

Non-Pharmacological Labor Pain Management Utilization and Its Associated Factors Among Skilled Birth Attendants in North Showa, Ethiopia: A Cross-Sectional Study

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ABSTRACT

Introduction: Non-pharmacological labor pain management (NPLPM) is effective for labor pain management, with minimal or no harm to the mother and fetus. However, there is limited research conducted on the practice of non-pharmacological labor pain management and associated factors among skilled birth attendants (SBAs) in North Showa Zone public hospitals, Ethiopia. This study aimed to assess non-pharmacological labor pain management utilization and its associated factors among skilled birth attendants in North Showa, Amhara Region, Ethiopia. **Methods:** A facility cross-sectional study design was conducted among 418 SBAs from March 1 to 30, 2021. All SBAs who were working in the labor ward were included in the study. Data were collected from pretested, self-administered, and structured questionnaires. The collected data were coded, entered EpiData version 4.6, and exported to SPSS version 25 for analysis. Descriptive statistics were computed. Logistic regression was used to assess the association between explanatory and outcome variables. The odds ratio with its 95% confidence interval was used to estimate the strength of the association, and statistical significance was declared at a P-value less than 0.05. **Results:** 176 (42.8%) of respondents had a good practice with NPLPM. Work experience of 6–9 years [AOR=4.21, 95%CI=1.75–13.8%], work experience ≥10 years [AOR= 5.45, 95%CI=1.94–14.97], moderate labor pain [AOR=2.18, 95%CI=1.00–8.308], severe labor pain [AOR=3.23, 95%CI=1.37–9.13], presence of management protocol [AOR=1.72, 95% CI=(1.21–2.64)], good knowledge [AOR=4.3, 95%CI=(1.032–7.99)], and positive attitude [AOR=1.605(1.032–2.49)] were found to be significantly associated factors to practice of NPLPM among SBAs. **Conclusions:** Most SBAs failed to provide NPLPM. There is a need to develop strategies that help SBAs to provide NPLPM for the women to relief labor pain.

Vol No: 09, Issue: 01

Received Date: June 25, 2024

Published Date: February 10, 2025

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Citation: Mekete D, et al. (2025). Non-Pharmacological Labor Pain Management Utilization and Its Associated Factors Among Skilled Birth Attendants in North Showa, Ethiopia: A Cross-Sectional Study. *Mathews J Gynecol Obstet.* 9(1):43.

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Keywords: Practice, Non-Pharmacological, Labor Pain Management, SBAs, Ethiopia.

INTRODUCTION

Pain is an unpleasant sensory and emotional experience that causes physical, psychological, and spiritual effects. These effects vary depending on an individual's age, experience of pain, psychological characteristics, socio-cultural background, and spirituality [1]. Labor pain has been experienced during the effort of childbirth. It is influenced by multiple physiological and psychological factors, and its intensity varies greatly among women [2-7].

Non-pharmacological labor pain management (NPLPM) methods are noninvasive, cheap, simple, and effective for the prevention of postpartum depression and postpartum hemorrhage, along with increasing maternal satisfaction [8,9]. NPLPMs increase the client's status (increase the individual ability to control feelings, reduce the feeling of weakness, enhance the functional capacity and activity level, reduce anxiety and stress, decrease the pain behavior and focused pain level, and decrease the dosage of analgesic drugs), consequently decreasing the well-known side effects of drugs [10]. NPLPM methods are effective and safe for labor pain managements [11]. These NPLPM can be massage, acupuncture, relaxation methods, water immersion, hypnosis, water immersion, aromatherapy, biofeedback, reflexology, and transcutaneous electrical nerve stimulation [8-10,12-14]. Therefore, it is necessary to utilize evidency based practices in midwifery and women health issues during pregnant, intrapartum and postpartum period [4,7,15,16].

Various studies have found different values in the practice of non-pharmacological labor pain management among SBAs. A cross-sectional study conducted in Turkey states that most women, 72.6%, received support during labor mainly from midwives. 45.7% of women reported that they used a variety of methods (exercise, relaxation, breathing exercises, yoga, music, prayer, and taking analgesia) to cope with labor pain [17]. Another cross-sectional study was done on the perception and practice of health care providers towards NPLPM strategies in reliving labor pain at Abha Maternity Hospital, Saudi Arabia. Among 88 study subjects, the most widely known and used interventions were related to techniques that reduced painful stimuli and techniques of active birth [18].

According to a study done in Kenya on the practice of non-pharmacologic labor pain management among

health providers, most of the health care providers use breathing exercise (77.4%, massage (50%), and 50% of the respondents encourage different laboring positions during labor [19]. In addition, a cross-sectional study was done in all Tigray region general hospitals (Ethiopia) among SBAs, with 233 participants, 43.3% of whom used NPLPM methods. The most used method was psychotherapy (229; 98.3%), followed by companionship [13]. Other studies in the Amhara regional state referral hospital found that among obstetric caregivers, the total utilization of the NPLPM method was 40.1%. The most frequently used methods were psychotherapy 88.2%, followed by breathing technique 71.9% and massage 63.51% [20]. Another study done in Amhara region governmental health institutions among SBAs revealed that 46.8% of participants practice NPLPM [21]. In a similar setting, research conducted in east Gojam reported that 30.4% of NPLPM methods were utilized [22]. Also in Dessie referral hospital, the practice of NPLPM methods was low, at 28.6% [23].

Like the prevalence of the practice of NPLPM among SBAs, the contributing factors were found to be different across the country. Age [21], educational status [13,23] knowledge [20,21] attitudes [21], number of staff [18,20] workload [15], training [24] and experience [13,20,25] were associated factors to NPLPM [20,21] However, there is limited research regarding non-pharmacological labor pain management among SBAs in Ethiopia. Even though non-pharmacological therapies have progressively gained significance to give rise to holistic clients' care, most of the time this management is cost-effective with high safety and without any side effects [26]. When using this management as a part of hospital pain relief strategies, it gives significant advantages to women and their infants without causing additional harm [12].

In modern obstetrics, labor pain and its methods to reduce or avoid the pain is the major recognized problem for laboring mother and SBAs [9]. Hence, awareness about the practice of non-pharmacological labor pain management methods is crucial for SBAs and women to cope with labor pain. The findings will be used by healthcare providers to apply simple labor pain management methods. The study findings will also provide information to the Ethiopian Ministry of Health on the magnitude and factors associated with the practice of NPLPM to make policy and important guidelines. Therefore, research is needed to evaluate the practice of non-pharmacological labor pain management and the factors associated with it. As there is limited information regarding NPLPM in Ethiopian research, this study was to assess the

practice of NPLPM and its associated factors among SBAs in the North Showa zone of Ethiopia.

METHODS AND MATERIALS

Study design, period, and setting

An institutional-based cross-sectional study was done in North Shewa Zone public hospitals, Ethiopia from March 1–30, 2021. North Shewa zone has 24 woredas and 439 kebeles with a total population of 2,335,205. Of this population, 1,138,797 are females and 1,196,408 are males. With an area of 15,936 square kilometers. There are 12 hospitals (2 private and 10 public hospitals). There are about 772 nurses, 452 midwives, 120 laboratory professionals, 130 pharmacists, 219 general practitioners, 15 specialists, 54 integrated emergency surgical officers (IESO), 56 anesthetists, 22 radiology technicians, and 15 mental health professionals working in the zone (source: Zone Health Department).

Source population and Study population

All SBAs working in labor and delivery ward in North Shewa Zone public hospitals were the source population, while all SBAs working in labor and delivery ward in North Shewa zone public hospitals during the study period were the study population.

Inclusion criteria and Exclusion criteria

All SBAs who work in the labor and delivery wards of all public hospitals in the North Shewa zone during the data collection period were included in the study. Whereas SBAs who come to labor and delivery wards for consultation from other facilities during the study period were excluded from the study.

Sample size determination, sampling technique, and sampling procedure

All the SBAs working in labor and delivery wards in North Shewa Zone public hospitals were taken, which were 418 SBAs. There are 10 public hospitals in the north Shewa administrative zone. Debrebrehan comprehensive specialized hospital, Debresina, Deneba, Ataye, Yifat, Mehal Meda, Molale, Mida, Enat, and Arerti hospitals All 418 SBAs who were working in labor wards and following laboring mothers in the above hospitals during the study period were included.

Study outcomes

The practice non-pharmacological labor pain management methods and its associated factors among SBAs in North Showa, Ethiopia.

Independent Variables

Socio-demographic: Age, Sex, Profession, Educational status, Year of experience, Monthly income, Marital status.

Individual factors: Clients' unwillingness, HCPs unwillingness, Pain expectation of HCPs, Intention to stay in the profession, Clients strong belief towards drug, HCP preference of NPLPM.

Institutional factors: Structure of health care, insufficient number of staff, lack of time, lack of management supplies, working time shift, high patient flow, absence of training and management protocol, and workload.

Operational definition

Good Practice of NPLPMs: SBAs who were asked 13 practice related questions with four option, 1= Never, 2= on maternal request, 3= sometimes, 4= Routinely, thus SBAs who answered greater than or equal to the mean values, from a total practice related questions were considered as good practice of NPLPM.

Skilled birth attendants (SBAs): Skilled provider includes gynecologist/obstetrician, doctor, nurse, midwife and health officer.

Public Hospitals: Public hospitals are hospitals held by governments and play an important role in the health care system.

Data collection tool, procedure, and quality assurance

The data were collected using structured self-administered questionnaires that contained socio-demographic, knowledge, attitude, practice, individual, and facility-related factor questions. The tool was adapted from previous literatures of the studies similar with the present study title. The questionnaires were designed in English to be understood by every study participant. A pretest was done on 5% of the sample size (21) at Borru Hospital before the actual data collection time. Ten diploma nurse data collectors and 3 supervisors were recruited. The training was given for one day on study objectives, individual rights, informed consent, and how to administer the questionnaire.

Data processing and analysis

First, the questionnaire was checked manually for completeness and any misfiled questions. The data were coded and entered using EPI Data Manager 4.6 software and exported to the statistical package for social sciences (SPSS) version 25.0 software. Descriptive statistics were computed to determine frequencies and summary statistics (mean, standard deviation, and percentage) to describe the

study population in relation to socio-demographic and other relevant variables. Data were presented using tables, graphs, and figures. Then, bivariable logistic regression was carried out to see the association of each independent variable with the dependent variable. Then multivariable logistic regression was carried out for variables with a p-value < 0.25 in bivariate logistic regression to determine significant relationships between the dependent and independent variables. A P-value-value.05 and a 95% confidence level were used as a distinction of statistical significance.

RESULTS

Socio-demographic characteristics of respondents

A total of 411 SBAs were included in this study, for a response rate of 98.3%. The mean age of the respondents was 29.8 years, with a standard deviation of (SD = 4) years. Of them, 239 (58.2%) were in the age group of 20–29. Among the respondents, 283 (68.9%) were midwives. From the total, more than half of them, 224 (54.5%), had less than 5 years' experience (Table 1).

Table 1. Socio-demographic characteristic of SBAs working at labor ward in public hospitals of north Showa zone, Amhara region, Ethiopia, 2021 G.C. (n=411)

Characteristics	Frequency(n)	Percentage(%)
Age in year(n=411)		
20-29	239	58.2
30-39	160	38.9
>=40	12	2.9
Sex		
Male	218	53
Female	193	47
Marital status		
Married	183	44.5
Single	210	51.5
Divorced	18	4
Profession		
Midwife	283	68.9
Medical doctor	100	24.3
IESO	28	6.8
Educational status		
Diploma	180	43.8
Bachelor's degree	101	24.6
Master's degree	30	7.3
General practitioner	94	22.9
Gynecologist	6	1.5
Monthly income		
<5000	38	9.2
5000-10000	339	82.5
>10000	34	8.3
Work experience		
<5	224	54.5
6-9	151	36.7
>10	36	8.8

Practice of respondents towards NPLPM

Of the total of 411 SBAs working at North Showa public hospitals, 176 (42.8%) of the respondents had good practice of non-pharmacological labor pain management (CI = 38–47.6%) (Figure. 1).

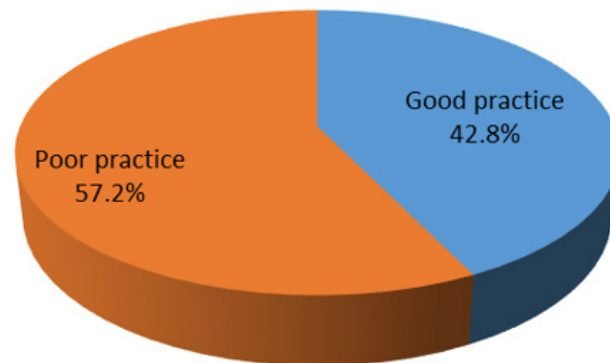


Figure 1. Overall practice of Skilled birth attendants working at labor ward in all public hospitals of north showa zone, Amhara region, Ethiopia, 2021 G.C. (n =411).

From the listed of NPLPM methods show to the mother how to bear down 199(48.4%), Allow companionship 185(45%), followed by Psychotherapy 175(42.6%) were routinely practiced NPLPM (Figure 2).

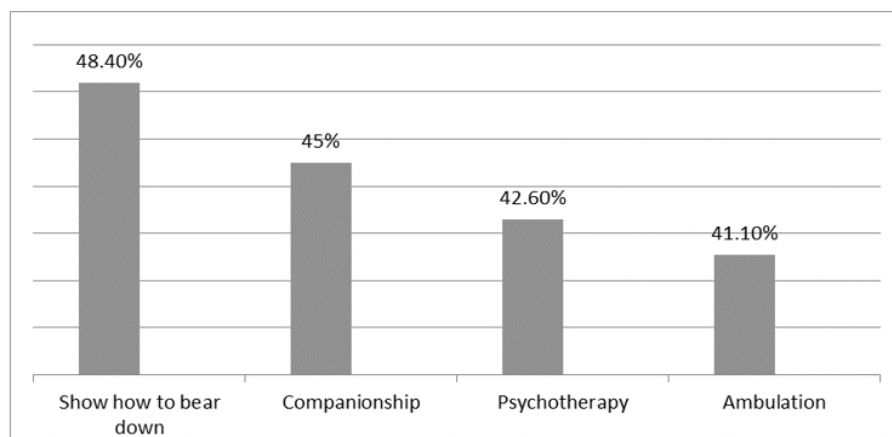


Figure 2. Routinely practiced NPLPM methods among SBAs in North Showa public hospitals 2021 (n=411).

Pain expectation and personal preference

Most SBAs, 313 (76.2%), expect labor pain to be as severe as While more than half of them, 228 (55.5%) and 211 (51.3%) prefer changing positions and back massage, respectively, to manage labor pain (Figure 3).

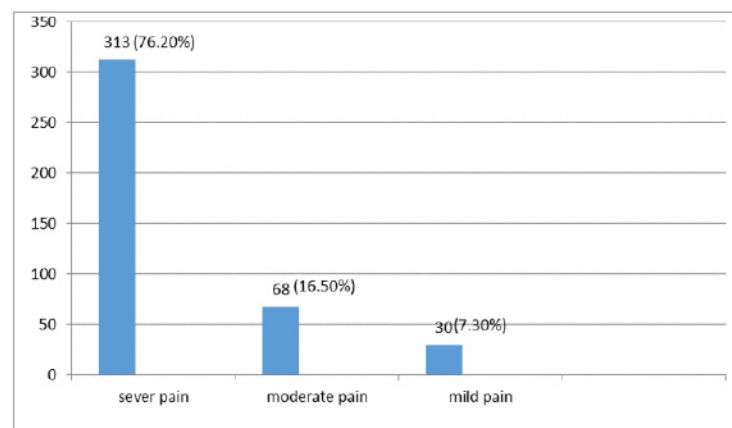


Figure 3. Labour pain expectation of SBAs working at labor ward in all public hospitals of North Showa Zone, Amhara region, Ethiopia, 2021 G.C (n =411).

Factors associated with the Practice of NPLPM

In the bivariable analysis Age, work experience, intention to stay in the profession, pain expectation, unavailability of protocol, knowledge, and attitude were significantly associated with the practice of NPLPM, but in multivariable analysis, work experience, pain expectation, unavailability of protocol, knowledge, and attitude remained significantly associated with the practice of NPLPM.

SBAs who had an experience of 6–9 and ≥ 10 years were 4.2 and 5.4 times more likely to practice NPLPM methods than those who had ≤ 5 years' experience [AOR = 4.21, 95% CI = 1.75–13.8%, and AOR = 5.45, 95% CI = 1.94–14.97], respectively. SBAs who expect labor pain to be moderate or severe pain were 2 and 3.2 times more likely to practice NPLPM methods than those SBAs who expect labor pain to be mild pain [AOR = 2.18, 95% CI = 1.00–8.308] and 3.23, 95% CI = 1.37–9.13], respectively. This study stated that SBAs who had a management protocol in their facility were 1.7 times more likely to practice NPLPM than those who didn't have a labor pain management protocol in their hospital. [AOR=1.72, 95% CI=(1.21-2.64)] And SBAs who had adequate knowledge about NPLPM methods for managing labor pain were about 4.3 times more likely to practice NPLPM methods than those who had inadequate knowledge about NPLPM methods [AOR = 4.3, 95% CI = (1.032–7.99)]. SBAs who had a positive attitude toward NPLPM were 1.6 times more likely to practice NPLPM than their counterparts [AOR = 1.605 (1.032–2.49)] (Table 2).

Table 2. Bivariable and Multivariable analysis of factors associated with the Practice of SBAs towards NPLPM, in north Showa Zone, Amhara region, Ethiopia, 2021

Variables	Practice of skilled birth attendants		COR(95%CI)	AOR(95%CI)	P-value
	Good Practice Frequency(n)	Poor practice Frequency(n)			
Age					
20-29	102(42.7%)	137(57.5%)	0.248(0.66-0.94)	0.206(0.77-1.223)	0.094
30-39	65(40.6%)	95(59.4%)	0.228(0.59-0.875)	0.208(0.76-1.243)	0.098
>40	9(75%)	3(25%)	1	1	
Work experience					
<5 year	109(48.750)	115(51.3%)	1	1.00	
6-9 year	62(41.1%)	89(58.9%)	4.319(1.59-11.72)	4.216(1.75-13.8)	0.002*
>10year	5(13.9%)	31(86.1%)	5.877(2.205-15.66)	5.45(1.948-14.97)	0.001*
Intention to stay in the profession					
Yes	160(44.9%)	196(55.1%)	1.99(1.07-3.692)	1.138(0.56-2.31)	0.7
No	16(29.1%)	39(70.9%)	1	1	
Pain expectation					
Mild	6(20.0%)	24(80%)	1	1	
Moderate	26(38.2%)	42(61.8%)	2.476(0.893-6.864)	2.18(1.001-8.308)	0.05
Sever	144(40.6%)	169(54.0%)	3.408(1.358-8.568)	3.237(1.370-9.13)	0.009*
Unavailability of protocol					
Yes	100(58.8%)	97(49.2%)	1	1	
No	76(35.5%)	138(64.5%)	1.87(1.26-2.78)	1.72(1.12-2.64)	0.03*
Knowledge					
Adequate	161(91.5%)	161(83.1%)	4.93(2.217-8.957)	4.305(2.319-7.99)	0.001*
Inadequate	15(8.5%)	74(31.1%)	1	1	
Attitude					
Positive	119(67.6%)	113(48.1%)	1.983(1.325-2.96)	1.605(1.032-2.49)	0.036*
Negative	57(32.4%)	112(51.9%)	1	1	

Keys: COR: crude odds ratio; AOR: adjusted odds ratio; CI: confidence interval; * represent variables significant at p-value <0.05.

DISCUSSION

The current study found that the proportion of SBAs who practiced non-pharmacologic labor pain management was 42.8% (95 CI = 38–47.6%). This study finding was in line with the study done in Ibdan, Nigeria [27], Egypt [28], Tigray regional state general hospitals [25], Amhara Regional State health institutions [18], and Amhara region referral hospitals [29], which show that 42.2%, 44.9%, 43.3%, 46.8%, and 40.1% of respondents had good practice towards non-pharmacological labor pain management respectively. The plausible explanation might be that the similarity in sociodemographic, inclusion criteria, training and education provided to SBAs, and availability of resources and infrastructure to support SBAs to provide NPLPM [30,31].

The present study findings are lower than from studies done in Harari Regional Health facilities (59.3%) [32]. However, it is higher than studies done in East Gojam, Ethiopia (30.4%) [24], and Dessie referral hospital (28.5%) [13,22]. This discrepancy may arise from a difference in the study setting and study population, whereas only health centers and one referral hospital were included in those studies, respectively. Also, the difference is expected from place to place because health professionals can't be identical in every aspect from one site to another [25]. The other plausible reason might be that in this study all health care providers working in maternity wards were recruited unlike previous studies.

This study reported that SBAs who had an experience of 6–9 and ≥ 10 years were 4.2 and 5.4 times more likely to practice NPLPM methods than those who had ≤ 5 years' experience, respectively. The result of this study is consistent with a study done in Kenya, and East Gojam [19,24]. The plausible reason might be that SBAs who have longer work experience might get exposure to training and mentorship which supports them to adopt guidelines to practice NPLPM. Because exposure to training and mentorship about NPLPM increase the likely hood to utilize NPLPM [24].

SBAs labor pain expectation was a statistically significant predictor of NPLPM practice, which was primarily identified by this study. SBAs who had moderate and severe labor expectations were 2 and 3.2 times more likely to practice NPLPM than those SBAs who had mild expectations of labor pain respectively. This might be since SBAs who expect severe labor pain will provide better labor pain management than their counterparts.

This study stated that SBAs who had a labor pain management protocol in their facility were 1.7 times more likely to have good practice than those who didn't have a labor pain management protocol. This study was supported by a study done at the Amhara region health institute in Ethiopia [18]. A possible reason is that the presence of the management protocol might provide SBAs evidence-based practices and recommendation to practice NPLPM to SBAs.

And SBAs who had adequate knowledge about NPLPM methods for managing labor pain were about 4.3 times more likely to practice NPLPM methods than those who had inadequate knowledge about NPLPM methods. This study was supported by studies done in the Benishangul Gumuz and East Gojam zone [22,24]. This could be justified by the fact that being aware of something creates a good opportunity for actual performance or application.

Also, SBAs who had a positive attitude towards NPLPM were 1.6 times more likely to practice NPLPM than those who had a negative attitude towards NPLPM. The result of this study was in line with the studies done in Amhara region health institute and East Gojam Ethiopia [18,24]. The plausible explanation is that the way SBAs think and feel about NPLPM might initiate the SBAs to practice non-pharmacological labor pain management methods.

Limitation of the study

Since the study was a cross-sectional study, it did not address the cause-and-effect relationship of the factors and the outcome variables. In this study, the participants were midwives, medical doctors, and the IESO assembly. It is impossible to generalize the findings to other health care professionals. The study did not investigate the women's outlook about non-pharmacological labor pain relief methods; only skilled birth attendants were asked, not clients.

CONCLUSIONS

This study revealed that 42.8% of respondents had good practice with NPLPM. Finally, pain expectation, unavailability of labor pain management protocol, knowledge level, attitude, and work experience of SBAs had statistical significance with the practice of non-pharmacological labor pain management methods. Most of the participants didn't have training in NPLPM. Therefore, supervision of SBAs towards their labor pain management mechanisms and the availability and use of labor pain management protocols should be considered

an essential component of maternity care. In addition, participate in providing short-term training issues related to non-pharmacological labor pain management methods, empower a woman to ask for NPLPM services during labor, and keep well-informed knowledge and attitude about NPLPM methods.

LIST OF ABBREVIATIONS

CI: Confidence Interval; AOR: Adjusted odd Ratio; COR: Crude odd Ratio; EDHS: Ethiopian Demographic Health Survey; HCP: Health Care Provider; SBAs: Skilled Birth Attendants; NPLPM: Non-Pharmacological Labour Pain Management; SPSS: Statistical Package for Social Sciences.

DECLARATIONS

Ethics approval and consent to participate

Ethical clearance was obtained from the Institutional Review Board of Wollo University. Informed consent was obtained from the study participants. Information was kept confidential, and names of study participants were not written. All the methods were performed in accordance with the relevant guidelines and regulations.

Consent for Publication

Not applicable.

Availability of data and materials

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Competing of interests

The authors declare that they have no competing interests.

FUNDING

Wollo University

AUTHORS' CONTRIBUTIONS

DM developed initial study conception, design, analysis and wrote up the draft articles. DT and TM contributed to conception, design, and analysis of the study. BT, MS, SN, and BDD contributed to in writing the background of the study. MA and LA contributed to the knowledge-based analysis. ST contributed to knowledge-based analysis, drafted, and revised the main text of the manuscript. All authors contributed to the interpretation of findings. All authors reviewed and approved the final draft of the manuscript.

ACKNOWLEDGMENTS

We would like to thank Wollo University College of Medicine and Health Science, for their clearance approval and financial support. We would like to extend our heartfelt thanks to data collectors and supervisors for their involvement throughout the data collection period. Finally, we would like to thank the study participants for their role in this research work.

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