



ST. PAUL'S HOSPITAL MILLENNIUM MEDICAL COLLEGE

DEPARTMENT OF PUBLIC HEALTH

**KNOWLEDGE AND ATTITUDE OF PARTOGRAPH AND ITS
ASSOCIATED FACTORS AMONG OBSTETRIC CARE
PROVIDERS IN SAINT PAUL'S HOSPITAL MILLENNIUM
MEDICAL COLLEGE**

**STUDENT'S RESEARCH REPORT TO BE SUBMITTED TO THE
DEPARTMENT OF PUBLIC HEALTH SPHMMC IN PARTIAL
FULFILLMENT FOR THE REQUIREMENT OF DEGREE OF DOCTOR OF
MEDICINE**

July, 2018

ADDIS ABABA, ETHIOPIA



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Acronyms

WHO - World Health Organization

MMR - Maternal mortality ratio

SPHMMC- Saint Paul's Hospital Millennium Medical College

SPSS - Statistical Packaging for Social Science

CS- Cesarean Section

A.A- Addis Ababa

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ABSTRACT

Background- The Partograph is a graphic record of progress of labor, and relevant details of the mother and fetus plotted against time for intra-partum monitoring, providing a pictorial overview of labor. Ethiopia is one of the ten countries contributing to 60% of the global maternal deaths with an estimated maternal mortality ratio of 676,000 per 100,000 live births. Though it is recommended for physicians and surrounding health workers to apply the partograph to set reasonable expectations for labor progress, its use is hindered by many factors. Therefore, this study aims to assess the utilization and associated factors of partograph among the obstetric care providers in one of the largest hospitals of the country, SPHMMC.

Objective- To assess the utilization and associated factors of partograph in SPHMMC labor ward for labor progress follow up among obstetric health care workers.

Methods- An institution based descriptive cross-sectional quantitative study was carried out among the health care providers working in the obstetrics and gynecology department. Self-administered questionnaire was used for data collection and analyzed using Statistical package for Social Sciences (SPSS 21) software. Descriptive statistics, bivariate and logistic regression analyses were used to identify the associated factors.

Results- Out of 110 obstetric care providers, ninety seven (88.2%) of the care providers had a good knowledge of partograph utilization. While almost 101 (91.8%) of the obstetric care providers in this study had a favorable attitude towards partograph. About 64 (58.2%) of the participants routinely used the modified WHO partograph to monitor women in labor. Amongst others, the main reasons advanced for the non-routine utilization of this tool were “shortage of staff” (27.3%),

Conclusion- The findings suggested that the obstetric care providers at St. Paul’s Hospital Millennium Medical College had good level of knowledge and favorable attitude towards partograph utilization for monitoring labor.

INTRODUCTION

1.1. Background of the study

It was in 1954 when Friedman first introduced a graphical depiction of cervical dilation during following labor after studying a large number of women in USA(1) He then divided labor functionally into two parts; the early latent phase extending over 8-10 hours and up to about 3cm dilation. This was followed by an active phase, characterized by acceleration from about 3-10cm at the end of which deceleration occurred. And in 1969 Hendricks et al. demonstrated that, in the active phase of normal labor, the rate of cervical dilatation in primigravidas and multiparas varies little in character. In 1972 Professor Hugh Philpott and Caste did extensive studies on primigravid in Central and Southern Africa, and were able to identify deviations from the normal and provide a sound scientific basis for early intervention leading to the prevention of prolonged labor(2). Philpott constructed a plot for cervical dilatation in his population forming his major contribution, which was the partograph.

The Partograph is a graphic record of progress of labor, and relevant details of the mother and fetus plotted against time for intra-partum monitoring, providing a pictorial overview of labor(1). It contains three distinct sections where parameters for the progress of labor as cervical dilatation, descent of fetal head, and uterine contractions are recorded (2). It will also be used for monitoring fetal conditions with parameter as: fetal heart rate, membranes status liquor and molding of fetal skull. Additionally, the partograph can be used to monitor maternal condition including pulse rate, blood pressure, temperature, urine analysis drugs, IV fluids and oxytocin administration(2). So in general it is designed for recording maternal identification, fetal heart rate, color of the amniotic fluid, molding of the fetal skull, cervical dilatation, fetal descent, uterine contractions, whether oxytocin was administered or intravenous fluids were given, maternal vital signs and urine output(2).

In obstetric it is a one-page visual summary on a single sheet of paper, cost effective and affordable tool introduced as an early warning system to detect labor that was not progressing normally so that it would allow for timely transfer to occur to a referral center, for augmentation or cesarean section (CS) as required(1). It increases the quality and regularity of observations made on the mother and fetus by alerting obstetric care providers about deviations in maternal, fetal condition and progress of labor (1).

Name		Gravida	Para	Hospital number	
Date of admission	Time of admission	Ruptured membranes		hours	

Fetal heart rate	200 180 160 140 120 100 80		
Amniotic fluid Moulding	10 9 8 7 6 5 4 3 2 1 0	Hours	
Cervix (cm) (Plot X)	Descent of head (Plot O)	Hours	
Contractions per 10 mins	5 4 3 2 1		
Oxytocin u/L drops/min			
Drugs given and IV fluids			
Pulse and BP	180 170 160 150 140 130 120 110 100 90 80 70 60		
Temp °C			
Urine { protein acetone volume			

Fig 1. Modified Partograph (3).

Partograph utilization by the WHO was borne out of the Safe Motherhood Conference in Nairobi, Kenya in 1987, which is set out to address the worrisome statistics of maternal and infant mortalities worldwide. This conference concluded with “a call to action” demanding the health workers involved in the care of mothers and children take positive action immediately to reduce maternal mortality and morbidity. Among actions called for are; “All pregnant women in labor are managed by appropriately trained personnel using practical and relevant technology”. And the asset was the partograph, and to respond to this call WHO developed a format of printed modified partograph, beginning only in the active phase of labor, when the cervix is 4cm or more dilated(5).

1.2 Statement of the problem

One of the major determinants of the gap between the level and outcome of reproductive health between the developed and developing countries is the ratio of maternal mortality (4). There were more than 300,000 maternal deaths from complications during pregnancy or childbirth occurring worldwide in the year 2015. And almost 99% were in developing countries out of

which 66% were in Sub-Saharan African countries. This was also seen in the life time risk of a woman dying from preventable or salvageable complications of pregnancy and child birth in Sub-Saharan Africa being 1 in 31. On the contrary it was estimated to be 1 in 4300 in the developed regions (4).

Ethiopia is one of the ten countries contributing to 60% of the global maternal deaths (6). Despite the recognition of maternal mortality as a major public health issue, a minimum of 20,000 women die each year from pregnancy and childbirth related complications. It has estimated that the maternal mortality ration (MMR) of the country is at 676,000 per 100,000 live births, which is the highest among the world (6).

Ninety-nine percent of all maternal deaths occur in developing countries of out which more than half of these deaths occur in sub-Saharan Africa and almost one third occur in South Asia. Among the five major causes of maternal mortality in developing countries like Ethiopia (hypertension, hemorrhage, infection, obstructed labor and unsafe abortion_ the middle three (hemorrhage, infection, obstructed labor) are highly correlated with prolonged labor. Obstructed labor accounted for 8% of maternal deaths worldwide and 13% in Ethiopia (7).

Almost all of these deaths occurred in low-resource settings and most could have been prevented. About 830 women die from pregnancy or childbirth-related complications around the world every day. Furthermore, it is highly associated with birth trauma, birth asphyxia, still births, neonatal sepsis, and neonatal deaths. This can be prevented by using the partograph which is a cost-effective and affordable health interventions (8).

Though it is recommended for physicians and surrounding health workers to apply partograph to set reasonable expectations for labor progress to avoid unnecessary interventions and complications, its use is hindered by poor knowledge, lack of the charts in the labor wards, shortage of health care personnel, time consuming tasks for the low number of staff, and poor appreciation of its advantages in preventing labor complications. (9)

1.3 Significance of the study

This research will be beneficial due to the fact that the hospital enrolls the largest number of patients in the country and most being mothers. Since one of the millennium development goals is minimizing maternal and neonatal mortality the partograph has been one combating mechanism. It will be a moving point to assess the role and effectiveness of obstetric care providers in utilizing standard measurements.

2. Objectives of the study

2.1 General objective

The main objective of this study is to assess:

- To assess the knowledge and attitude of partograph and its associated factors in SPHMMC labor ward among obstetric health care workers in the year 2018.

2.2 Specific objectives

The specific objective this study is:

- To identify the knowledge of obstetric care providers working in SPHMMC regarding partograph
- To assess the attitude of obstetric care providers working in SPHMMC towards partograph
- To determine the contributing associated factors with the knowledge and attitude of the partograph amongst obstetric health workers in SPHMMC.

3. Literature review

In 2013 a research regarding the utilization and knowledge of partograph was conducted on a total of 30 public health institutions in Addis Ababa. Using a sample size of 202 obstetric care givers which included midwives, nurses, physicians and public health officers this study used a simple random sampling technique to select the eligible health professionals. The median age of these respondents was 27 years with duration of practice ranging from 1 up to 34 years. Out of 195 (100%) correctly completed questionnaires all knew what a partograph was. Of those who knew what a partograph was more than half of the respondents 102 (52.3%) had fair knowledge of the partograph while only 79 (39.0%) of them had good knowledge of it. The majority (83.6%) of the respondents in the public health institutions of Addis Ababa, Ethiopia had not received training on partograph where most cite their primary source of knowledge from universities or colleges. Only 104 (53.3%) of the respondents could explain the function of alert line while 161 (82.6%) of the respondents could explain the function of action line, which may indicate the need for very urgent steps to improve the knowledge of obstetric care givers on the partograph through in-service training and periodic seminars in order to maximize the utilization and proper use of the partograph. This study also revealed that only 32 (16.4%) of the respondents received in-service training on the partograph of whom more than half utilized the partograph in monitoring of women in labor(4).

In regard to its utilization the study in Addis Ababa concluded that 112 (57.3%) of the obstetric care givers at public health institutions reportedly used partograph to monitor mothers in labor. The comparison of utilization between obstetric care givers working in health centers to those working in hospital was showed to be 67.9% and 34.4% respectively. Proving that the partograph is an efficacious tool for monitoring labor and identifying women in need of an obstetric intervention, almost all (97.9%) of the respondents in Addis Ababa study admitted that the use of the partograph could prevent prolonged labor and facilitate early referral to specialized health facilities(4).

That same year another research was conducted in the public health institutions of Addis Ababa using a retrospective document review with an objective to assess the completion of the modified WHO partograph during labor. Using a random sampling technique this research selected 420 partographs out of which 174 (41.1%) had no recording of fetal heart rate pattern, 364 (86.7%) had no records of fetal head molding and only 113 (26.9%) had recorded the status of membrane. In the following parameters as measurements of cervical dilatation, 248(59.1%) partographs had been filled and 189(45%) did not have records of uterine contraction while descent of the presenting part was not recorded in 353 (84%) partographs. In conclusion this study revealed that though all the health units had the modified WHO partograph available most were not being properly completed. On further basis the majority of the obstetric care givers had few skills on the appropriate utilization reflecting a poor intrapartum care to the existing high perinatal and maternal mortality in the country(5).

There have been a couple of researches regarding the knowledge, practice and attitude of partograph done in parts of the country Ethiopia. These include public health institutions from eastern Ethiopia as DireDawa, Harari and east Hararge zone of Oromia regional state, North Shoa and east Gojjam. Out of 441 health professionals in the study done in eastern Ethiopia the mean age of the respondents was 26.8 years. These professionals had a mean duration of 4.28

years of service in health care delivery ranging between less than 2 years to 25 years. About 222 (51.4%) of them had received in service training about partograph and 231 (53.5%) of the total professionals could diagnose fetal distress using partograph. Only 196 (45.4%) of them had fair knowledge while 187 (43.2%) had good and 49 (11.3%) had poor knowledge. It showed that midwives were about 2.8 times more likely to have a good knowledge than general medical practitioners due to the fact that they have a better chance of training and exposure. This concludes that the presence of in-service obstetric care training, type of health institution and profession were the factors found to have impact on the knowledge of the partograph (6).

A cross-sectional study done that has been done in the Central part of Ethiopia; North Shoa included 92 health institutions providing obstetric care services in June 5 to 20, 2013. A total of 403 health personnel were selected about which half (50.4%) were males and had a mean age of 26.2 years. The duration of practice ranged between 1 and 37 years, were 235(58.3%) had a diploma in their profession. More than two thirds (70.5%) of the care providers had knowledge about the partograph and almost all (99.8%) learned about it in college or universities they have been in. Those providers who were knowledgeable about partograph were about 4 times more likely to utilize partograph than the non-knowledgeable. The majority (83.6%) had a favorable attitude and 327(81.1%) of the obstetric care providers utilize partograph to monitor progress of labor in mothers. Among those not using partograph using different monitoring tools like clinical records, monitoring charts, piece of paper than the partograph accounted about 52.6%. While 68(41.21%) cited shortage of staff, lack of human power and un-availability of the partograph as obstacles (7, 8).

In East Gojjam 273 participants were selected from 103 public health facilities to conduct a study regarding their knowledge and attitude to the utilization of partograph. In this study more than half, 153(56.1%), of the obstetric care givers had good knowledge about the partograph but there is a knowledge gap in specific areas like when to start plotting on the partograph and the functions of the alert line on the partograph. Above half, 150 (55%), of the obstetric care providers in this study had a favorable attitude towards partograph but only 111 (40.7%) of the caregivers agreed to use partograph. Those who had favorable attitude were those working in a hospital and they were more likely to have better knowledge as compare to unfavorable knowledge (9).

On another part of the country in Bale zone, the documentation status of modified WHO partograph on a total of 508 sampled partograph were allocated from 44 maternity service provider health institutions. Among the reviewed medical records only 342 (67.3 %) had partograph forms and 103 (30.1 %) were not totally recorded while 239 (69.9 %) were recorded only in some manner. This finding was against the WHO recommendation which emphasize on monitoring of all labor with the aids partograph. The study also revealed that in general, the overall poor documentation of the partograph found in the present study could reflects the presence of skill gap among health care professionals on how to use partograph forms and poor quality of intrapartum care(10).

These results imply that knowledge of obstetric care givers on partograph may be inadequate for better utilization of partograph in public health institutions and this seems somewhat comparable with the same study done in Nigeria. The study done in Nigeria was conducted in two hundred

ninety obstetric care workers in three tiers of health care delivery system that form the bulk of skilled birth attendants in Nigeria. The age of these respondents range of the subjects spanned 24 to 58 years with a duration of service ranging from less than a year to 35 years. More than half of the respondents had fair knowledge of the partograph, while less than one-third of them had a good knowledge of it. However in correctly defining partograph as a simple graphic recording of labor and salient conditions of the mother and fetus against time in hours, about two-thirds of the respondents were unable to do so. In the study in Nigeria being trained personnel showed a significant association with a better knowledge of the partograph. Among the three levels of health centers the workers at the General Hospital which is the secondary healthcare facility had a better knowledge than those at the University Teaching Hospital, which is a tertiary health facility (11).

Nigerian study showed most of the respondents indicated that the partograph can be used in detecting prolonged labor (71.0%), poor progress of labor (71.0%), insufficient uterine contractions (62.1%), satisfactory progress of labor (62.8%), suspected fetal distress (60.7%), need for labor augmentation (60.3%), abnormal fetal heart rate (58.6%), need for Caesarean delivery (57.2%), obstructed labor (56.6%), and dehydration in the mother (41%)(11). In the attempt to identify the factors militating against the use of partograph little or no knowledge on the partograph (79%), non-availability of the instrument in labor wards (58.6%), and shortage of staff (46.9%), 24.1% time consuming were seen in the study in Nigeria. And little or no knowledge of the partograph (30.66%), much detail to fill (10.48%), time consuming (28.23%), lack of adequate number of personnel (6%), 'doctors do that' (16.13%), and lack of training (8.06%) were the reasons identified in the study in Addis Ababa (4).

African countries besides Ethiopia and Nigeria others like Cameroon and Malawi have been able to conduct research studies on partograph. In urban referral public health institutions found in north and south-west Cameroon about one-third (31%) of the respondents had poor and most (39.4%) had fair while a little higher than a quarter of the participants (29.4%) were found to have a good knowledge. Though not statistically significant this study showed that more females (31.1%) had good knowledge than males (20%). According to some reasons that have been cited for the non-routine utilization of the partograph 6.3% responded that it was unavailable (12).

On the other hand in Malawi's south-west zone 1070 of available recorded partographs were reviewed showing that the health care providers did not accurately use the partograph. And shortage of the healthcare workers, complexity of the charts, knowledge and attitude were some reasons for the poor documentation illicit. Overview studies like this point out that partograph is the way to properly monitor the progress of labor (13).

4. Methods and materials

4.1. Study area

The research was conducted in the gynecological and obstetrics labor ward of St. Paul's Hospital Millennium Medical College in the year 2018. St. Paul's Hospital Millennium Medical College is the second largest hospital in Ethiopia, found in 1969 by Emperor Haile Selassie. It has 1200 clinical and non-clinical staff members with over 13 departments. The department of obstetrics and gynecology is one the major departments providing health care with the joint team work of doctors, nurses and midwives serving laboring mothers.

4.2. Study design

An institution based cross sectional study design was selected as an appropriate method to conduct this particular research.

4.3. Source population

All obstetric care providers working in the obstetrics and gynecology department at SPHMMC.

4.4. Study population

All obstetric care providers including midwives, interns and year one residents working at SPHMMC.

4.5 Inclusion and exclusion criteria

Inclusions

The study was conducted amongst all obstetric health care professionals at the institution's labor ward including all midwives, interns and residents.

Exclusions

This study limited its respondent scale to those not able to participate due to work load, unavailability at time of data collection or those who have been an employee for only a month in the hospital.

4.6. Sampling

The sample size was calculated using single population proportion formula: considering the following assumptions; the proportion (p) for the level of knowledge on the partograph 57.3% based on previous study in North Shoa Zone (8), 95% confidence interval, and 100% response rate. Based on this $n = \frac{z^2(p(1-p))}{d^2}$ formula: the sample size was obtained to be 376. Since the entire population was below 10,000 a reduction formula was used and the sample size was reduced to 110 being the final sample size.

4.6.1. Sampling size determination

- n=sample size
- d= margin of error
- P=proportion
- α =degree of accuracy

$$n = \frac{Z_{\alpha/2}^2 p(1-p)}{d^2}$$
$$= \frac{(1.96)^2 \times 0.57(0.427)}{(0.05)^2} = 376$$

Because the number of obstetric care providers in SPHMMC is less than 10,000 the final sample size (n_f) is calculated as

$$n_f = \frac{n_i}{1 + (n_i/N)}$$

Therefore: $N_f = 376/1 + 376/154$
 $N_f = 110$ Obstetric care providers

4.6.2. Sampling technique

The study participants were selected using a simple random sampling method among year one resident, interns and midwives. From the total 154 obstetric care givers, 110 study participants were selected using simple random sampling method with proportionate allocation to size after getting the list of all the year one residents, mid wives and interns working in labor and delivery care on routine activity. Out of 106 interns there were 77 participants, 13 year one residents and all 20 midwives available had responded.

4.7 Data collection

After reviewing different possible relevant literature review a pre-tested and structured self-administered questionnaire was used for data collection. It was designed to obtain adequate information on the professional characteristics of obstetric care providers, their knowledge and attitude towards partograph. This was based on assessing monitoring labor progress according to the standard protocol of the modified WHO partograph.

4.7.1. Data processing and management

The gathered data was processed by manually checking for accuracy, completeness and consistency.

4.7.2 Data analysis

The questionnaire responses were analyzed using Statistical package for Social Sciences (SPSS 21) software. Descriptive statistic was done to compute frequencies of independent and dependent variables of the study. The relations between selected independent variables and the respondent's knowledge and attitude were explored using chi-square test. Observed differences between samples were declared statistically significant if the p value was <0.05 .

4.8. Study variables

The variables included in this study were be socio-demographic characteristics as age, sex, , health professional qualification, years of experience and training on partograph and obstetrics care are independent variables while knowledge and attitude of the participants on the partograph are the dependent variables.

4.9. Operational definitions

Knowledge of obstetric care providers about the partograph was measured based on twelve knowledge specific questions each correct response having one point, whereas any wrong response attracted no mark and thus the sum score of partograph knowledge was calculated 12 points, with a mean score of 6 points. Respondents who scored 0-6 were adjudged as having poor knowledge whereas those who scored 7 and above were considered to have good level of knowledge.

Table 1: Criteria for the partograph knowledge score

Parameters	No	Yes
Correct definition of partograph	0	1
Know where to start the first plot on the partograph	0	1
Know the functions(3) of action line	0	1
Knows the interval of maternal blood pressure measurement	0	1
Knows adequate number of contraction	0	1
Knows the minimum duration of adequate contractions	0	1
Knows the duration needed to assess adequate number of contractions	0	1
Knows satisfactory labor progress	0	1
Knows when to say prolonged labor	0	1
Components of partograph	0	1

Minimum score=0; Maximum score=12, Scores 0-6, poor level of knowledge; 7 and above, good level of knowledge

One of the knowledge assessing questions was mentioning at least one and maximum of ten components of the WHO modified partograph. The overall components were scored out of 30 each having individual scoring points. Those who have scored less than 15 were considered as not being able to satisfactory mention the parameters acquiring no mark. Whereas, those scoring 15 and more were given one point considering their satisfactory answers in mentioning the components of the partograph.

Table 2; Criteria for the components of the partograph parameters

Components of partograph	No	Yes
Fetal heart rate	0	3
Color of liquor	0	4
Cervical dilatation	0	3
Descent of the presenting part	0	5
Uterine contraction	0	5
Maternal blood pressure	0	2
Maternal pulse	0	1
Maternal temperature	0	1
Intravenous fluids and drugs	0	1
Moulding	0	5

Minimum score=0; Maximum score=30, Scores 0-14, poor awareness of the components; 15 and above, good awareness of the components

Similarly, attitude towards partograph was measured using eight attitude related questions. A 5-point scale (with five responses= strongly agree, agree, neutral, disagree, strongly disagree) was used to measure providers' attitude towards partograph utilization. An individual who responded strongly agree for positive attitude was given scores of 5 and 1 for those who responded as strongly disagree, while the above scores was reversed for negative attitude questions. Finally the total score (5x8=40) was dichotomized into favorable and unfavorable attitude taking the mean score (20) as a cutoff point :{Mean score or more than 20 favorable attitude and less than the mean score had unfavorable attitude}.

Table 3: Criteria for the partograph attitude score

Parameters	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Partograph reduces risk of maternal morbidity	5	4	3	2	1
Partograph reduces risk of maternal mortality	5	4	3	2	1
Partograph reduces risk of neonatal morbidity	5	4	3	2	1
Partograph reduces risk of neonatal mortality	5	4	3	2	1
Partograph increases the efficiency of labor monitor	5	4	3	2	1
Partograph improves quality of women's care	5	4	3	2	1
Partograph is only used by doctors	1	2	3	4	5
Partograph should be used in all labors	5	4	3	2	1

Minimum score=0; Maximum score=40, Scores 0-19, unfavorable attitude; 20 and above, favorable attitude

4.9.1. Ethical consideration

Ethical approval and clearance were obtained from the SPHMMC public health department and Obstetric and Gynecological department of the hospital. Participants who were involved in this study were totally on a voluntary basis and were able to withdraw with no restriction or consequences made to them. Those who have responded were also guaranteed on keeping their confidentiality and clarified the justified purpose of the study.

5. Results

Socio-demo graphic characteristics of study participants

A total of 110 obstetric care providers were included in the study having a response rate of 100%. About 63 (57.3%) of the participants were males. The age range of the subjects spanned 20 to 24. Majority 77 (70%) of the participants were interns. Majority of these professional had a range of years of practice from 1 to 5 years. Regarding their training 102 (92.7%) o these obstetric care providers have received a formal training on partograph monitoring.

Table 4: Socio-demographic characteristics of obstetric care providers at St. Paul's Hospital Millennium Medical College

Variables	Frequency	Percentage
Age in years		
20-24	76	69.1%
25-29	30	27.3%
>30	4	3.6%
Gender		
Male	63	57.3%
Female	47	42.7%
Professional qualification		
Midwife	20	18.2%
Intern	77	70.0%
ObGyn resident	13	11.8%
Years of experience		
1-3	108	98.2%
5-10	2	1.8%
>11	0	
Has received		
Yes	102	92.7%
No	8	7.3%

Knowledge about partograph utilization

Ninety seven (88.2%) of the care providers had a good knowledge of partograph utilization. Of those who knew what a partograph was 94 (85.5%) respondents knew its correct definition as a simple graphic recording of labor and salient conditions of the mothers and fetus against time in hours. Knowledge of the function of the partograph's action line was also assessed. More than half 60 (50%), correctly identified that the first partograph plots should fall on the alert line. Furthermore, 108 (98.2%) of them the function of the alert line, about 91 (82.7%) answered that action line helps to reassess a laboring mother for appropriate intervention while 63% (57.3%) of the participants incorrectly answered that it indicates that the women should continuously be observed till delivery. Only 43 (39.1%) of the obstetric care providing respondents knew that the maternal blood pressure should be plotted on the partograph at least every 4hrs. With respect to the characteristics of contractions and progress of labor, over 89 (80.9%) agreed that 3-4 contractions are approved every 10 minutes with about 84 (76.4%) identifying that a minimum of 40 seconds is required to have an adequate contraction. Over 13 (11.8%) did not agree that the progress of labor is assessed by the degree of cervical dilatation and descent of the presenting part. Slightly 32 (29.1%) mentioned that prolonged labor lasts more than 12 hours.

Table 5; Knowledge of obstetric care providers at St. Paul's Hospital Millennium Medical College

Knowledge variables	Correct response	Percentage
Definition of partograph	94	85.5%
The first plot on the partograph	60	54.5%
Action line indicates prompt action	108	98.2%
Action line indicates the need of reassessment	91	82.7%
Action line indicates continuous observation till delivery	63	57.3%
Interval of maternal blood pressure measurement	43	39.1%
Adequate contraction	89	80.9%
Minimum duration of adequate contractions	84	76.4%
Duration needed to assess adequate number of contractions	91	82.7%
Satisfactory labor progress	102	92.7%
Identifies prolonged labor	32	29.1%
Components of partograph	77	70%

Attitude of obstetric care providers towards partograph

Almost 101 (91.8%) of the obstetric care providers in this study had a favorable attitude towards partograph. Nearly half 56 (50.9%) of them agreed that partograph utilization can reduce maternal mortality and 65 (59.1%) agreeing that it can reduce maternal morbidity. About 68 (61.8%) of the providers agreed it is also used to reduce neonatal morbidity and mortality. Similarly 54 (49.1%) agreed that the partograph is necessary to increase the efficiency of monitoring laboring and roughly about 51 (46.4%) identified that it improves the quality care of a woman in labor. A lower proportion, 39 (35.5%) of the care providers agreed that partograph is developed only for midwives while 68 (61.8%) disagreed with this idea and the remaining 3 (2.7%) were neutral. Almost half 53 (48.2%) of the study participants agreed that the partograph should be used as a chart to monitor all labor by obstetric care providers.

Of all respondents, about 64 (58.2%) of them reportedly used the modified WHO partograph routinely (always) to monitor women in labor. Amongst others, the main reasons advanced for the non-routine utilization of this tool were “shortage of staff” (27.3%), “time-consuming” (8.2%) and “little or no knowledge on how to complete it” (6.4%).

Table 6; Attitude of obstetric care providers at St. Paul’s Hospital Millennium Medical College

Attitude variables	(Agreed) response	Percentage
Partograph reduces risk of maternal morbidity	65	59.1%
Partograph reduces risk of maternal mortality	56	50.9%
Partograph reduces risk of neonatal morbidity	68	61.8%
Partograph reduces risk of neonatal mortality	68	61.8%
Partograph increases the efficiency of labor monitor	54	49.1%
Partograph improves quality of women’s care	51	46.4%
Partograph is only used by doctors(Disagree)	68	61.8%
Partograph should be used in all labors	53	48.2%

Table 7; Frequency of usage of partograph amongst obstetric care providers at St. Paul's Hospital Millennium Medical College

Frequency of usage	Frequency	Percentage
Always	64	58.2%
Often	35	31.8%
Sometimes	9	8.2%
Rarely	2	1.8%
Never		

Table 8; Reasons for not routine usage of partograph amongst obstetric care providers at St. Paul's Hospital Millennium Medical College

Reason for not routine usage	Frequency	Percentage
Little or no knowledge	7	6.4%
Shortage of staff	30	27.3%
Time-consuming	9	8.2%

Factor associated with partograph knowledge and attitude towards it

In bivariate analysis the factors were not significantly associated with the knowledge or attitude about partograph utilization. The majority of the participants were interns of class 2018 being 77 in number. Out of these 67 (87.0%) were considered to have good knowledge and 68 (88.3%) were considered to have favorable attitude towards partograph utilization. There were 20 midwives who participated in this particular research where 18 (90.0%) were considered to have good knowledge and all of them had a favorable attitude towards using the partograph. Out of the 13 year one resident that had responded 12 (92.3%) had good knowledge and all 13 had a favorable attitude.

Table 9; Association of selected socio-demographic and related factors for knowledge and attitude of partograph and its associated factors in SPHMMC labor ward among obstetric health care workers in the year 2018.

Variables	Knowledge		P value	Attitude		P value
	Good	Poor		Favorable	Unfavorable	
Professional qualification						
Midwife	2	18	0.377	20		4.201
Intern	10	67		68	9	
ObGyn resident	1	12		13		
Years of experience						
1-3	95	13	0.273	99	9	0.182
5-10	2			2		
>11						
Has received training						
Yes	92	12	0.06	93	9	0.769
No	7	1		8		

6. Discussion

This study focused on obstetric care providers in SPHMMC specifically in labor ward where the study participants were selected from hospitals. Findings from the survey may therefore provide a glimpse into the current knowledge and attitude of obstetric care practice within the study area. This study found that above half of the caregivers had good knowledge and favorable attitude about partograph and its use.

In this study assessed the level of knowledge about partograph utilization and associated factors among obstetric care providers in St. Paul's Hospital Millennium Medical College labor ward activity. In this study, (82.2%) of obstetric care providers had a good level of knowledge about partograph utilization. This finding is higher than the studies conducted in North Shoa Zone (71.2%)[7], Eastern Ethiopia (53.7%)[6], East Gojjam (56.1%)[9], (39%) in Addis Ababa[4], Cameroon (29.6%), and Nigeria (16%)[11],.

The discrepancy between these findings and other studies might be due to the differences in data collection tools and differences in socio-demographic characteristics of study participants. For instance this particular research was confined to participants with similar status regarding their socio-demographic patterns. The difference might also be due to the place of the study and sample size. In previous studies done elsewhere like Nigeria it had showed that the type of health facility where obstetric care providers working were significantly associated with knowledge of partograph utilization. And since this research was conducted in one of the renowned hospitals of the country the results have appeared more knowledgeable than the other studies mentioned above.

In this study, 91.8% of the obstetric care providers had a favorable attitude towards partograph and its use. This finding is higher than the studies conducting in North Shoa Zone (83.6%)[8], East Gojjam (55%)[56.1%] but slightly lower than the study done in the public health institution of Addis Ababa (97.9%)[4]. This could be explained by the fact that, having a good knowledge either as having access to trainings and participations in the tertiary level hospital would lead them into perceiving a favorable attitude towards partograph. This likely explanation was also stated by a study done in Addis Ababa[4].

It was noted that 41.8% of the respondents who don't use the partograph routinely mentioned "shortage of staff" (27.3%), "time-consuming" (8.2%) and "little or no knowledge on how to complete it" (6.4%) as the main reasons. These findings are inconsistent with the studies done in Nigeria, North Shoa Zone and Addis Ababa.

In the study done in North Shoa Zone among the reasons cited by the respondents for not utilizing partograph to monitor labor, using different monitoring tools accounted for (52.6%) while 68(41.21%) of them were citing shortage staff as a barrier or not utilizing partograph routine during labor. In Addis Ababa little or no knowledge of the partograph accounted

(30.66%), much detail to fill being (10.48%), time consuming (28.3%), lack of adequate number of response accounted for (6%) and lack of training were (8.06%).

In the present study, working in a tertiary health facility might have aided obstetric care providers to have a good knowledge of partograph utilization. Working in the hospital helped to having more knowledge about partograph and this is consistent with the studies done in Nigeria and Gambia. This could be due to care providers working in the hospitals have an access to participate in bed side and morning session discussion with obstetricians than the care providers working in the health center. These opportunities would lead them to update their knowledge. The other possible explanation might be care providers working in tertiary level may have good perception towards partograph than those who are working in primary and secondary level of facilities.

7. Limitation of the study

As the study was conducted on number of participants with similar knowledge and training much variation was not able to obtain from the collected information, it may not represent a significant association between variable parameters in assessing knowledge and attitude.

8. Conclusion

Generally, the utilization of partograph and the attitude obstetric care providers have towards it is good. It showed that almost all number of interns, midwives and the year one residents have satisfactory knowledge regarding the partograph. Most of these respondents also have favorable attitude in using it for labor monitoring. Therefore, the partograph is a useful tool to prevent any anticipated complications of both the mother and the fetus for better delivery outcome and wellbeing. It also enhances the team work that is needed in the labor ward for effective management of labor. Finally, understanding certain equipment is useful for the correct usage as well as believing that it makes a difference to the better outcome.

9. Recommendation

Though this study demonstrates that most of the obstetric care providers had good knowledge as well as favorable attitude towards the utilization of partograph, there are some few points for improvement. As the definition of normal and abnormal labor parameters get revised through time, periodic in-service training for all obstetric care providers is essential to keep them updated. For instance some providers with good knowledge might not practice using the partograph as a tool to monitor laboring mothers. The provision of on-job training and giving special attention to providers working at the health center is important to improve knowledge about partograph. Therefore, I would like to recommend the reinforcement of the knowledge and inclination to use this instrument by seniors and professional midwives through formal presentations, seminars and forums.

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11. Questionnaire

1. Sociodemographic characteristics

Personal Information

1. Age in years

2. Gender

A Male

B. Female

3. Professional qualification

A. Midwife

B. Intern

C. ObGyn resident

4. Years of experience

5. Have you ever received any previous formal training on partograph monitoring?

A. Yes

B. No

Questions about the partograph

6. Definition of a partograph

A. A chart developed by midwives in developed countries to monitor labor

B. A complex tool with pictorial overview of labor for use by midwives

C. A simple graphical recording of labor and salient conditions of the mother and fetus against time in hours

D. A chart for monitoring labor by doctors

7. Where do you think the first plot on the partograph should fall?

A. To the left of the alert line

B. On the alert line

C. To the right of the alert line

D. I don't know

8. What do you think the function of the action line is?

Indicates appropriate action should be taken

- A. Yes
- B. No
- C. I don't know

Time for the woman to be adequately re-assessed for appropriate intervention

- A. Yes
- B. No
- C. I don't know

Continuous observation till delivery

- A. Yes
- B. No
- C. I don't know

9. How often do you think maternal blood pressure is recorded on the partograph?

- A. Every 30 minutes
- B. Every 1 hour
- C. Every 2 hours
- D. Every 4 hours
- E. Once
- F. I don't know

10. Please mention as many as components of the WHO modified partograph paper you know of?

Questions on characteristics of normal labor

11. Do you approve that three/four contractions in every 10 minutes are normal?

- A. Yes
- B. No
- C. I don't know

12. Is the minimum duration of a strong contraction 40 seconds?

- A. Yes
- B. No
- C. I don't know

13. Does it require 10 minutes to effectively assess adequacy of contractions?

- A. Yes
- B. No
- C. I don't know

14. Is the progress of labor assessed by the degree of cervical dilatation and descent of the presenting part?

- A. Yes
- B. No
- C. I don't know

15. Is labor prolonged when it lasts more than 12 hours?

- A. Yes
- B. No
- C. I don't know

Please choose what you think the partograph can be used to as a preventive tool to reduce.

16. maternal morbidity

- A. Strongly agree
- B. Agree
- C. Neutral
- D. Disagree
- E. Strongly disagree

17. maternal mortality

- A. Strongly agree
- B. Agree
- C. Neutral
- D. Disagree
- E. Strongly disagree

18. neonatal morbidity

- A. Strongly agree

- B. Agree
- C. Neutral
- D. Disagree
- E. Strongly disagree

19. neonatal mortality

- A. Strongly agree
- B. Agree
- C. Neutral
- D. Disagree
- E. Strongly disagree

20. Do you think the partograph will increase the efficiency of those attending to women in labor?

- A. Strongly agree
- B. Agree
- C. Neutral
- D. Disagree
- E. Strongly disagree

21. Is the partograph mandatory for improved quality care of a woman in labor?

- A. Strongly agree
- B. Agree
- C. Neutral
- D. Disagree
- E. Strongly disagree

22. Do you think that the partograph is a chart for monitoring labors only by doctors?

- A. Strongly agree
- B. Agree
- C. Neutral
- D. Disagree
- E. Strongly disagree

23. Do you think the partograph should be used for monitoring the progress of labor?

- A. Strongly agree
- B. Agree

- C. Neutral
- D. Disagree
- E. Strongly disagree

24. How frequent do you use the partograph to monitor the progress of labor?

- A. Always
- B. Often
- C. Sometimes
- D. Rarely
- E. Never

25. If your answer to the question mentioned above (No.18) was not 'Always' what is your reason to not using?

- A. Little or no knowledge
- B. Shortage of staff
- C. Time-consuming
- D. Easier to manage labor without the use of the partograph
- E. Non-availability of the partograph

12. Assurance of Investigator

I the undersigned student agree to accept all responsibilities for the scientific and ethical conduct of the research project. I will provide timely progress report to my advisors and seek the necessary advice and approval from my advisors in the course of the research. I will also communicate timely to my advisors and all stakeholders involved in the study.

Name of the student: _____

Signature: _____

Date: _____

Approval of Advisors

Name of PHD Advisor: _____

Signature: _____

Date: _____

Name of Clinical Advisor _____

Name of Clinical Advisor _____

Signature: _____

Date: _____

