a study conducted in Benin, more staff on duty was associated with high utilization of the partograph. There were more partograph completed where there was more than one midwife and few partograph were completed where there was only one midwife on duty(24).

2.2.4.2 Lack of supportive supervision

Study in the Bamenda Health District, North-West Region, Cameroon reveals that there was a significant relationship between supervision by the service heads and the use of the partograph (RR=4.6; 95% CI=2.1-10.0). About 45.2% of the health workers admitted to having regular supervision from their service heads(18). In Indonesia, Fadhy et.al, found that when staff were trained and then given supportive follow up, there was an increase in the referral rate from primary health care centers to secondary or tertiary levels. A higher rate of correct use of partograph was shown which resulted in reduction in vaginal examination, augmented labor and increased referral (25). In Tanzania, Bosse et.al, and in Uganda, Ogwang et.al, reported that the health workers lacked follow-up and supervision. This resulted in poor monitoring of maternal–fetal condition and there were high perinatal deaths(23, 26). One of the eight centers which participated in the study in Uganda correctly used the partograph. This center received more supportive technical supervision than any other center.

2.2.5 Conceptual framework of partograph utilization

In childbearing, women need a continuum of care to ensure the best possible health outcome for them and their newborns. Skilled management of labor using a partograph is at the center of the continuum of care. However, basic factors such as Knowledge, training, experience, profession and place of work and immediate factors like Attitude toward use of partograph and Availability of pre-printed graph paper may affect partograph utilization. In addition, personal experiences with devotion to use clearly articulated protocols of care that harmonize with the partograph and availability of necessary equipment are critical.

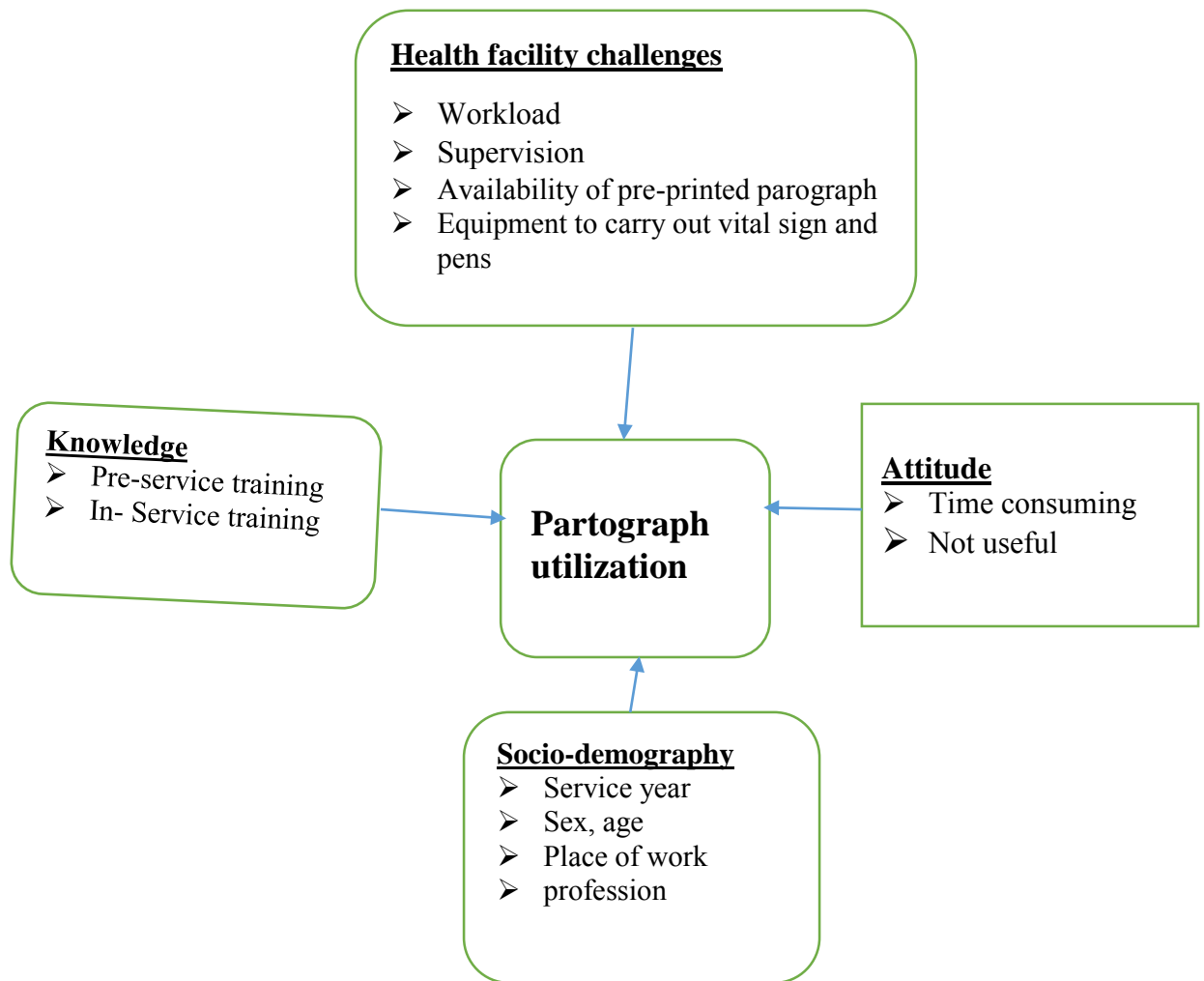


Figure.2. Conceptual framework of factors associated with partograph utilization among obstetric care providers in Wolaita Zone, SNNPR Ethiopia, 2017(Based on different literature review)

3. Objective

3.1 General objective

- To assess the magnitude of partograph utilization and associated factors on partograph utilization among obstetric caregivers in public health institutions of Wolaita Zone, SNNPR Regional state, Ethiopia 2017.

3.2 Specific objective

- To determine the magnitude of use of partograph by obstetric staff in maternity units of public health institutions of Wolaita Zone, SNNPR Regional, Ethiopia 2017.
- To identify associated factors on partograph utilization among obstetric caregivers in public health institutions of Wolaita Zone, SNNPR Regional state, Ethiopia 2017.

4. Methods and materials

4.1. Study Area and study period

The study was conducted from February to April 2017 in Wolaita zone, one of the 14 zones in Southern Nations Nationalities and Peoples Region (SNNPR), Ethiopia. The capital city of the zone about 327 KM far away from Addis Ababa. The zone has total area of 4512 square kilometers, administratively divided into 12 districts (locally termed “woredas”) and 3 town administrations with total population of nearly 1.7 million. In the zone are currently 5 governmental and 2 nongovernmental hospitals, 342 health post, 10 private clinics and 67 health centers aged 5 years or above as of establishment. In the zone the total number health provider are 2787, among these 770 providers which give delivery service and 878 are health extension workers as Wolaita zone health department reported.

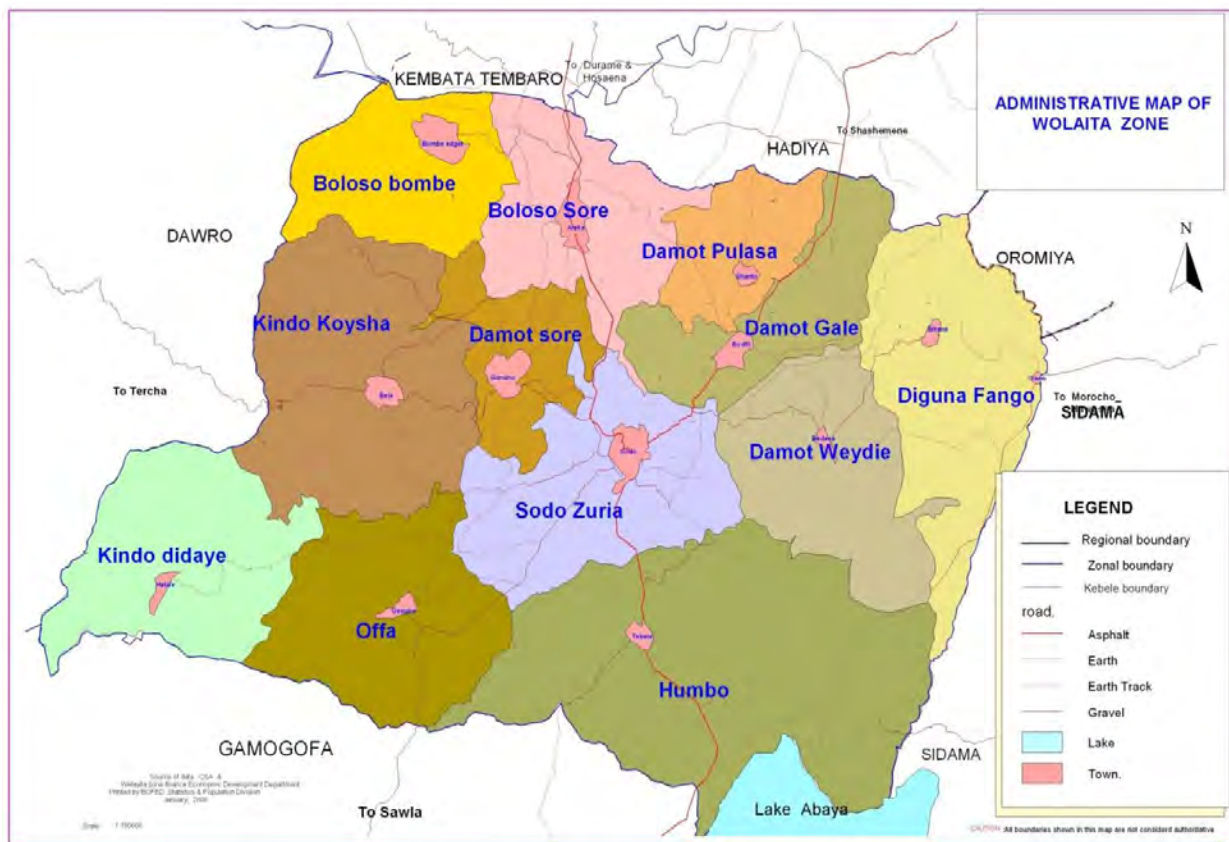


Figure 3. Administrative map of wolaitta zone

Source:wolaitta zone health department

4.2. Study Design

An Institution based quantitative cross-sectional study design was conducted.

4.3 Population

4.3.1. Source population

The source populations were all obstetric care givers in public health institution at Wolaita zone SNNPR regional state.

4.3.2. Study population

Study populations were those selected obstetric care givers who are working in maternity unit of selected health facilities.

4.3.3. Eligibility criteria

4.3.3.1 Inclusion criteria

Participants from each sampled health facilities were enrolled to the study after getting their confirmation to work in delivery units either on regular basis, by rotation or at night duty regardless of the time duration which provider stayed in delivery unit.

4.3.3.2 Exclusion criteria

Those who not voluntary to participate were excluded from the study. Also the providers on sick leave, annual leave and unwilling to participate was out of the study.

4.4. Sample size determination

A total number of health professionals working in wolaita zone public health institution is 770. According to studies conducted to assess utilization of partograph and factors affecting utilization of partograph North Shoa, the prevalence of partograph utilization among health care providers was 40.2%. The required sample size of eligible participants for the study is determined by using a single population proportion formula as follows.

$$n = \frac{(Z_{\alpha/2})^2 \times pq}{d^2}$$

Where,

n= the desired sample size

q=1-p

p= the proportion taken from the research done North Shoa Zone were (40.2%)

Z= is the standard normal score set at 1.96 (95% confidence interval)

d= is the margin of error to be tolerated (5%)

The sample size is calculated using the following formula:

$$n = \frac{(Z_{\alpha/2})^2 \times pq}{d^2}$$
$$= \frac{(1.96)^2 \times (0.402 \times 0.598)}{(0.05)^2} = \frac{0.926}{0.0025} = 369.4$$

Since, the source population was less than 10,000, correction factor was used to estimate the final sample size required.

$$n_f = \frac{n}{1 + \frac{n}{N}}$$

n_f =final sample size

N=total number of source population

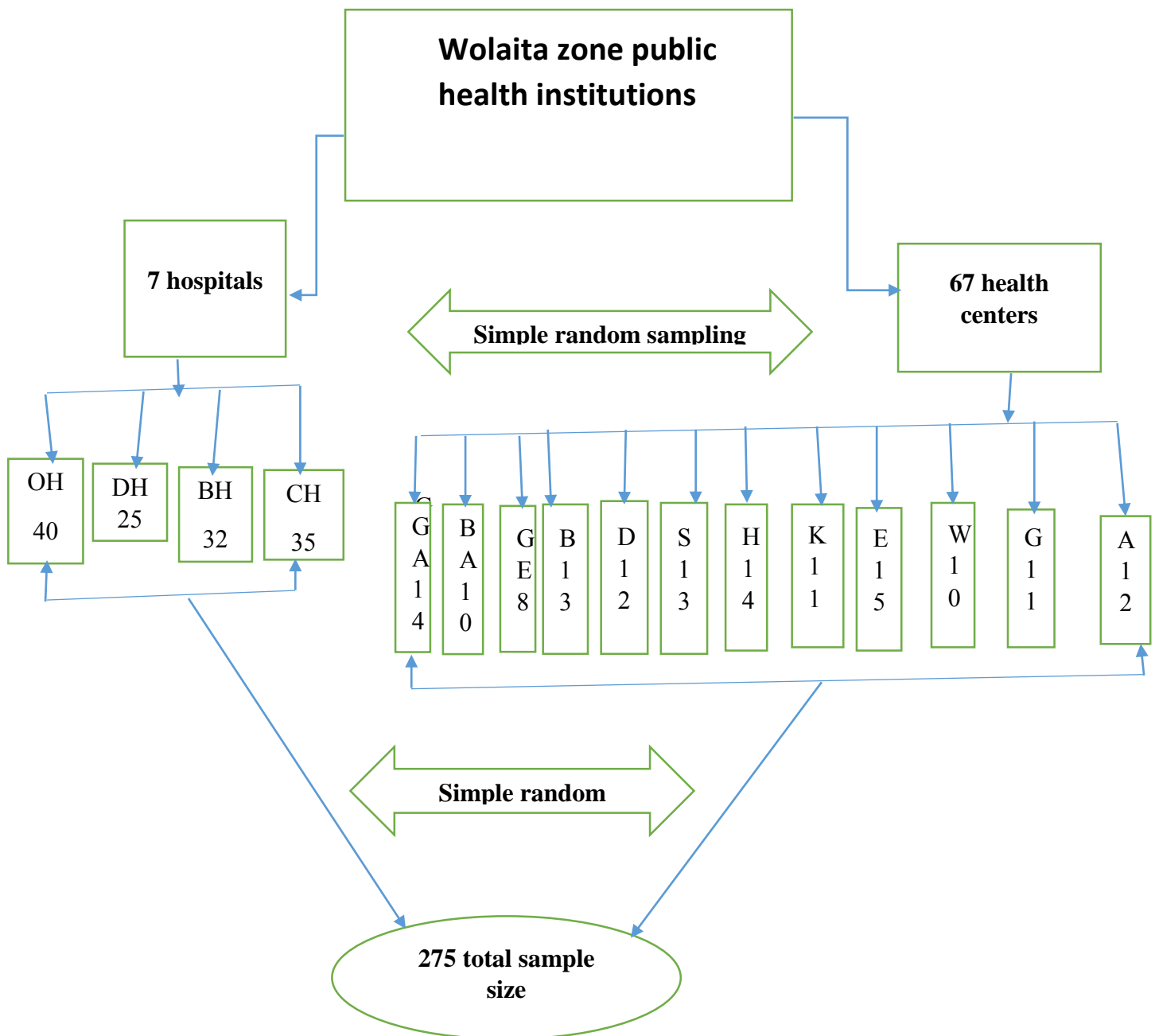
$$n_f = \frac{369.4}{(1 + (369.4/770))}$$

$$n_f = 250$$

Taking non-response rate, the total sample size for this study was 250+25=275

4.5. Sampling procedure

The selection of Public health institution was by using simple random sampling method from all health institution in Wolaita zone. All obstetric care providers in the study area were considered as study participants and each participant was selected by using random sampling method. In Wolaita Zone there are three general and four primary hospitals with 67 health centers. Among these, by using simple random sampling method 4 hospitals and 12 health centers were selected. All obstetric care providers in the study area was considered as study participants and each participant was selected by using random sampling method.



OH=otona hospital, DH=dubo hospital, BH=bitena hospital, CH=Christian hospital, BHC=bodit heath center, DHC=dimtu health center, SHC=shanto health center, HHC=humbo health center, KHC=kindo health center, EHC=edo health center, WHC=wadu health center, GHC=gasube health center, AHC=areka health center, BAHC=badessa health center, GAHC=gacheno health center, GEHC=gelan health center

Figure 4 schematic diagram of sampling diagram

4.6 The study variables

4.6.1 Dependent variable

- Partograph utilization

4.6.2 Independent variable

- Socio-demographic characteristics
- Sex, age, service year, level of education.
- Obstetric care providers' factors: knowledge, attitude, training.
- Health facilities factors: work load, supervision, availability of partograph and place of work

4.7 Operational definition

Utilizing of partograph: - Obstetric care providers who have been using partograph routinely for all laboring mother.

Obstetric care givers: - the providers include medical doctor, midwifery, nurse and health officers which are given delivery service by regular time, rotation and duty time.

Not utilizing partograph: - Obstetric care providers who have been using partograph sometimes or occasionally.

Good knowledge: - Obstetric care providers who score 50% and above to knowledge related questions.

Poor knowledge: - Obstetric care providers who score less than 50% to knowledge related questions.

Favorable attitudes: - Obstetric care providers who score mean value and above to attitude related questions.

Unfavorable attitudes: - Obstetric care providers who score less than mean value to attitude related questions.

4.8 Data collection

A pre-tested and structured self-administered questionnaire was used for data collection. The survey questionnaires are adopted from different literature developed for similar purposes by different authors, it was then modified to suit the local condition. The author permission was requested through email and phone communication(19). During data collection period one BSc midwife was assigned as supervisor from otona referral hospital and four diploma midwives was assigned as data collectors' based on their previous experience of data collection and related activity. Among four data collectors first one from kindo didaye primary hospital, second one from bale primary hospital, third one from bale health center and fourth one from edo health center.

4.9 Data quality assurance

Data collectors were trained on data collection tools to understand the objective of study, the flow tools, contents of tools, to ensure ethical issues during data collection and, the principal investigator and field supervisor was recheck completeness and clarity of the questionnaire immediately after interview at field level and during submission. The questionnaire was pre-tested at ello erasho health center among 5% of the study subject & the necessary arrangements & corrections were made to standardize & ensure its validity.

4.10 Data management and analysis

The collected questionnaire was checked manually for its completeness, coded and entered into EpiInfo version 3.5.1 statistical package, then exported to SPSS version 23.0 for further analysis. Descriptive and summary statistics were done. The data analysis was presented on table, pie chart and different type of graphs. Both bivariate and multivariate logistic regression analysis was used to determine the association of each independent variable with the dependent variable. Variables significant in bivariate analysis ($P < 0.2$) were entered into a multivariate logistic regression model to adjust the effects of cofounders on the outcome variable. Odds ratio with their 95% confidence intervals were computed to identify the presence and strength of association, and statistical significance was declared if $p < 0.05$.

4.11 Ethical consideration

Ethical clearance was sought, from, department of Nursing and Midwifery, College of Health Sciences, Addis Ababa University, Research and Ethics Committee. An official letter from the department of nursing and midwifery at Addis Ababa University was written to Wolaita Zone Health Office to obtain permission to carry out the study at the selected hospitals and health centers. Informed written consent was obtained from each study participants, before the interview. Any personal identification of the study participants were not recorded during data collection. Confidentiality of information was secured by keeping the questionnaires and data in a secured place.

4.12 Dissemination of the result

The study result will be submit to Addis Ababa University College of Health Sciences as a partial fulfillment of the requirements for Master's Degree in maternity and reproductive health in Nursing. It will also be disseminate to SNNPR Regional Health Bureau, Wolaita Zone health office and to the organization or institution or individuals who have direct or indirect input to the project. All attempts will made to present on different professional conferences and publishing on local/international journals.

5. Results

5.1 Socio-demographic characteristics of study participants

A total of 275 obstetric care providers were included in the study (response rate=97.8%). About more than half (51.7%) of obstetric care providers were males. The mean age of the respondents were 30.41 years (Standard deviation (SD) =5.029). Most (59.5%) of them were working at the health center. Regarding their profession (32.7%) were BSc midwifery (Table1).

Table 1: Socio-demographic characteristics of obstetric care providers in Wolaita zone SNNPR Ethiopia, 2017 (N=269)

Variable	Category	Frequency	Percent
Respondents sex	Male	139	51.7
	Female	130	48.3
Marital status of respondents	Single	80	29.7
	Married	178	66.2
	Divorced	11	4.1
Respondent's age	20-24	28	10.4
	25-29	108	40.1
	30 or more	133	49.4
Health facility	Health center	160	59.5
	Hospital	109	40.5
Respondent's profession	Gynecologist	12	4.5
	Medical doctor(general practitioner)	9	3.3
	Health officer	36	13.4
	BSc nurse	43	16.0
	Diploma nurse	19	7.1
	BSc midwifery	88	32.7
	Diploma midwifery	62	23.0
Respondent's religion	Protestant	163	60.6
	Muslim	24	8.9
	Orthodox	71	26.4
	Catholic	11	4.1
Respondent's working experience	1-3	81	30.1
	4-6	117	43.5
	7 or more	71	26.4
Training on partograph	Yes	223	82.9
	No	46	17.1

5.2 Partograph utilization

The almost all 269(100%) of obstetric care providers responded as they utilizes partograph to monitor labor. Of those who were routinely utilizing partograph 193 (71.1%) and 76(28.3%) of participants reported not utilizes partograph routinely.

5.3 Reasons for not utilizing partograph

According to this assessment out of 269 respondents the main factors that were reported by obstetric care givers as reasons for not utilizing partograph include; unavailability of partograph 45(16.7%), lack of training 34 (12.6%) followed by lack of supervision 29 (10.8%) how to use the partograph being used at their facilities.

In addition 1 (0.4%) absence of managerial body in facility for the utilization of partograph, 16 (5.9%) respondent has difficulty to plot properly on the partograph because its time consuming. On the other hand 15(5.6%) of the participants were uses different tools instead of partograph.

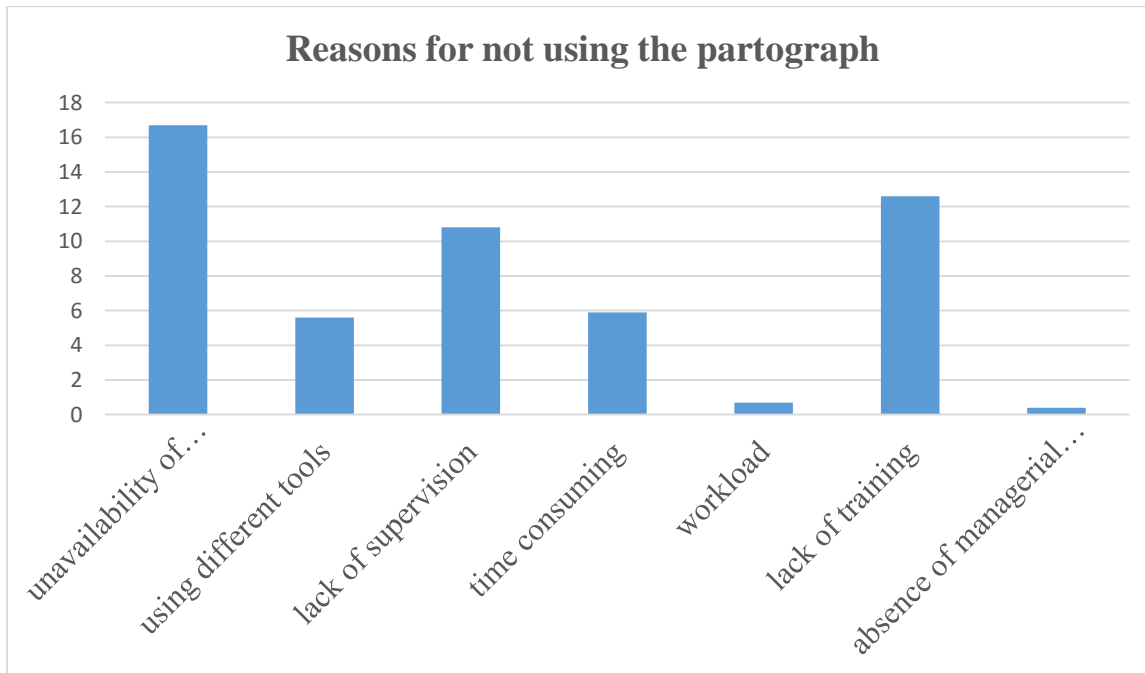


Figure 6: Reasons for not using the partograph by obstetric care providers of public health institution in Wolaita zone, SNNPR Ethiopia; 2017

5.4 Knowledge and attitude of obstetric care providers towards partograph utilization

Knowledge towards utilization partograph, more than half (61.7%) of the care providers were knowledgeable. All (100%) of the participants were learned about partograph while at college or university. About (82.9%) of them received on the job training on partograph. The majority (80.3%) of obstetric care providers had a favorable attitude towards partograph.

Table 2:-Knowledge of obstetric care givers towards partograph utilization in Wolaita zone SNNPR, Ethiopia, 2017 (n=269)

Variable	Frequency	
	Yes	No
Definition of partograph A salient feature of recording the whole process of labor	165(61.3%)	104(38.7%)
Components of partograph Identification, Assessment of fetal, maternal wellbeing and assessment of labor progress	215(79.9%)	54(20.1%)
Knowledge about the start time of plotting partograph At 4cm cervical dilation	215(79.9%)	54(20.1%)
Frequency of plotting on partograph once active phase of labor started Once/30 minutes	182(67.7%)	87(32.3%)
Cervical dilatation should be plotted on partograph every 4 hours	220(81.8%)	49(18.2%)
Partograph is decided to detect deviation from normal delivery that develop as labor as labor progress	202(75.1%)	67(24.9%)
Types of client that needs partograph use All mother in active first stage of labor	235(87.4%)	34(12.6%)

Table 3:-Attitude of obstetric care givers towards partograph utilization in Wolaita zone SNNPR, Ethiopia, 2017 (n=269)

Variable	Agree	Disagree
To follow women in labor, using partograph is beneficial for the laboring women	257(88.1%)	32(11.9%)
The partograph is very favorable as it alert skilled birth attendant of any deviation from normal	236(87.7%)	33(12.3%)
By using a partograph, health care providers are able to identify problems, recognize complications early.	235(87.4%)	34(12.6%)
Skilled birth attendant must use a partograph on every laboring mother	239(88.8%)	30(11.2%)
Using partograph enables health care providers perform essential basic interventions and make referrals to appropriate levels of care when necessary.	240((89.2%)	29(10.8%)
Using partograph is not beneficial as the estimate it gives is exaggerated.	24(8.9%)	245(91.1%)
Using partograph misleads management as the progress of labor and the partograph alert line are not aligned in most pregnant woman.	23(8.5%)	246(91.5%)

5.5 Factors associated with partograph utilization by obstetric care providers

According to bivariate logistic regression and multivariate logistic regression analysis, factors significantly associated with partograph utilization were identified. Logistic regression for factors associated with partograph utilization was performed. As shown in Table 4 below in bivariate logistic regression analysis age of respondents(>30 yrs. old)(COR=11, CI=4.5-28.4), respondents service year(7 or more) (COR=14.7,CI=5.9-36.3), Profession(midwifery)(COR=0.53,CI=0.14-1.895), respondents being knowledgeable(COR=5.532, CI=3.1-9.8), with favorable attitude towards partograph utilization(COR=4.8, CI=2.6-9.1), respondents working place(COR=1.852, CI=1.05-3.3)and training (COR=0.06, CI=0.028-0.132)were significantly associated with partograph utilization. In bivariate analysis the factors found to be significantly associated with partograph utilization were: work experience of respondents, age of respondents, health facility they were working, profession, on-job training, knowledge and attitude of obstetric care providers towards partograph utilization.

However, in multiple logistic regression analysis: service year, on job training, knowledge and attitude of obstetric care providers towards partograph were significantly associated with partograph utilization. Those who were work experience greater than 7 years were more about 5 times more likely utilize partograph than who were experienced (AOR=4.9,95% CI:1.53-15.8). Those obstetric care providers who received on the job training on partograph were about 1 times more likely to utilize partograph than who haven't received on- job training(AOR=0.161,95% CI:0.060-0.432). In addition, those who were knowledgeable on partograph were about 3 times more likely to utilize partograph than the non-knowledgeable (AOR=3.35, 95% CI: 1.614-6.96). Furthermore, those who had a favorable attitude towards partograph utilization were about 3 times more likely to utilize partograph than those with non-favorable attitude (AOR=2.997, 95% CI: 1.278- 7.029) (Table 4).

Table 4: Bivariate and Multivariate analyses of factors associated with partograph utilization among obstetric care providers in public Health institution in wolaita zone SNNPR, southern Ethiopia, Feb, 2017(n=269)

Variables	Category	Partograph utilization		COR with 95% CI	AOR with 95% CI
		Yes	No		
Age of respondent	20-24	11	17	1	1
	25-30	65	43	2.336[0.988,5.469]	1.406[0.475,4.165]
	30 or more	117	16	11.30[4.500,28.384]	2.467[0.690,8.818]
Respondent's service year	1-3	31	50	1	1
	4-6	98	19	8.319[4.279,16.175]	3.916[1.661,9.231]
	7 or more	64	7	14.747[5.997,36.26]	4.930[1.53,15.878]*
Respondent's profession	Medical doctors	18	3	1	1
	Health officer	22	14	0.262[0.065,1.056]	0.269[0.035,2.043]
	Nurse	39	23	0.283[0.075,1.065]	0.283[0.041,1.956]
	Midwifery	114	36	0.528[0.147,1.895]	0.379[0.062,2.324]
Training on management of labor	Yes	10	36	0.06[0.028,0.132]	0.161[0.060,0.432]*
	No	183	40	1	1
Knowledge	Knowledgeable	141	25	5.532[3.114,9.826]	3.354[1.614,6.969]*
	Not knowledgeable	52	51	1	1
Attitude	Favorable attitude	171	46	4.820[2.559,9.082]	2.997[1.278,7.029]*
	Unfavorable attitude	23	30	1	1
Respondent's working place	Hospital	23	86	1.852[1.052,3.261]	1.085[0.479,2.456]
	Health center	53	107	1	1

*=p-value<0.05 1=reference point

6. Discussion

This study tried to identify level of partograph utilization and associated factors among obstetric care providers in Wolaita Zone, southern Ethiopia. In this study, 193 (71.1%) used routinely utilized partograph and 76(28.3%) of participants reported not utilizes partograph routinely; less service year, absence of on-job training, unfavorable attitude towards partograph utilization, Knowledge of obstetric care providers were significantly associated with partograph utilization. However, this finding is higher than the study conducted in North Shoa Zone in Amhara region (40.2%)(162), Jimma University Specialized Hospital (6.9%) (19), Amhara region (29%)(25), Niger Delta Region of Nigeria (32.6%-37.5%), Addis Ababa (57.3%) (26) and in University of Calabar Teaching Hospital, Calabar, Nigeria of obstetric (13.6%). The differences between these findings might be due to trainings provided on partograph, differences in the place of the study which encourage to use partograph with different strategies in partograph implementation, different levels of knowledge and attitudes of care providers towards partograph utilization(14 , 19, 27, 28).

In addition to above explanation, the other reason could be the difference in the method of data collection procedure, the study done in University of Calabar Teaching Hospital, Calabar, Nigeria of obstetric revealing of partograph utilization by reviewing the records, sample size and time of this study proceeded from previous study, as time goes on, there is a change in policy, strategy and improvement in implementation of the partograph utilization (28). Involvement of midwives on the study conducted in Niger Delta (Nigeria) may also another reason for this gap, as such, they may have had adequate knowledge about partograph secondary to great chance to be trained on partograph than other professions. In contrast to this, relatively large numbers of study participants from different professions participated in our study (13).

In this study, the reasons for not using partograph during labor were unavailability of partograph, lack of on-job training, lack of supervision, absence of managerial body, time consuming, using different tools. This finding is similar with the studies in North Shoa and University of Calabar Teaching Hospital, Calabar, Nigeria(16, 19). Also in the present study, significantly affects utilization partograph for laboring mother were service year (year of work experience), on job training, knowledge of partograph and attitude of obstetric care providers towards partograph and significantly associated with partograph utilization.

Health care providers year of service was also associated with partograph utilization (AOR=4.9,95% CI:1.53-15.8) i.e. those health providers whose service year more than 7years were 5 times more likely to use partograph to monitor the progress of the labor. This result consistency with study which done in North Shoa, Ethiopia(19) and same with study done in the Niger Delta Region of Nigeria ($\chi^2=4.818$, $df=4$, $p<0.05$). This may be due to the having exposure to different on-job experience, long time experience of partograph utilization for health providers have more opportunity of using of partograph for all laboring mothers.

On-job training on partograph had a significant association with partograph utilization. Those obstetric care providers who received on job training on partograph were more likely to utilize partograph than who haven't received on- job training (AOR=0.161, 95%CI: 0.060, 0.432). This finding consistency with the study done North shoa, Northern Ethiopia (AOR=2. 86, 95% CI: 1.69, 4.86) and study done in Amhara, Ethiopia(15, 29). This might be due to the fact that, obstetric care providers who received on-job training had better knowledge about partograph than others that in turn improves their partograph utilization.

Knowledge about partograph is also one of the influencing factors for partograph utilization. Obstetric care providers who were knowledgeable about partograph were about 3 times more likely to utilize partograph than those who were not knowledgeable (AOR=3.354, 95% CI: 1.614, 6.969). This similar with study done in north shoa, Ethiopia (AOR=3. 79, 95% CI: 2.05, 7.03), also is in line with the study done in Niger delta region of Nigeria ($\chi^2 = 32.298$. $Df = 1$; $P<0.05$)(13) and also agrees with study done in in the University of Calabar Teaching Hospital, Calabar, Nigeria ($X^2=52.5$, $P=.00$). This implies that, having knowledge about partograph is important to implement partograph during labor.

In addition to above factors, this study revealed that attitude as another factor influencing partograph utilization. Those who had a favorable attitude towards partograph utilization were about 3 times more likely to utilize partograph than those with non-favorable attitude (AOR=2.997, 95% CI: 1.278- 7.029). Partograph utilization was significantly higher among obstetric care providers who had a favorable attitude as compared to those who had the unfavorable attitude. This finding agrees with the study done in North shoa, Northern Ethiopia(AOR=2. 35, 95% CI: 1.14, 4.87) and also line with study done in Amhara region, North Ethiopia(14, 19). This could be due to the fact that, having a good attitude towards partograph utilization might come after having knowledge about partograph that may influence the utilization of partograph.

7. Conclusion and recommendation

7.1 Conclusion

The study revealed that higher proportion of obstetric care providers use partograph to follow the progress of labor than previously conducted study. Service year (year of work experience), on job training, knowledge of partograph and attitude of obstetric care providers towards partograph and significantly associated with partograph utilization. Reasons for not using partograph during labor were unavailability of partograph, lack of on-job training, lack of supervision, and absence of managerial body, time consuming, using different tools.

7.2 Recommendation

To Wolaita Zonal health Bureau

- The WHO standards for recording in the partograph should be accessible to all institutions using the partograph to maintain consistency in its utilization. The obstetric care providers should monitor all laboring mothers with partograph, rather than using other monitoring tools that lack the parameters of partograph.

To stake holders

- Making the obstetric care givers stable by providing incentives to decrease turnover of staffs.
- A provision of on-job training on partograph is mandatory, to improve knowledge, skill and attitude of obstetric care providers towards partograph utilization.
- Monitoring and supervision of obstetric staff to ensure appropriate use of the partograph should been given highest priority by every hospital administrator and primary health care unit leader.

To obstetric care providers

- The partograph should be used for every woman in labor and taken seriously by the care providers and it should be considered as a tool for diagnosing problems during the progress of labor. A great commitment and favorable attitude towards partograph utilization are also mandatory.

8. Strength and limitations of the study

8.1 Strength of the study

Being participants selected by simple random sampling method makes the study generalizable.

8.2 Limitation of the study

Small sample size hampers the precision of some associations. Since information about partograph utilization was obtained from respondents through self-administered questionnaires, rather than observation; response bias and social desirability bias are the potential limitations of this study. However, numerous scientific procedures were employed to minimize the possible effects. To reduce the response bias, for instance, the aim of the study was discussed with respondents in order to obtain genuine response. In addition, procedures such as supervision, pretest of data collection tool, and adequate training of data collectors and supervisors were utilized.

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Annex II: Study information sheet

This sheet is to be ready for the participants of the study.

Good morning/afternoon, my name is _____ and I am one of the data collectors for the study being conducted by Addis Ababa University, College of Health Sciences, department of Nursing and Midwifery.

The objective of the study is to assess the magnitude of partograph use and factors that affect utilization of partograph among obstetric caregivers in public health institutions of Wolaita Zone, SNNPR, and Ethiopia. You are selected to be a participant of this study if you give me consent after you have understood the following information sheet:

Back ground of the study: A partograph is one of the valuable appropriate technologies in use globally for improved monitoring of labor progress, maternal and fetal wellbeing. It is an important tool for managing labor. The partograph is used to recognize any deviation during labor which causes of problems that lead to maternal morbidity and mortality.

Objective of the study: The aim of this study is to assess the magnitude of partograph use and factors that affect utilization of partograph among obstetric caregivers in public health institutions of Wolaita SNNPR state, Ethiopia.

There is no benefit, payment or possible risk associated with participating in this study except the time spent for responding to the questionnaire. All information given by you was kept confidential. Your participation is voluntary and you are not obligated to answer any question you do not willing to respond. If you feel any discomfort with the question, it is your right to drop it any time. If you have questions regarding this study, you can contact the principal investigator.

Address of the principal investigator:

Mesfin Markos: Phone Number: 0916069308, E-mail: mesfinmarkos92@gmail.com

Annex III. Consent form

I, the selected participant of the study have read the information sheet carefully and understood the purpose, benefit, and what is required from me and what is the consequences of the study on me if I take part in the study. I understood that all the information regarding me, like name and all answers given by me should not be transferred to the third party without my permission. I also understand that I can decide whether or not to take part in the study or even withdraw from the study at any time.

The participant Sign _____

Questionnaire identification number _____

Name of the data collector _____ Signature _____ date _____

Name of the supervisor _____ Signature _____ date _____

Annex IV: English questionnaire

Questionnaire for assessment of partograph utilization and associative factors in Wolaita public health institution SNNPR, Ethiopia 2017.

Part I. Socio-demographic characteristics of study participants in Wolaita Zone SNNPR 2017 (Select the most appropriate answer and tick one from the list below)			
NO	Questions	Response option	Code
101	How old are you?	_____ years	
102	Sex	1. Female 2. Male	
103	What is your current marital status	1. Not married 2. Married 3. Divorced 4. Widowed 5. Other specify _____	
104	Religion	1. Protestant 2. Muslim 3. Orthodox 4. Catholic 5. Other specify _____	
105	What is your profession	A. Gynecologist B. General practitioner C. Health officer D. Nurse (BSc) E. Nurse diploma F. Midwives BSc G. Midwives diploma	
106	Currently working in	1. Hospital 2. Health center 3. Other,specify _____	
107	Service year (enter number) _____ year	_____ years	
108	Did you receive any in service training in the management of a pregnant mother in labor?	1. Yes 2. No	
Part II. Knowledge related questions towards partograph utilization, in Wolaita Zone SNNPR 2017. (Please tick one for each statement below to indicate your response)			

201	Have you heard about partograph?	1. Yes 2. No	
202	What is partograph?	1. A tool to be used only in active phase of labor 2. A graphic methods of recording 1st stage of labor 3. A salient feature of recording the whole process of labor 4. Other specify_____	
203	What are components of partograph?	1. Assessment of Fetal, maternal wellbeing and assessment of labor progress 2. Others specify_____	
204	During attending women in labor, when do you start plotting on the partograph?	A. When labor s diagnosed B. At 4cm cervical dilatation C. When complication is detected D. At 3cm cervical dilatation E. Other specify_____	
205	How often is it used once active phase of labor started?	a. Once/30 Minutes b. Once/Hour c. Once/4 Hours d. Once /6 Hours e. Other specify_____	
206	Cervical dilation should be plotted on partograph every 4hrs.	1. Yes 2. No	
207	Partograph is designed to detect deviations from normal delivery that develop as labor progresses	1. Yes 2. No	
207	Type of client that needs partograph use	1. Primigravida 2. Multiparus 3. All women in active phase of labour 4. On eclamptic patient	
Part III Attitude related questions towards partograph utilization: Please, tick one box to indicate to what extents do you agree or disagree with the following statement			

301	To follow women in labor, using partograph is beneficial for the laboring women	A. Strongly agree B. Agree C. Uncertain D. Disagree E. Strongly dis agree	
302	The partograph is very favorable as it alert skilled birth attendant of any deviation from normal	A. strongly agree B. Agree C. Uncertain D. Disagree E. Strongly dis agree	
303	By using a partograph, health care providers are able to identify problems, recognize complications early.	A. strongly agree B. Agree C. Uncertain D. Disagree E. Strongly dis agree	
304	skilled birth attendant must use a partograph on every laboring mother	A. Strongly agree B. Agree C. Uncertain D. Disagree E. strongly disagree	
306	Using partograph enables health care providers perform essential basic interventions and make referrals to appropriate levels of care when necessary.	1. Strongly agree 2. Agree 3. Uncertain 4. Disagree 5. strongly disagree	
307	Using partograph is not beneficial as the estimate it gives is exaggerated.	1. Strongly agree 2. Agree	

		<ul style="list-style-type: none"> 3. Uncertain 4. Disagree 5. strongly disagree 	
308	Using partograph misleads management as the progress of labor and the partograph alert line are not aligned in most pregnant woman.	<ul style="list-style-type: none"> 1. Strongly agree 2. Agree 3. Uncertain 4. Disagree 5. strongly disagree 	
Part V Characteristics of Partograph utilization and Factors affecting utilization of the Partograph in labor monitoring.			
401	Have you been using partograph to monitor labor?	<ul style="list-style-type: none"> 1. Yes 2. No 	
402	If *Yes* to Q401, how often is it used?	<ul style="list-style-type: none"> 1. Routinely(for all laboring mother) 2. Occasionally 3. sometimes 	
403	If “occasionally” or “sometimes” to Q402, What would make difficult to use the partograph routinely when monitoring women in labor? (you can tick more than option)	<ul style="list-style-type: none"> 1. Non-availability of partograph 2. Using different monitoring tools 3. Lack of supervision 4. Time consuming to use 5. Workload 6. Lack of trained human power 7. Shortage of staff 8. Absence of managerial policy 	
404	Did you learn about partograph while you are in college/university?	<ul style="list-style-type: none"> 1. Yes 2. No 	

Annex V: Declaration

I, the undersigned Reproductive Health and Maternity Nursing student declares that the thesis is my original work in partial fulfillment of the requirement for the degree of master of Reproductive Health and Maternity Nursing.

Name:-Mesfin Markos (BSc)

Signature _____

Place of submission: Department of Nursing and Midwifery, college of Medicine and Health science, Addis Ababa University

Date of submission _____

This thesis work has been submitted with my/our approval as university advisor(s)

Advisors

Name

signature

1. Mrs.Yeshi Assefa (RN, BSc, MSC)

2. Mrs. Semarya Berhe (ASSISTANT PROFESSOR)
