



# Evidence-Based Intrapartum Practice and Associated Factors Among Obstetric Care Providers Working in Public Hospitals of South Wollo Zone North-Central Ethiopia: An Institutional-Based Cross-Sectional Study

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**Background:** Even though recent progress, Ethiopia continues to be one of the most significant contributors to the worldwide burden of maternal mortality. Evidence-based intrapartum practices have significant value to improve the health outcome of the mother and the neonate. However, in Ethiopia, it is not exercised according to the standard. Assessing the proportion of evidence-based intrapartum practice and predictors is essential and vital to providing better-quality care to laboring mothers. Hence, this study was aimed to assess the magnitude of evidence-based intrapartum practice and predictors among obstetric care providers working in public hospitals in South Wollo zone, North-central Ethiopia.

**Patient and Methods:** An institutional-based cross-sectional study was employed among 398 obstetric care providers from February 1 to April 30, 2021. Study participants were selected using a simple random sampling technique. Both a structured questionnaire and an observational checklist were used to collect the data. Bivariate and multivariable logistic regression was done to determine predictors associated with evidence-based intrapartum practice and P-value <0.05 at 95% CI was declared as statistically significant.

**Results:** The overall magnitude of evidence-based intrapartum care was 54.7% [95% CI (49.6–59.7%)]. Knowledge [AOR = 2.1; 95% CI (1.30–3.38)], computer access [AOR = 2.04; 95% CI (1.27–3.27)], work experience [AOR = 2.13; 95% CI (1.21–3.73)] and training [AOR = 1.81; 95% CI (1.12–2.93)] were found to be statistically significant with evidence-based intrapartum practice.

**Conclusion:** We found that only half of the obstetric care providers applied evidence-based intrapartum practice. Increasing knowledge of intrapartum care, providing continuous training, making the working environment safe to handle experienced providers, and easily access computers in the workplace will be needed to maximize the practice of evidence-based intrapartum care and scale up the quality of care.

**Keywords:** evidence-based, intrapartum practice, knowledge and obstetric care providers

## Background

Evidence-based practice (EBP) is a problem-solving strategy in which the best available information is used to enhance health outcomes by integrating research evidence, clinical expertise, and patient values and preferences.<sup>1</sup> Intrapartum practice encompasses the time between the confirmation of true labor and the first, second, third, and fourth stages of labor, which the last one to two hours after the placenta is delivered.<sup>2</sup> Furthermore, evidence-based intrapartum practice is a successful technique for improving obstetric care quality. The WHO has declared that inadequate and harmful practices should be changed with evidence-based clinical practices.<sup>3</sup> The concept of evidence-based practice is a very new idea, which started in the early 1970s when Iain Chalmers and his colleagues in Oxford responded to the

statement of Archie Cochrane that much of the evidence underpinning obstetric practices were flawed. This was a paradigm shift from opinion-based to evidence-based obstetrics practice.<sup>4</sup> In developing countries, deaths during the first few hours following childbirth lead to a significant rate of maternal and newborn mortality. Skilled delivery attendance and prompt detection and treatment of any problems have a significant impact on maternal and perinatal mortality.<sup>5</sup>

The adoption of evidence-based intrapartum care is a difficult process. In this regard, recognizing possible challenges is the primary phase in identifying and implementing effective strategies to promote evidence-based obstetric care compliance and improve the quality of maternal care.<sup>6</sup> In recent years, there has been a growing awareness of the global burden of maternal, neonatal, and child mortality.

Approximately 300,000 women die each year worldwide, while greater than 15 million suffer long-term disease or disability as a result of pregnancy and birth complications.<sup>7</sup> Besides, each year, 1.2 million newborn mortality rates are caused by intrapartum complications that could be avoided with an effective and low-cost intrapartum practice combined with evidence-based fundamental obstetric care training.<sup>8</sup>

In developed countries, the lifetime risk of maternal death is 1 in 3300, compared to 1 in 41 in developing countries. It was also stated that three Asian (India, Pakistan, and Afghanistan) and three African (Nigeria, Ethiopia, and the Democratic Republic of Congo) countries accounted for more than half of all maternal deaths worldwide.<sup>9</sup> Between 2016 and 2030, the worldwide maternal mortality ratio (MMR) must be reduced by an average of 7.5% per year to meet the Sustainable Development Goal (SDG) of an MMR below 70. This will necessitate a decrease rate of more than three times the global average of 2.3% every year between 1990 and 2015.<sup>10</sup>

In Africa, a study done in Ghana showed that only 17% of deliveries conducted in health facilities fulfill standards of clinical practice, and studies from Nigeria and Côte d'Ivoire report that clinical practices quality was also low in health institutions.<sup>11</sup> Despite many efforts taken by the Ethiopian government and other stakeholders' maternal and neonatal mortality and morbidities are still high, according to a 2016 EDHS report in Ethiopia MMR reach 412 deaths per 100,000 live births and neonatal death reaches 29 per 1000 lives.<sup>12</sup> In Ethiopia skill birth attendance increased from 16.8% in 2010 to 28% in 2016.<sup>12</sup> However, the quality of care was not supported by the available evidence; a study done in hospitals of Northwest Ethiopia shows that only 38.2% of the care provider delivered care based on the available evidence.<sup>13</sup> And other studies performed in the Jabi Tehinan district revealed that only 13% of women obtained a standard quality of care in the intrapartum period.<sup>14</sup>

Despite the availability of best practice initiatives, in Ethiopia evidence-based intrapartum practice is not well exercised. And there are no previous studies regarding intrapartum evidence-based practice among obstetric care providers in the study setting. Hence, this study aimed to assess the magnitude of evidence-based intrapartum practice and associated factors among obstetric care providers in South Wollo zone public hospitals, North-central Ethiopia.

## Methods

### Study Design and Setting

An institutional-based cross-sectional study was performed in public hospitals of South Wollo Zone, North-central Ethiopia from February 1 to April 30/2021. South Wollo Zone is among the ten zones found in Amhara Regional State of Ethiopia. South Wollo has 16 hospitals (12 public and four private), 138 health centers, and many private clinics are placed. Out of the total 12 public hospitals, only one is a comprehensive specialized hospital, two are general hospitals and the rest nine were primary hospitals.

### Participants

The source populations were all obstetric care providers who were working in public hospitals of South Wollo zone, whereas the study populations comprise all obstetrics care providers who were working in selected public hospitals of South Wollo zone North-central Ethiopia during the study period. All obstetrics care providers who have a minimum of diploma qualifications in the health-care profession, and had provided obstetric care in the past 6 months in those selected public hospitals of South Wollo zone during the data period were included. Based on the zonal department health office

information reports, an overall 950 obstetrics care providers were found in all twelve public hospitals of south Wollo zone North-central Ethiopia and 519 obstetric care providers were found in thus selected six public hospitals.

## Sample Size Determination

A total of 398 respondents were identified by using single population proportion formula with the assumptions proportion of evidence based intrapartum practice among obstetrics care provider was 38.2% from a similar study,<sup>13</sup> the margin of error 5%, confidence interval 95% and 10% non-response rate.

## Sampling Procedure

Twelve public hospitals provide labor and delivery service in the study area. From the 12 hospitals, we selected six randomly by using lottery methods (Dessie, Akesta, Mekane Selam, Mekdela, Tenta, and Wegidi public hospitals). Samples were selected and proportionally allocated to each selected hospital based on the total number of obstetric care providers and study groups (Dessie = 178, Akesta = 72, Mekane selam=76, Mekdela = 70, Tenta = 65, and Wegidi = 58). Therefore, the calculated sample for each hospital was: Dessie = 136, Akesta = 55, Mekane selam = 58, Mekdela = 54, Tenta = 50, and Wegidi = 45.

## Study Variables

### Dependent Variable

Evidence based intrapartum practice.

### Independent Variables

Socio-demographic characteristics: age, sex, profession, qualification, income, marital status and experience.

Managerial variable: managerial motivation, interactive EBP skill building workshops, in-service training, access to computer and internet, regular mentoring, role clarity.

Individual variable: Searching up-to-date health information, participating on conference, training, seminar, and case-study over the last 6 months, Knowledge and Attitude.

## Operational Definitions

Evidence-based intrapartum practice: It is a set of standard activities recommended by WHO and national protocols that are expected to be performed by obstetric care providers during intrapartum care. Obstetrics care providers who scored greater than or equal to the median value of intrapartum-practice-related observational checklists.<sup>13,15</sup>

Obstetric care providers for this study includes: midwife, Integrated emergency surgical officers (IESO) and medical doctors who work in labour and delivery ward to give care and treatment for the women in childbirth and during the period before and after delivery.

Knowledge: Obstetric care providers who scored greater than or equal to the median value of knowledge-related questions were considered as having a good knowledge while obstetric care providers who scored less than the median value were considered as having poor knowledge.<sup>13</sup>

Attitude: Those obstetric care providers who scored greater than or equal to the median value of attitude-related questions of intrapartum practice were labelled as having a positive attitude, whereas obstetric care providers who scored less than the median values were considered as negative attitude.<sup>13</sup>

Qualification: It is the obstetric care provider's educational level. It includes: Diploma, BSc, MSc, General practitioners and specialist.

## Data Collection Tool and Quality Management

Data were collected using a pretested and structured self-administered questionnaire supplemented with observational checklists adapted from a previous study,<sup>13</sup> from WHO recommendations on intrapartum care for a positive childbirth experience.<sup>15</sup> The questionnaire contains 36 questions arranged into four parts; socio-demographic factors, organizational and individual-related factors, knowledge, and attitude parts. The observational checklist also contains twenty-one items

and the questionnaire was designed to elicit a “yes” or “no” response to gather the required information related to the utilization of evidence-based intrapartum care or practice-related questions. Pre-testing of both the questionnaire and observational checklist was conducted on 5% of the samples (20 obstetric care providers) in Haik primary public hospital which is not included in the study. Based on the pre-test modifications and corrections including wording, logical sequence, and skip patterns were immediately corrected before use. The data were collected by six BSc Midwives who had previous experience and were supervised by BSc Midwives. Two days of training were given for both data collectors and supervisors on the objective of the study, data collection techniques, items of the tool, and the privacy of the participants. The completeness and consistency of the collected data were cross-checked and compiled by supervisors and principal investigators on a daily basis. First, the data were collected by an observational checklist blindly and then by self-administered questionnaires.

## Data Processing, Analysis, and Interpretation

The collected data were entered into Epi Data version 4.2 and analyzed using SPSS Version 25 statistical software. Descriptive statistics such as frequencies and percentages were calculated. In addition, the cross-tabulation was computed using dependent and independent variables. To assess the effect of the independent variable on the dependent variable, bivariate and multivariable logistic regression analysis was carried out. Those variables in bivariate analysis whose p-value was less than 0.25 ( $p < 0.25$ ) were fitted in multiple logistic regression by controlling confounding variables. Finally, a significant association was declared at a p-value of  $<0.05$  with 95% CI and AOR, and the result was presented in the form of figures, tables, graphs, and charts.

## Ethical Consideration

The ethical issue was considered in all stages of the research process, some of the most important are the following: Ethical clearance and approval were obtained from the Ethical Review Committee of college of medicine and health science coordination office under the delegation of the Institutional Review Board (IRB) of Wollo University. Then a letter of permission was secured from administrative bodies of the area to communicate with relevant bodies at the hospital. After explaining the objectives of the study in detail, informed written consent was taken from all study participants. All participants were reassured of the anonymity and personal identifiers were not used. Then, after obtaining informed consent from every participant, the data collectors continued the job by giving due respect to the norms, values, and beliefs of the study participant and ensure the confidentiality of the data.

## Results

### Socio-Demographic Characteristics

A total of 391 participants participated in this study with a response rate of 98%. Out of the total respondents more than half 214 (54.7%) of respondents were male and 197 (50.4%) were married. The mean age of the respondents was 28.68 (SD± 4.41) years ranging from 20 to 45 years old. Regarding profession 328 (83.9%) respondents were midwives followed by medical doctors 49 (12.5%). The majority of the participants were 182 (46.5%) BSc holders followed by diploma 111 (28.4%). Out of the total respondents, 156 (39.9%) and 132 (33.8%) of them had a monthly salary of 5001\_7999 and  $\geq 8000$  Ethiopian birr, respectively (Table 1).

### Organizational and Individual Related Characteristics

Of the total study participants, 224 (57.3%) had in-service training related to intrapartum practice. About 199 (50.9%) of the study participant had internet access at their workplace. Among those who had internet access at their workplace 79 (39.9%) used the internet for social media and the remaining 32.3%, 22.2%, and 5.6% of the study participants used internet access for online journal searching, WHO/RHL, and Cochrane database searching, respectively (Figure 1) and patient condition was the leading motives of the obstetrics care provider with 202 (79.5%) response rate followed by skill-building workshops with 167 (74.2%) (Figure 2). Out of the total respondents, 57.8% had access to computers and more than half of the respondents used patient-related reading 129 (57.1%) (Figure 3).

**Table 1** Socio-Demographic Characteristics of Obstetric Care Providers in South Wollo Zone Public Hospitals, Ethiopia, February 1 to April 30/2021 (N = 398)

Variables		Frequency	Percepts
Sex	Male	214	54.7
	Female	177	45.3
Age	20_24	61	15.6
	25_29	188	48.1
	30_34	110	28.1
	35_39	19	4.9
	40_45	45	3.3
Salary in ETB	≤5000	103	26.3
	5001_7999	156	39.9
	≥8000	132	33.8
Profession	Medical doctors	49	12.5
	Midwives	328	83.9
	IESO	14	3.6
Educational level	Residents	23	5.9
	GP	26	6.6
	MSc	49	12.5
	BSc	182	46.5
	Diploma	111	28.4
Year of experiences	<5	189	48.3
	≥5	202	51.7
Marital status	Single	173	44.2
	Married	197	50.4
	Widowed	9	2.3
	Divorced	12	3.1

**Abbreviations:** ETB, Ethiopian Birr; IESO, Integrated emergency surgical officers; GP, General Practitioner; MSc, Masters of Science; BSc, Bachelor of Science.

## Knowledge and Attitude of Study Participants

Among the total participants, 205 (52.4%) and 214 (54.7%) of them had good knowledge and positive attitude towards evidence-based intrapartum practice, respectively (Table 2).

## Magnitude of Evidence Based Intrapartum Practice

In this study, the evidence-based intrapartum practice was assessed by using 21 items of intrapartum practiced related observational checklists and the median score of the respondent was 13 (SD± 2.83). The overall magnitude of evidence-based intrapartum practice was 54.7% [95% CI (49.6%\_59.7%)].

Among the respondents, 332 (84.9%), 312 (79.8%), 306 (78.3), and 303 (77.5%) had a good recommended intrapartum practice of providing appropriate active management of 3rd stage of labor, effective communication using simple and culturally acceptable methods, digital vaginal examination every 4 hours and fetal heart rate monitoring within 30mins during 1st stage of labors, respectively. On the other hand, from the non-recommended intrapartum care the most commonly experienced were; immediately umbilical cord clamping less than 1 min (78%), routinely intravenous fluid infusions (46%), and fundal pressure (39.6%) (Table 3).

## Factors Associated with Evidence Based Intra-Partum Practice

In bivariate logistic regression analysis, obstetric care providers' age, educational status, monthly salary, work experience, access to a computer, access to health information, training, knowledge, and attitude towards evidence-based

Mostly searched activity during online stay

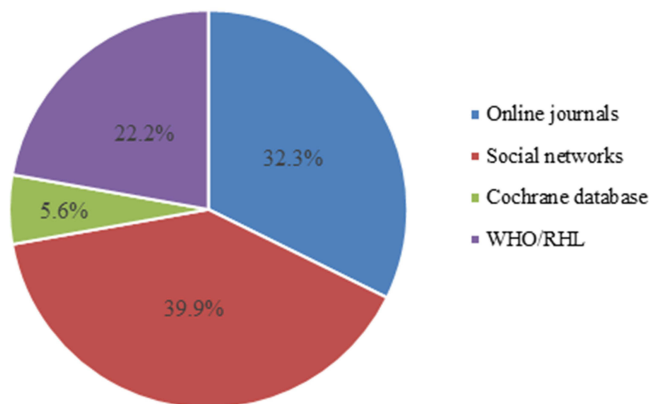


Figure 1 Distribution of study participants by their mostly searched online activities in South Wollo Zone Public Hospitals, Ethiopia, 2021.

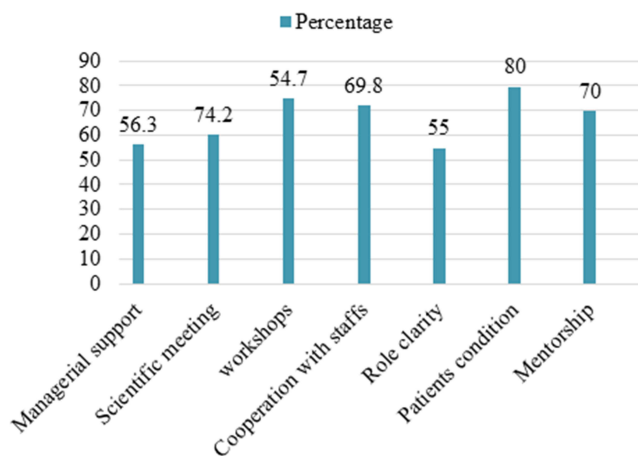


Figure 2 Activities of obstetrics care provider motivated to seek scientific health information in South Wollo Zone Public Hospitals, Ethiopia, 2021.

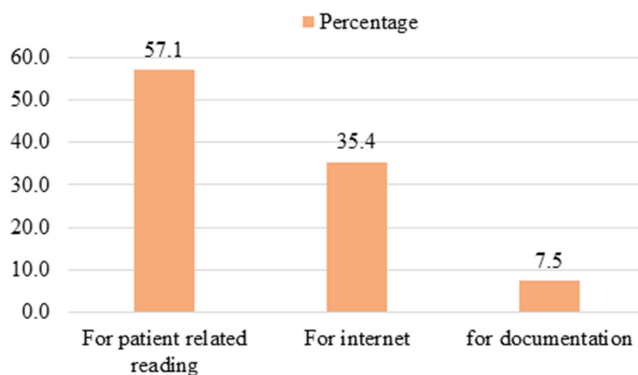


Figure 3 Purpose of computers for obstetrics health care providers in South Wollo Zone Public Hospitals, Ethiopia, 2021.

**Table 2** Obstetric Care Providers Level of Knowledge and Attitude Based on Their Educational Levels in South Wollo Zone Public Hospitals, Ethiopia, February 1 to April 30/2021 (N = 398)

Educational Level	Level of Knowledge		Level of Attitude	
	Good	Poor	Good	Poor
Resident	17 (73.9%)	6 (26.1%)	14 (60.9%)	9 (39.1%)
GP	10 (38.5%)	16 (61.55)	19 (73.1%)	7 (26.9%)
MSc	25 (51%)	24 (49%)	25 (51%)	24 (49%)
BSc	111 (61.3%)	70 (38.7%)	88 (48.4%)	94 (51.6%)
Diploma	42 (37.8%)	69 (62.2%)	68 (61.3%)	43 (38.7%)

**Abbreviations:** GP, General Practitioner; MSc, Masters of Science; BSc, Bachelor of Science.

practice had an association with evidence-based intrapartum practice. In multivariable logistic regression analysis only working experience, training, computer access, and knowledge remained significantly associated with the evidence-based intrapartum practice. A respondent with a good knowledge of intrapartum care was 2.1 times more likely to have good evidence-based intrapartum practice [AOR = 2.1; 95% CI (1.30–3.38)]. Similarly, obstetric care providers who had access to computers for reading were 2.04 times more likely to perform intrapartum care based on the available evidence than those who did not have access to computers [AOR = 2.04; 95% CI (1.27–3.27)]. Moreover, obstetric care providers who had working experience of  $\geq 5$  years were 2.13 times more likely to provide evidence-based intrapartum practice than those who had working experience of  $< 5$  years [AOR = 2.13; 95% CI (1.21–3.73)]. Finally, those respondents who had in service training related to intrapartum practice were early two times more likely had good evidence-based intrapartum practice compared with their counterparts [AOR = 1.81; 95% CI (1.12–2.93)] (Table 4).

## Discussion

According to the present study, 54.7% of obstetric care providers practiced evidence-based intrapartum practice according to the recommended protocols. The proportion of evidence-based intrapartum practice in this study is relatively consistent with studies conducted in Arba Minch district, Gamo Gofa zone, Southern Ethiopia (54.06%)<sup>16</sup> and Uganda 49.4%.<sup>17</sup>

However, our finding was higher than a study done in Jabi Tehinan district health center, North West Ethiopia (13%),<sup>14</sup> Tigray northern Ethiopia 29.2%,<sup>18</sup> Northwest Ethiopia (38.2%),<sup>13</sup> and Sweden 22.7%.<sup>19</sup> The possible explanation might be due to a strategy shift from routine obstetrics to technology-oriented interventions. Besides, this discrepancy might be due to the small sample size of the previous study and the difference in the number of hospitals, in which some of the above studies were conducted in a single health facility. Once more, the government might be too focused on striving to reduce maternal mortality is one of the goals to achieve sustainable millennium developments. Time gap, study population, data collection tool, and differences in health institution structure and procedure might also have a role in the discrepancy.

On the contrary, our study finding is lower than the study done in Iran 78%<sup>20</sup> and multicenter study done in tertiary hospitals in Arab found that 60% in Egypt, 82% in Lebanon, and 73% in Syria.<sup>21</sup> The discrepancies might be due to socio-cultural difference, inadequate number of health professionals serving in the hospital, providers' characteristics. Additionally, variations in the study area, data collection tool, and study participants might have a role in the difference in the current study. Furthermore, some of the above studies were conducted in developed countries, in which the service is given under advanced technology, high quality of health-care institutions, and due to differences in case overload.

In this study, the personal experience of obstetrics care providers was significantly associated with evidence-based intrapartum care. Obstetric care providers having working experience of  $\geq 5$  years were nearly two times more likely to perform evidence-based intrapartum practice than those who had experience  $\leq 5$  years [AOR = 2.13; 95% CI (1.21–

**Table 3** Distribution of Recommended and Non-Recommended Intrapartum Practice Among Obstetric Care Providers in South Wollo Zone Public Hospitals, Ethiopia, February 1 to April 30/2021 (N = 398)

Variables	Response	Frequencies	Percentage (%)
Effective communication	Yes	312	79.8
	No	79	20.2
Freedom of movements during 1st stage of labor	Yes	200	51.2
	No	191	48.8
FHR monitoring within 15 minutes during 2nd stage of labour	Yes	176	45.0
	No	215	55.0
Episiotomy done by using local anaesthesia	Yes	273	69.8
	No	118	30.2
Vaginal examination every 4hrs	Yes	306	78.3
	No	85	21.7
Routine rupture of amniotic fluid	Yes	149	38.1
	No	242	61.9
Cleaning of the vulva and perineum with antiseptics	Yes	67	17.1
	No	324	82.9
Opioid analgesia for pain relief	Yes	50	12.8
	No	341	87.2
Provide oral fluid and food	Yes	276	70.6
	No	115	29.4
Use relaxation techniques for pain management	Yes	139	35.5
	No	252	64.5
Routine IV fluid infusion	Yes	180	46
	No	211	54
Perineal shaving	Yes	20	5.1
	No	371	94.9
Fundal pressure	Yes	155	39.6
	No	236	60.4
Follow progress of labour by using partograph	Yes	204	52.2
	No	187	47.8
Fetal heart rate monitored with in 30min during 1st stages of labour	Yes	303	77.5
	No	88	22.5
Routine uterine exploration	Yes	153	39.1
	No	238	60.9
Pre-warmed neonatal corner for neonatal care	Yes	259	66.2
	No	132	33.8
Immediate umbilical cord clamping	Yes	305	78.0
	No	86	22.0
Skin to skin contact of the newborn	Yes	260	66.5
	No	131	33.5
Routine nasal or oral suction of newborns	Yes	113	28.9
	No	278	71.1
AMSTL using appropriately	Yes	332	84.9
	No	59	15.1

**Abbreviations:** AMSTL, Active Management of Third Stage of Labour; FHR, Fetal Heart Rate; IV, Intravenous.



**Table 4** Bivariable and Multivariable Logistic Regression Analysis of Factors Associated with Evidence-Based Intrapartum Practice in South Wollo Zone Public Hospitals, Ethiopia, February 1 to April 30/2021 (N = 398)

Variables	Evidence Based Intra-Partum Practice		COR (95% CI)	AOR (95% CI)	P-value
	Yes	No			
Knowledge level					
Good	138	67	3.02 (1.997–4.57)	2.097 (1.303–3.377)	0.002*
Poor	75	110			
Attitude level					
Good	108	106	0.682 (0.456_1.021)	0.852 (0.534_1.358)	0.500
Poor	106	71			
Computer access					
Yes	149	77	2.977 (1.964–4.514)	2.036 (1.269–3.265)	0.030*
No	65	100			
Health information					
Yes	145	108	1.323 (0.872–2.009)	0.929 (0.570–1.512)	0.766
No	69	68			
Age					
20–24	22	39			
25–29	106	82	2.292 (1.262–4.162)	1.533 (0.712–3.299)	0.275
30–34	65	45	2.562 (1.342–4.886)	1.504 (0.619–3.655)	0.368
35–39	15	4	6.648 (1.962–22.528)	3.266 (0.765–13.945)	0.110
40–45	6	7	1.519 (0.453–5.095)	0.607 (0.127–2.895)	0.531
Training					
Yes	146	78	2.725 (1.802–4.120)	1.813 (1.121–2.933)	0.015*
No	68	99			
Educational level					
Resident	17	6	3.719 (1.363–10.145)	1.876 (0.513–6.855)	0.341
GP	15	11	1.79 (0.745–4.246)	2.385 (0.793–7.175)	0.122
MSc	29	20	1.903 (0.962–3.765)	1.216 (0.451–3.279)	0.700
BSc	105	77	1.79 (1.111–2.884)	1.170 (0.637–2.149)	0.612
Diploma	48	63			
Salary in ETB					
≤5000	46	57			
5001–7999	83	73	1.409 (0.855–2.322)	0.586 (0.292–1.176)	0.132
≥8000	85	47	2.241 (1.323–3.796)	0.772 (0.318–1.872)	0.567
Experience					
≥5	135	67	2.805 (1.859–4.234)	2.127 (1.213–3.728)	0.008*
<5	79	110			

Note: \*p-value <0.05 considered as statistically significant.

Abbreviations: ETB, Ethiopian Birr; GP, General Practitioner; MSc, Masters of Science; BSc, Bachelor of Science.

3.73)]. This finding does not agree with studies in Tigray, the northern part of Ethiopia.<sup>18</sup> The probable reason might be due to variation in a study setting, study participants, data collection tool, and procedure. Variation in terms of time might have also contributed since as time advances change in practice is likely. On the other hand, the studies were done in Netherlands,<sup>22</sup> African setting,<sup>23</sup> and Iceland<sup>24</sup> showed a significant association between year of experience of obstetrics health-care provider and evidence-based intrapartum practice. The possible explanation might be due to the fact that

those who had more experience would improve their skill and conduct the procedure with the best available evidence-based practice. In addition, it also implies a trend that brings about change in a theory into practice like the presence of role models and well-experienced practitioners.

The current study found that obstetric care providers' knowledge was strongly associated with the evidence-based intrapartum practice, where obstetric care providers who had good knowledge were nearly two times more likely to adhere to evidence-based intrapartum practice than those who had poor knowledge [AOR = 2.1; 95% CI (1.30–3.38)]. Finding was in line with a study conducted in Iran,<sup>6</sup> Kenya,<sup>25</sup> and a multi-institutional study in southern California, USA.<sup>26</sup> Obstetrics care providers who had adequate knowledge regarding evidence-based practice would have an increased eagerness to put their knowledge into practice. In addition, it also implies that acquiring adequate knowledge is a key to evidence-based intrapartum practice.

Similarly, in this study, obstetric care providers who had training in intrapartum practice were nearly two times more likely to stick to evidence-based intrapartum practice as compared with their counterparts [AOR = 1.81; 95% CI (1.12–2.93)]. The current finding does not agree with studies in Africa settings<sup>23</sup> and Sweden.<sup>27</sup> The discrepancy might be due to variation in a study setting, study participants, data collection tool, and procedure. On the other hand, variation in terms of time might have contributed since as time advances change in practice is likely. But, the current finding was consistent with a study conducted in Kenya,<sup>25</sup> Northwest Ethiopia.<sup>13</sup> The probable reason might be due to the fact that obstetric care providers who had job training might have a better motive for practice because of the insight they had from the training. Also, obstetric care providers trained with recommended and newly searched scientific-based intrapartum care might have initiation to put new evidence into practice. Lastly, the finding of this study noticed those study participants who had a computer for reading were two times more likely to perform intrapartum care based on the available evidence than those who had no access to computers [AOR = 2.04; 95% CI (1.27–3.27)]. Results from Cameroon<sup>23</sup> and Iceland<sup>24</sup> also showed a significant association between computer access for reading and evidence-based practice. This signifies that obstetric care providers who had used intrapartum-related health information for updating their knowledge might have awareness of how to put research findings into clinical practice, their daily reading habits help them to be motivated to put new evidence into practice. In addition, clinicians were more attached to patients who increase their likelihood to use evidence in practice, probably due to a motive to enhance patient care. Furthermore, obstetric care providers who are more attached to searching online journals, the Cochran database, and the WHO reproductive health library may increase their probability to use evidence in practice, probably due to a motive to enhance patient care. This was reflected in this study, while relatively more likely trained obstetric care providers were using evidence in practice than those who did not take training.

Despite its importance, this study had its limitation. Since it was carried out only in public health facilities, it does not represent the proportion of evidence-based intrapartum care that occurs in private health facilities and government health centers.

## Conclusions

The finding of this study showed that the proportion of evidence-based intrapartum practice among obstetric care providers in south Wollo zone public hospitals was still unsatisfactory (54.7%). Knowledge of the care provider, training on intrapartum practice, computer access, and work experience were associated with the evidence-based intrapartum practice.

## Recommendation

The authors recommend the government and respective stakeholders design and implement strategies that scale up evidence-based interventions to optimize intrapartum management of laboring mothers which could help to reduce the occurrence of maternal and neonatal death during labor and delivery through providing regular training to update providers' knowledge, the updated guideline for intrapartum practice, and making work environments safe to handle experienced providers and minimize turnover effects. Furthermore, increase easy access to computers and qualitative studies are recommended to identify factors that contribute a magnitude of evidence-based intrapartum care in both governmental and private health facilities.

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The authors declare that there are no competing interests.

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