ADDIS ABABA UNIVERSITY

COLLEGE OF HEALTH SCIENCES

DEPARTMENT OF OBSTETRICS AND GYNECOLOGY

THE PRACTICE AND DETERMINANTS OF LABOR ANALGESIA AMONG OBSTETRIC CARE PROVIDERS SERVING IN THREE ACADEMIC HOSPITALS LOCATED IN ADDIS ABABA: A CROSS-SECTIONAL STUDY.

PRINCIPAL INVESTIGATOR: MEKONNEN GEBRE, MD, OB-GYN RESIDENT

ADVISORES: DR DAWIT DESALEGN (MD, GYN-ONCOLOGIST, PHD CANDIDATE) AND DR ABERA BEDHADHA (ASSISTANT PROFESSOR IN OB-GYN, MFM FELLOW)

A THESIS PRESENTED TO THE DEPARTMENT OF OBSTETRICS AND GYNECOLOGY, COLLEGE OF HEALTH SCIENCES, ADDIS ABABA UNIVERSITY, IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE SPECIALTY QUALIFICATION IN OBSTETRICS AND GYNECOLOGY.

JULY, 2025

ADDIS ABABA, ETHIOPIA

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Declaration

The undersigned hereby assumes responsibility for the technical, scientific, and ethical conduct of this study and for submitting all progress reports in accordance with the Research Publications Office's then-current policies at the time the grant is approved.

Name of the resident: _____DR MEKONNEN GEBRE_

Date._____ Signature _____

We hereby acknowledge that we have read and evaluated the thesis, "The practice and determinants of labor analgesia among obstetric care providers serving in three academic hospitals located in Addis Ababa, Ethiopia., A cross-sectional study 2025," under our supervision from start to finish, including ethical considerations, as part of the resident's research project for the Department's partial fulfillment of the Degree of Specialty in Obstetrics and Gynecology. We further announce that the thesis may be sent to the DRPC for further administrative processing and proposal documentation.

Advisors:

Dr Dawit Desalegn Signature …… Date……

Dr Abera Bedada, Sinature…… Date ….

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ACRONYMS/ABBRIVATION

ACOG - American College of Obstetricians and Gynecologists

AAU- Addis Ababa University

ASA - American Society of Anesthesiologists

BOFHTA- Basque Office for Health Technology Assessment

CBE- Community Based Education

CDC- Center for Disease control

CI- Confidence Interval

CSE- Combined Spinal Epidural

EFMOH- Ethiopian Federal Ministry of health

N2O- Nitrous Oxide

NICE- National Institute of Clinical Excellence of United Kingdom

NSAIDS- Non-Steroidal Anti-Inflammatory Drugs

OR- Odds Ratio

PSI- Primary Sampling Unit

S2-S4- Sacral nerve fibers 2 to 4

T11-T12- Thoracic nerve fibers 11 to 12

TENS- Transcutaneous Electrical Nerve Stimulation

WHO- World Health Organization

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Abstract

Introduction: Uterine ischemia and intricate neuro-hormonal processes are the causes of labor pain, which is a physiological and psychological phenomenon. For childbirth experience to be positive, effective pain management is essential. Despite the existence of international policies and guidelines aimed at improving maternal care, including the management of labor pain, their actual implementation is still restricted. Finding the variables that affect medical professionals' decisions and practices around managing labor pain is a common focus of this field of study.

Objective: To assess the practice and determinants of labor analgesia among obstetric care providers serving in three academic hospitals located in Addis Ababa, Ethiopia.

Methodology: Institution based cross-sectional study was employed in three teaching hospitals of Addis Ababa between November 1/2024 - February 30/2025 G.C. The study subjects were selected using convenience method and 202 obstetric care workers were proportionally allocated to respective health facilities. The data was collected by self-administered structured questioner. The data was entered and analyzed by SPSS version 26.00 for clearing and analysis and Logistic regression analyses was employed to identify factors associated with the practice of analgesia. Using 95% CI variables with a p-value <0.05 was identified as statistically significant factors.

Results: Just 19.8% of the obstetric care providers in this study demonstrated good labor analgesia practices. Being female (AOR = 3.3, 95% CI: 1.45–7.60), having more professional experience (AOR = 3.2, 95% CI: 1.81–12.49), having a positive attitude toward labor analgesia (AOR = 3.2, 95% CI: 1.81–12.49), and exhibiting sufficient knowledge about labor analgesia (AOR = 1.9, 95% CI: 1.47–5.12) were all factors that were significantly associated with better practice.

Recommendation: - In order to improve the quality of labor pain management, this finding highlights the need for focused interventions that improve obstetric providers' attitudes and knowledge while also increasing training opportunities, particularly for male and midwife providers.

Keywords: practice and determinants, labor analgesia, health care worker, pain management, maternal health.

Introduction

Background

According to scientific definitions, pain is an unpleasant emotional and sensory reaction to actual or possible tissue damage (1). Two main components make up acute pain, including that felt during labor: a sensory-physical component that involves pain signals being transmitted to the brain and an affective component that reflects how the individual interprets these signals. A complex interplay of individual differences in emotional, social, cultural, and cognitive factors shapes this interpretation (2,3).

Pain is a multifaceted episode that is consistently a subjective, a physiologic and a combination of both sensations in the body and an emotional event(4).It is categorized by persistent patterns of worrying uterine contractions that surge in frequency and severity in the moment of labor (5). Labor pain is a physiological and psychological event that connected to ischemia of the uterus and other complicated neuro-hormonal process (6, 7). Pain-brought sympathetic stimulation will cause heart disease, eclampsia, and anemia in parturient. Thus, with adequate nerve block is needed(8).

So, various analgesic options are available, including both pharmacologic and non-pharmacologic methods, their implementation in clinical practice is often inconsistent. Understanding the practice and determinants, that obstetric care providers face in administering labor analgesia is essential for improving pain management strategies and enhancing maternal and neonatal outcomes. insufficient training and outdated knowledge on analgesic techniques prevent healthcare providers from offering effective pain relief. Continuous professional education is essential to address this gap (9)

Excessive or prolonged labor pain has been shown to have negative effects on the mother and the fetus. This prolonged contractions cause the mothers to experience nausea, anxiety, fear, hyperventilation, and heightened sympathetic responses. Therefore, providing adequate pain relief during labor is essential for a positive birth experience (10). There is still insufficient use of international policies and guidelines to enhance maternal care, especially when it comes to managing labor pain (10).

Numerous pharmacological and non-pharmacological techniques are currently available to manage labor pain (11, 12). During childbirth, women experience a wide range of pain levels, from mild discomfort to severe distress. Therefore, effective pain management during labor is essential to improve maternal and neonatal outcomes (13). Despite the fact that labor is painful, many Ethiopian healthcare providers (HCPs) do not provide women with adequate options for pain relief during childbirth (14).

Statement of the Problem

Every woman experiences both excitement and pain during labor. There are several ways to ease this discomfort and assist the woman in recalling the exciting times in her life (15).Uterine ischemia and intricate neuro-hormonal processes cause labor pain, which is a physiological and psychological phenomenon (16, 17). It is a major component of a woman's childbirth experience and is frequently so severe that the majority of moms look for pain relief. Women often go through some of the worst pain in their lives during childbirth (18).

Pain induced sympathetic stimulation can cause heart disease, eclampsia, and anemia in parturient, that is why adequate nerve block is needed to alleviate this pain(19). There is sufficient evidence to state that if labor pain surpasses a certain intensity and duration, it can generate damaging effects on mother and fetus. Some of the harmful effects on the mother contain fear, anxiety, nausea and increased sympathetic response and hyperventilation which may lead to uncoordinated uterine action(20). Providing adequate pain relief during labor is vital for a positive experience of childbirth(21).

Since pain relief in labor is an important aspect of the management of pregnant women during child birth, an effort to evaluate its practice becomes important in order to determine its' determinant factors that require improvement. A lot of controversy has existed since the inception of pain relief in labor to date. According to the American Society of Anesthesiologists (ASA) and American College of Obstetricians and Gynecologists (ACOG), maternal request represents sufficient justification for pain relief(22).

There are few medical situations in which a patient is permitted to endure excruciating pain that could be safely managed under a doctor's supervision, according to the American College of Obstetricians and Gynecologists (ACOG), and many women endure excruciating pain during labor (23). In a similar vein, the National Institute for Health and Care Excellence (NICE) in the United Kingdom recommends that women be informed about the choices available for effective labor analgesia in order to ensure that they receive the best possible pain relief during childbirth (24).

There are notable disparities in this practice between developed and developing countries. Despite being widely used in high-income nations, labor analgesia is still not widely used in Africa (25). To put it another way, the primary reasons given by healthcare providers for not

providing labor analgesia in developing nations are the high expense and scarcity of essential medications and equipment, as well as the attitudes and knowledge of practitioners regarding the use of different analgesic techniques (26, 27).

Expectations for labor pain management vary depending on the professional's role. Obstetricians, anesthesiologists, and anesthetists are primarily responsible for providing pharmacological interventions, whereas midwives, nurses, and other healthcare providers are more often involved in supporting women through psychological or alternative methods (2). Moreover, effectively relieving labor pain does not automatically translate into higher satisfaction for women in labor. Other factors—such as the woman's participation in decision-making, cultural and social influences, her relationship with caregivers, and her personal expectations of labor—can be equally or even more significant (28, 29).

This study focuses on identifying and understanding the determinants that obstetric care providers face in offering labor analgesia to pregnant women during childbirth. This topic will assess labor analgesia practice and explore determinants that influence obstetric care providers' decisions and actions related to pain management during labor. So, the current study is done to assess the practice and determinants of labor analgesia among health worker involve in labor and delivery in the three teaching hospitals of Addis Ababa.

Significance of the study

Practicing labor analgesia involves the administration of pain relief techniques during childbirth to alleviate the discomfort experienced by the mother. Effective pain relief can contribute to a more positive birth experience for the mother. It allows her to conserve energy, cope better with labor, and remains more alert and engaged during the delivery process. so, studying the practice and determinants of labor analgesia among obstetric care providers is significantly important to assess the practice by identifying gaps in providing effective pain relief during labor.

Identifying determinants can highlight areas where additional training or education is needed for obstetric care providers. So, they become more confident and competent in providing labor analgesia when it is needed. Findings from such study will be a source for healthcare policies and guidelines regarding the provision of labor analgesia. Assessing the practice and determinants can help to reduce disparities and ensure more equitable healthcare delivery.

The outcomes of this study give insight for studies on practice and determinants of labor analgesia and also can stimulate further research and innovation in the field of obstetric analgesia. Even it can promote a more patient-centered approach to childbirth, respecting women's preferences and choices regarding pain management..

Literature Review

The Practice of Labor Analgesia among Healthcare Providers

A study conducted tertiary health facility in Kenya on Labor pain relief practice by maternal health service providers found that more than half (61.5%) of obstetric care providers routinely provided the service of labor pain relief. Regional analgesia was provided by 3.4% of the respondents. Health system factors that hinder the provision of labor analgesia were reported as; non-availability of drugs and equipment (58.1%), lack of clear protocols and guidelines (56.4%), and absence of adequate skilled personnel (55.6%) (30).

A study conducted in Hawassa city, Ethiopia, on labor pain management among obstetric care providers found that only 13.8% of them routinely implemented pain management practices during labor (31).A systematic review and meta-analysis done in Ethiopia on labor analgesia management found that the pooled prevalence of labor pain management practices in Ethiopia was 45.73% (32).

A study conducted in Central Ethiopia's West Shewa Zone looked at the use of obstetric analgesia to treat labor pain and discovered that 46% of women used it overall (33). Out of 391 obstetric care providers polled, 143 (36.6%; 95% CI: 31.5–40.9%) reported administering labor analgesia, according to a comparable study conducted in Addis Ababa's public hospitals (34).

37.9% of participants in a different study conducted in Southern Ethiopia's Kembata Tembaro Zone reported using labor analgesia (35). Similarly, 48.9% of obstetric care providers at public health facilities in the East Gojjam Zone, Amhara Region, used labor pain management techniques and associated factors, according to research on the topic (36). Furthermore, a study conducted in public health facilities within the Gedeo Zone reported that only 37% of obstetric care providers practiced labor pain management. The study also explored their attitudes, methods, and the perceived barriers to providing effective pain relief during labor (37).

The determinants of labour analgesia utilization

Some intriguing trends were discovered in a study that examined the factors influencing how obstetricians in Hawassa City handle labor pain. Providers with a bachelor's degree or higher and those who had a favorable attitude toward pain management were more likely to manage labor pain than physicians and those with five or more years of experience. Physicians (AOR = 0.18), five or more years of experience (AOR = 0.41), bachelor's degree or above (AOR = 3.58), and positive attitude (AOR = 2.97) were the connections that the study demonstrated using adjusted odds ratios (AORs) (31).

Numerous studies have been carried out in different parts of Ethiopia to examine the factors influencing the use of labor pain management techniques. A systematic review and meta-analysis found that health providers who were knowledgeable about labor pain management were nearly four times more likely to use it (OR = 3.74). Furthermore, the likelihood of providing pain relief during labor was significantly higher for those who had ten or more years of professional experience (OR = 3.45), worked in facilities with analgesic medications available (OR = 3.23), or had a favorable attitude toward labor analgesia (OR = 2.90) (32).

The study done on obstetric analgesia utilization in labor pain management and associated factors among obstetric care providers in the West Shewa Zone, Central Ethiopia revealed that being a Midwife (AOR: 2.10), having heard of the World Health Organization pain ladder (AOR: 2.95), having favorable attitude (AOR: 1.89), the expectation of obstetric care providers about labor pain (AOR: 3.26), having training on labor pain management (AOR: 2.51), and presence of chance for preference of obstetric analgesia for mothers in the facility (AOR= 2.30) were identified as factors significantly associated with the practice of obstetric analgesia among obstetric care providers (33).

A study done in Public Hospitals of Addis Ababa, Ethiopia on determinants of practice of labor analgesia found that Having adequate knowledge (AOR 2.7), ten and more years of work experience (AOR 4.3), and availability of analgesics (AOR 3.3) were significantly associated with provision of labor analgesia (34).

A study done in Kembata Tembaro Zone, Southern Ethiopia on labor analgesia management showed that professionals who had inadequate knowledge were almost four (3.93) times more likely to use obstetric analgesia than those who had adequate knowledge (AOR: 3.93). Positive professionals' attitude had a significant association with labor analgesia, (AOR: 4.35). when drugs were not readily accessible in the facility, health care providers were 65% times less likely to use labor analgesia, than when drugs were freely available for use (AOR: 0.35) (35).

A study on the use of labor pain management techniques and related factors among obstetric care providers at public health facilities in the East Gojjam Zone, Amhara region, found that the use of labor pain management techniques was significantly correlated with professional knowledge [AOR = 2.006], the availability of medication and equipment [AOR = 2.937], and permitting a companionship [AOR = 2.587] (36).

Several characteristics were found to be substantially connected with obstetric pain management in a study on the attitudes and practices of labor pain treatment as well as the perceived barriers among obstetric care professionals in Gedeo Zone public health institutions. These included the provider's occupation (AOR = 4.35), employment history (AOR = 0.19), disposition (AOR = 3.0), medication accessibility (AOR = 2.17), and medication storage location (AOR = 0.3). (37).

Conceptual frame work

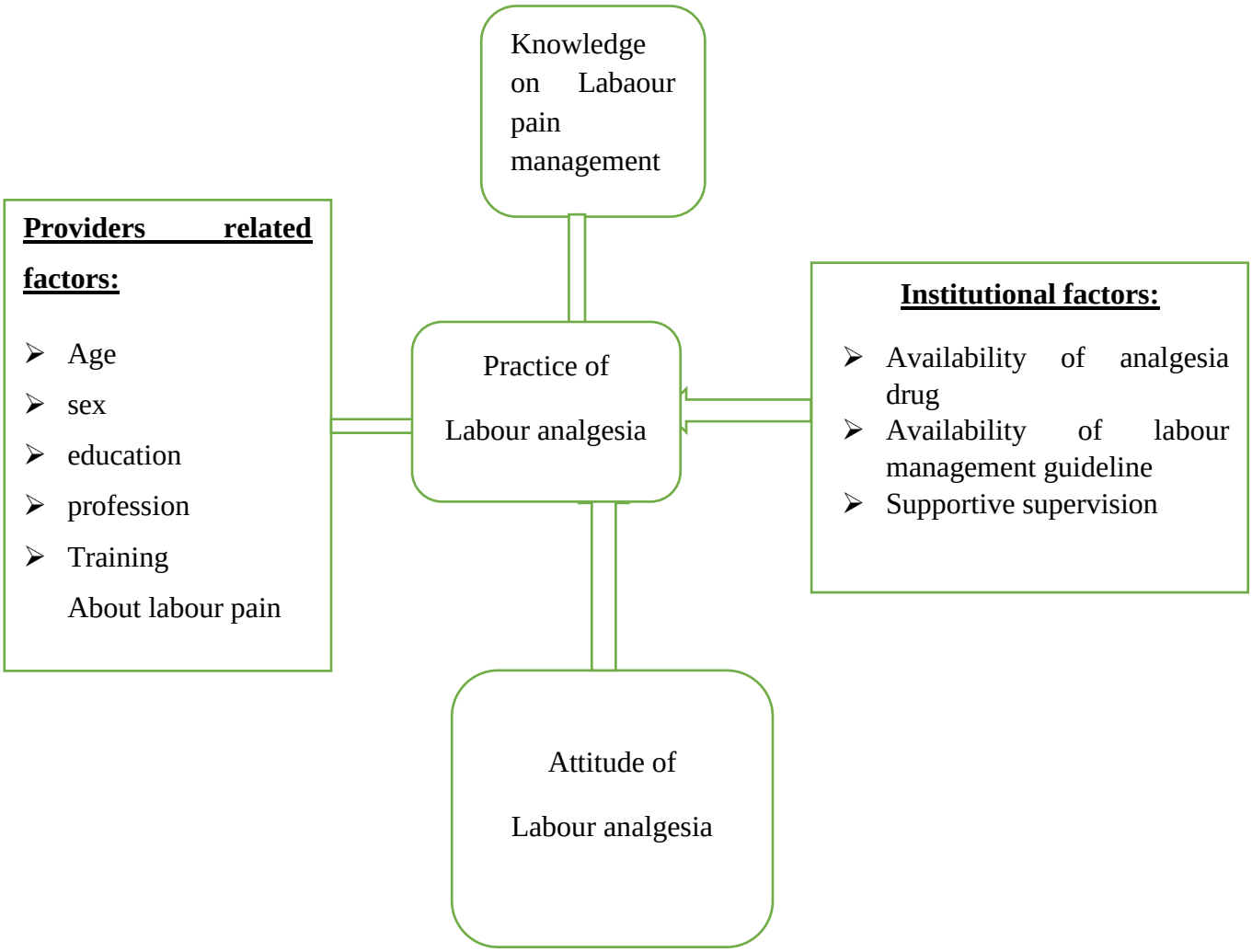

Figure 1. Conceptual frame work on practice on labour analgesia among health care provider involved in labour and delivery.

Objective

General Objective

To assess the practice and determinants of labor analgesia among obstetric care providers serving in three academic hospitals located in Addis Ababa, Ethiopia.

Specific Objectives

1. To assess the practice of labor analgesia among obstetric care providers serving in the three-teaching hospitals of Addis Ababa, Ethiopia
2. To identify the factors affecting the utilization of labor analgesia by obstetric care providers in the three teaching hospitals of Addis Ababa, Ethiopia.

Methods

Study Area and period

The study was conducted in Addis Ababa, the capital of Ethiopia, which had an estimated population of 5 million in 2024. The city currently hosts over 13 public hospitals, 27 private hospitals, more than 100 health centers, 35 health posts, and upwards of 500 clinics. From the 12 public hospitals, three were purposefully selected for inclusion in this study. These selected hospitals are referral centers that manage a large number of laboring women referred from 70 public health centers, as well as patients from other regions of Ethiopia.

The study was conducted in Tikur Anbessa Specialized Hospital (Addis Ababa University Hospital), Zewditu Memorial Hospital, and Gandhi Memorial Hospital. The latter two are regional hospitals operated by the Addis Ababa Health Bureau and affiliated with Addis Ababa University. All three institutions provide comprehensive maternal healthcare services, including labor and delivery care, as well as essential maternal and neonatal services. Data collection took place from November 1, 2024, to February 30, 2025 G.C.

Study Design

An institution-based cross-sectional study design was employed.

Population

Source Population

All obstetric care providers participating in labor and delivery management, including interns, midwives, residents, obstetricians and gynecologists, as well as anesthetists and anesthesiologists

Study population

Obstetric care providers engaged in labor and delivery management at the three teaching hospitals in Addis Ababa during the study period.

Inclusion and Exclusion Criteria

Inclusion Criteria

Obstetric care givers (Intern, midwife, resident and Obstetrician and gynecologist, anesthetists, anesthesiologists) who are involved in the management for labor and delivery was included in the study.

Exclusion Criteria

Obstetric care givers who were not present during the study period (maternal leave, annual leave) and unwilling to participate in the study were excluded from the study.

Sample Size and Sampling technique

Sample size determination

The sample size for this study was determined using the single population proportion formula, based on the following assumptions: a 95% confidence level, a margin of error of 5% (0.05), and an estimated proportion of 13.8% of providers who routinely practice labor pain management, as reported in a previous study conducted in Hawassa city (32). Applying the single population proportion formula: $N=\frac{(z\alpha/2)2p(1-p)}{d2}$= $(1.96)^2(0.138)\ (0.862)/\ (0.05)^2$ =183 where,

- N = sample size,
- z = Standard score corresponding to 95% confidence interval which is 1.96,
- P= proportion of providers routinely practiced labor pain management
- d= desired level of precision/Marginal error (0.05)
- An additional 10% was added to the calculated sample size to account for incomplete responses, resulting in a total sample size of 202.

Sampling Technique:

The sample size was distributed proportionally across the three teaching hospitals, and data were gathered using a consecutive sampling method until the targeted sample size was reached.

Study Variables

Dependent Variable

Practice of labor analgesia

Independent Variables

- Socio-demographic characteristics:
  - ✓ Age
  - ✓ Sex
  - ✓ Profession
  - ✓ Years of service
  - ✓ Level of education

- ✓ Training on labour management
- ➢ Knowledge on labour pain management
- ➢ Attitude on labour pain management
- ➢ Institutional factors:
- ✓ Analgesia drug availability
- ✓ Guideline
- ✓ Supervision support

Data Collection instrument

Structured questionnaire was adapted from the result of different research done on practice and determinants of labor analgesia. General practitioners had collected the data using self-administered questioner from study participants, and three residents had supervised the data collection. A pre-tested structured questionnaire initially prepared in English was used to collect data on practice and determinants of labor analgesia.

Data Quality Assurance

The questionnaire was first developed in English, then translated into the local language, and subsequently back-translated into English by different qualified individuals to ensure accuracy and consistency. Before the study began, data collectors underwent a one-day training on proper questionnaire administration and overall management of the data collection process. A pretest was conducted on 5% of the sample in a comparable population in Addis Ababa, which was not included in the main study, and appropriate modifications were made based on the findings. In all time of data collection period, the principal investigator had monitored the data collection process to make sure completeness and consistency of data.

Data Collection Procedure

Training for data collectors and supervisor was given on the planned date. The data collection formats were made ready for use. Instruments were pre-tested before the actual data collection on the planned date.

The participants were requested to complete the questionnaire. Following informed consent and screening for exclusion criteria, each individual participant was requested to respond to the questionnaire. Primary data was collected from obstetric care providers in selected health

facilities using self-administered questionnaire. For each facility one GP was assigned as a data collector.

Data collectors were supervised and questionnaire was checked for completeness and accurateness to determine the validity to the questionnaire. Any problem that has arised during the data collection process was managed by the principal investigator.

Data Analysis and Interpretation

Data were cleaned, entered and analyzed by SPSS version 26. Summary statistics of mean and percentages were used to describe the study. The fitted bivariate logistic regression models to assess the association between each of the study outcomes (analgesia practice) and the determinant factors. Then, multivariable logistic models were fitted to identify independent determinants. For the multivariable regression modeling, the covariates were included in a model which was selected based on their bivariate association with the outcome where variables with P-value< 0.25 were included. Adequacy of the models to predict the outcome variables were checked using the Hosmer–Lem show test. The strength of association between the different risk factors and the study outcomes were reported using crude and adjusted odd ratios and the presence of statistically significant association was considered at p-value less than 0.05.

Operational definition

Labor: The process from the start of uterine contractions to delivery fetus and placenta

Analgesia: - Analgesia refers to pain relief or the reduction of pain perception while maintaining alertness and control.

Labor analgesia: -focuses on pain relief methods during childbirth, allowing laboring mothers to experience reduced discomfort while maintaining alertness and control.

Labor and delivery care provider: health care workers who will involve during labor and delivery by administering medication, giving education, attending delivery, or following labor progress for laboring mother.

Practice of labor analgesia: -involves offering pain management options to mothers in labor, balancing effectiveness, safety, and patient preferences.

Anesthesia: - The use of medicines to prevent pain during surgery and other procedures.

Utilization of Labor Analgesia: Determined as a self- report of using labor analgesics to manage labor pain in the last delivery they attend (38).

Knowledge: Knowledge-related question comprised of 9 items, and the score ranges from 0 to 9; knowledge was considered as adequate when obstetric care providers scores equal or above mean and considered as inadequate when they score below the mean (39).

Attitude: Attitude-related question comprises 7 items, and possible response levels of all items were 5 (strongly disagree, disagree, uncertain, agree, and strongly agree), and total score ranges from 7 to 35. Then, attitude was considered as positive when obstetric care providers scores equal or above the mean and considered as negative when they score below the mean after arranging all statements in affirmative way (39).

Ethical Consideration

The research proposal was presented to the Department of Obstetrics and Gynecology, where ethical clearance was granted by the DRPC. Each participant received an information sheet (Annex 1) explaining the purpose of the study, and verbal consent was obtained before beginning the interview, using a one-page consent form attached to each questionnaire and verified by the data collector (Annex 2). Participants were informed that the interview would take less than 50 minutes, were briefed on the types of questions to expect, and were assured that the study was not an evaluation. Additionally, participants were informed that their involvement in the study was entirely voluntary and that they could refuse to participate or withdraw at any time without any consequences. The final report was written without referring any participants.

Data Presentation and Dissemination Plan

According to the work plan, once the data were collected and analyzed, conclusions were drawn and a discussion was prepared. A public defense will be conducted at the Department of Obstetrics and Gynecology, Addis Ababa University. After incorporating the examiners' feedback and obtaining the necessary approvals, the findings will be shared with relevant stakeholders and the public, and publication of the results will be considered.

5 Results

5.1 Socio-demographic characteristics of the study participants

In this study, 202 participants were involved, resulting in a 100% response rate. Half of the participants were over 30 years of age, with a mean age of 30 years. The male-to-female ratio was 1:1. Among the participants, 32.7% were midwives, 41.1% held a BSc degree, and 55.4% had 4 to 8 years of experience.

Table 1. The sociodemographic characteristics of Obstetric health care provider in the three teaching hospitals of AAU, 2025.

Variable	Frequency	Percent
Age in years		
<30	101	50.0
>30	101	50.0
Sex		
Male	101	50
Female	101	50
Profession		
Midwife	66	32.7
Intern	20	9.9
Resident	53	26.2
Anesthesia	50	24.8
Senior	13	6.3
Level of education		
Intern	20	9.9
BSC	83	41.1
MSC	24	11.9
R1	9	4.5
R2	17	8.4
R3	17	8.4
R4	19	9.4
Senior	13	6.4
Experience		
<4	66	32.7
4-8	112	55.4
>8	24	11.9

5.2 knowledge toward obstetric analgesia among obstetric care providers

Ninety-six percent of the obstetric health providers were knowledgeable about analgesia. Among them, 92.6% were aware of systemic opioids, followed by regional analgesia (92.6%), systemic non-opioids (77.2%), and cervical methods (64.4%). Fifty-three percent of the obstetric health

providers preferred pharmacologic analgesia as the best method for managing labor pain. Seventy-five percent had heard about the WHO pain ladder, and overall, 53% of the obstetric health providers demonstrated good knowledge of labor pain management analgesia.

Table 2. knowledge toward obstetric analgesia among obstetric care providers, at three teaching hospital, AA, ETH, N=202

Variable	frequency	Percent
Knowing of analgesia		
Yes	193	95.5
No	9	4.5
Types of knowing listing analgesic methods		
Systemic opioid	187	92.6
Systemic nonopioid	156	77.2
Reginal analgesics	187	92.6
Inhalational	110	54.5
Cervical	130	64.4
Ever asked to provide labour pain analgesics		
Yes	167	35.6
No	130	64.4
Best method for managing labor pain		
Nonpharmacologic	31	15.3
Both pharmacologic and non-pharmacologic	64	31.7
Pharmacologic	107	53
Heard about WHO pain ladder		
Yes	152	75.2
No	50	24.8
Overall knowledge		
Poor	95	47
Good	107	53

5.3 Attitude toward obstetric analgesia among obstetric care providers

Half of the obstetric health providers agreed with managing labor pain using analgesia, and 24.3% strongly agreed that every laboring mother should receive analgesia. Twenty-one percent strongly disagreed with the idea that women should endure labor pain. Forty-four percent agreed that labor analgesia influences labor, while 7.4% strongly disagreed that labor analgesia causes fetal distress. Overall, 47.5% of the obstetric health providers had a favorable attitude toward labor analgesia.

Table 3. Attitude toward obstetric analgesia among obstetric health care provider in the three teaching hospitals of AAU, 2025

Variable	SD	D	N	A	SA
Obstetric analgesia should be given for labor pain management	0	19(9.4)	23(11.4)	98(48.5)	62(30.7)
Every laboring woman should be managed with analgesics	1(0.5)	39(19.3)	33(16.3)	80(39.6)	49(24.3)
Women should endure labor pain	43(21.3)	88(43.6)	50(24.8)	19(9.4)	2(1)
Labor analgesia influences labor	15(7.4)	36(17.80	55(27.2)	89(44.1)	7(3.5)
Labor analgesia causes late presentation	14(6.9)	57(28.2)	74(36.6)	53(26.2)	4(2)
Labor analgesia causes fetal distress	15(7.4)	66(32.7)	72(35.6)	48(23.8)	1(0.5)
Labor analgesia offers a better birth experience	0	15(7.4)	34(16.8)	97(48)	56(27.7)
OVERALL ATTITUDE	Total(percent)				
Unfavorable	106(52.5)				
Favorable	96(47.5)				

5.4 The practice of labour analgesia by obstetric care providers

In this study, only 19.8% of the obstetric health providers demonstrated good practice in labor analgesia, as shown in the figure below.

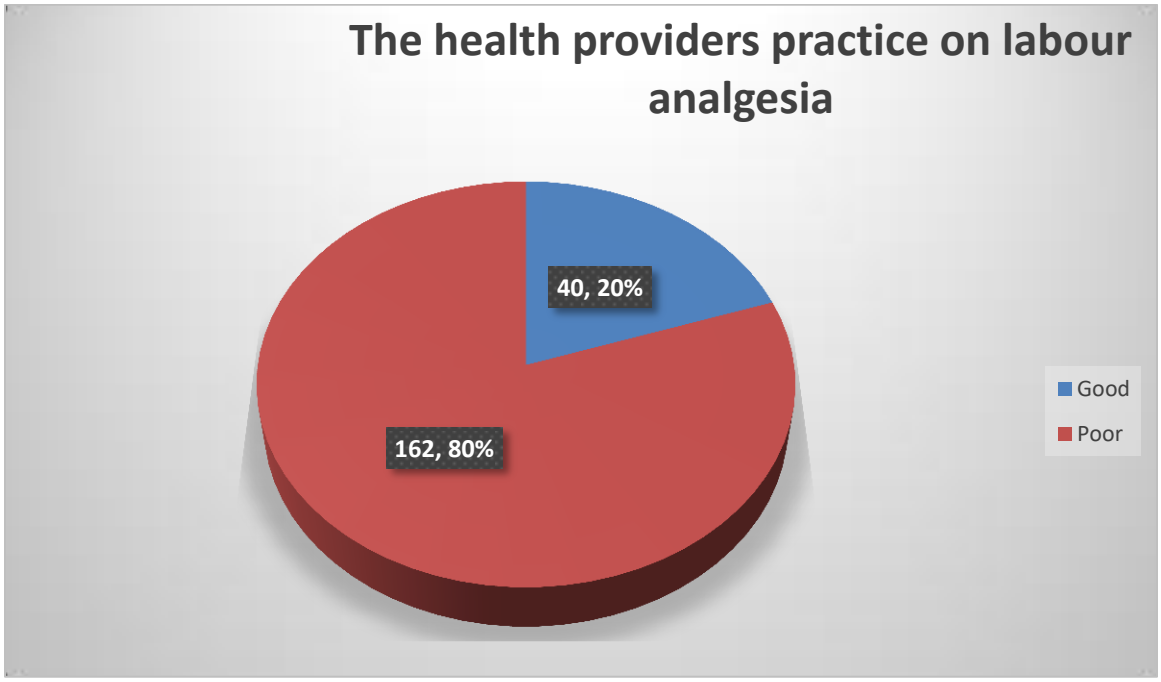

Figure 2. The practice of labour analgesia among obstetric health care provider in the three teaching hospitals of AAU, 2025

5.5 The pattern of use and type of labor analgesia used among maternal healthcare providers

Twenty percent of the obstetric health providers routinely used labor analgesia, while 44.1% were using it sometimes, and 24.8% used it on maternal request. Among those that ever-used analgesics, 98.3% used opioid analgesia, followed by non-opioid analgesia (98%) and regional analgesia (37.1%). Among opioid users, morphine was the most common (57.4%), followed by fentanyl (48.3%). Among non-opioid users, paracetamol accounted for 78.3%, followed by diclofenac (73.3%). Additionally, 99% of the obstetric health providers used non-pharmacologic pain management methods, with 90.4% providing psychological support.

Table 4. The pattern of use and type of labour analgesia among obstetric health care provider in the three teaching hospitals of AAU, 2025

Variable	frequency	Practice
Patterns of analgesia used		
never used	23	11.4
On maternal request	50	24.8
Sometimes	89	44.1
Routinely	40	19.8
The list of analgesia used (n=179)		
Opioid	176	98.3
The types of opioid used (n=176)		
Morphine	101	57.4
Fentanyl	85	48.3
Remifentanil	36	20.4
Tramadol	3	1.7
Nonopioid use	176	98.3
Types of nonopioid used(n=176)		
Diclofenac	129	73.3
Aspirin	32	18.2
Paracetamol	138	78.4
Regional used	75	37.1
Types of regional analgesia used (n=75)		
Spinal	55	31.3
Epidural	71	40.3
Combines epidural and spinal	19	10.8
Other nerve blocker	9	5.1
Non pharmacological management	178	99.4
Psychological support	161	90.4
Does labour analgesia offer a better birth experience?		
Yes	153	75.7
No	8	4

Not sure	41	20.3
pre-service or in-service training		
Yes	10	53
No	34	16.8
Didn't remember	61	30.3

5.6 Challenges for not routinely administered obstetric analgesia

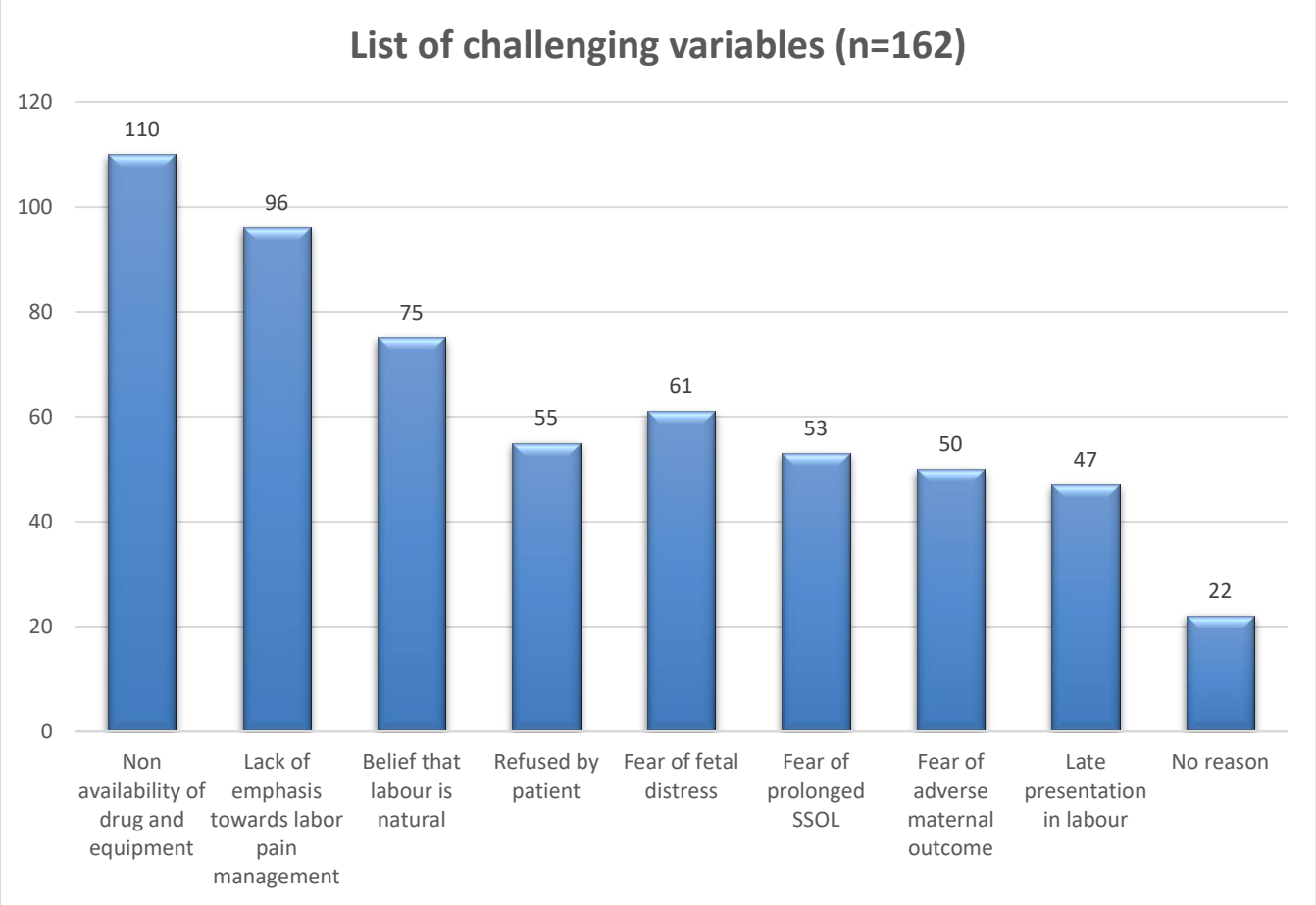

Figure 3. Challenges for not routinely administered obstetric analgesia obstetric health care provider in the three teaching hospitals of AAU, 2025

5.7 The determinant factors of labour analgesia practice among obstetric health provider

Sex, profession, experience, attitude toward labor analgesia, and knowledge of labor analgesia were associated with the practice of labor analgesia among obstetric health providers in bivariate logistic regression. Multivariate logistic regression revealed that female obstetric health providers had 3.3 times higher odds of practicing labor analgesia compared to male providers (AOR = 3.3, 95% CI: 1.45–7.60). Work Experience >8 years had 3.2 times higher odds of

practicing labor analgesia compared to those that had a work experience of <4years (AOR = 3.2, 95% CI: 1.81–12.49).

Providers with a favorable attitude toward labor analgesia had 2.3 times higher odds of practicing it compared to those with an unfavorable attitude (AOR = 2.3, 95% CI: 1.02–5.25). Providers with good knowledge of labor analgesia had 1.9 times higher odds of practicing it compared to those with poor knowledge (AOR = 1.9, 95% CI: 1.47–5.12).

Table 5. The bivariate and multivariate logistic regression association between practice of Labour analgesia among obstetric health care provider and independent variable at three teaching hospitals of AAU, 2025.

Variable	Practice of labour analgesia		p-value	COR with 95%CI	P-value	AOR with 95%CI
	yes	No				
Sex						
Male	12	92	1		1	
female	28	70	0.003	3.1(1.46, 6.46))	0.005	**3.3(1.45, 7.60)**
Profession						
Midwife	14	52	1		1	
Intern	3	17	0.543	0.66(0.17, 2.56)	0.745	0.75(0.13, 4.36)
Resident	3	50	0.024	0.22(0.06, 0.82)	0.118	0.13(0.03, 0.58)
anesthesia	18	32	0.080	2.1(0.92, 4.77)	0.846	1.1(0.37, 3.39)
Senior	2	11	0.634	0.68(0.13, 3.41)	0.089	0.21(0.03, 1.27)
Experience						
<4	10	56	1		1	
4-8	20	92	0.642	1.2(0.53, 2.79)	0.415	
>8	10	14	0.010	4.0(1.39, 11.48)	0.048	**3.2(1.81, 12.49)**
Attitude on labour analgesia						
Unfavorable	14	92	1		1	
Favorable	26	70	0.015	2.4(1.19, 5.02)	0.044	**2.3(1.02, 5.25)**
Knowledge on labour analgesia						
Poor	13	82	1		1	
Good	27	80	0.042	2.1(1.03, 4.42)	0.014	**1.9(1.47, 5.12)**

6. Discussion

In this study, only 19.8% of obstetric health care providers demonstrated good practice regarding labor analgesia. The finding of the study is consistent with the study done in Hawassa (31). However, the practice rate observed in this study was lower than those reported in Public Hospitals of Addis Ababa, Ethiopia (34), Kembata Tembaro Zone, Southern Ethiopia (35), Public Health Facilities of Gedeo Zone (37), Kenya (30), a systematic review and meta-analysis conducted in Ethiopia (32), as well as studies from West Shewa Zone, Central Ethiopia (33), and East Gojjam Zone (35). These differences may be attributed to variations in healthcare infrastructure, training opportunities, availability of analgesic medications, and provider attitudes across regions, possibly reflecting regional disparities in knowledge, resource availability, or institutional policies regarding labor pain management.

This study found that female obstetric health providers had 3.3 times higher in practicing labor analgesia compared to their male providers (AOR = 3.3, 95% CI: 1.45–7.60). This finding is similar with the study conducted in Public Health Facilities of Gedeo Zone (37), which reported a similar association between gender and the practice of labor analgesia. This may be due to; female provider's empathy towards laboring women or increased awareness of labor pain management-possibly influenced by shared gender experiences, having more exposure or interest in aspects of maternal care that helps them to have improved practice in labor pain management.

Experience >8 years had 3.2 times higher to practice labor analgesia compared to those of experience <4years (AOR = 3.2, 95% CI: 1.81–12.49). This finding is consistent with a study conducted in West Shewa Zone, Central Ethiopia (33). This may be due to their specialized training and expertise in pain management and the use of analgesic techniques.

Providers with a favorable attitude toward labor analgesia had 3.2 times higher in practicing labor analgesia compared to those with an unfavorable attitude (AOR = 3.2, 95% CI: 1.81–12.49). This finding is consistent with studies conducted in Hawassa city (31), a systematic review in Ethiopia (32), West Shewa Zone, Central Ethiopia (33), and Public Hospitals of Addis Ababa (34). Positive attitude likely influences providers' willingness to implement labor analgesia practices and overcome potential barriers.

Providers with good knowledge of labor analgesia had 1.9 times higher in practicing labor analgesia compared to those with poor knowledge (AOR = 1.9, 95% CI: 1.47–5.12). This finding

is supported by a systematic review conducted in Ethiopia (32) and a study from Public Hospitals of Addis Ababa (34). Good knowledge help providers about analgesic options, indications, contraindications, and management of side effects, which in turn increase their confidence and competence in administering labor analgesia.

7. Conclusion

In this study, only 31% of obstetric health care providers showed good practice of labor analgesia. Key factors significantly associated with better practice included being female (AOR = 3.3, 95% CI: 1.45–7.60), long duration of experience (AOR = 3.2, 95% CI: 1.81–12.49), having a favorable attitude toward labor analgesia (AOR = 3.2, 95% CI: 1.81–12.49), and possessing good knowledge of labor analgesia (AOR = 1.9, 95% CI: 1.47–5.12).

8. Recommendation

- ✓ Regular training and continuous professional development programs on labor analgesia, by giving emphasis on male obstetric care providers
- ✓ Develop educational interventions that not only increase knowledge but also positively influence attitudes toward labor analgesia, as favorable attitudes strongly impact practice.
- ✓ Regular Monitoring and Evaluation: Establish mechanisms to monitor labor analgesia practice and outcomes regularly, to identify gaps and inform continuous improvement.

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ANNEXES

Annex I: Participants information sheet

Hello, my name is_____I am a member of research team working to assess the Practice and determinants of labor analgesia among Obstetric Care Providers Working in the selected three teaching hospitals of Addis Ababa 2024/5, by Dr. Mekonnen Gebre who is studying for his specialty in obstetrics and gynecology at Addis Ababa University, Collage of Health Science. I kindly request you to give your attention about the study and be selected as the study participant

Purpose of the study: the main aim of this study is to provide input for appropriate change in policy and program for improving the service delivery quality through improving providers' practicum towards labour pain management.

Study procedure: If you agree to participate, you will be asked about your practice on labour analgesia management practice and basic socio demographic information. The survey should take approximately 50 minutes. If you are willing to participate in this project, you need to understand and sign on the consent form provided in Annex II

Confidentiality: the collected information will be kept confidential and used only for research purposes. No one except the members of the research team will have access to the information Collected and the personal information of the participant such as Name, phone Number was not notified. The hard copy of the data will be kept in a locked cabinet and the soft copy will be password protected & only accessed by the principal investigator. The findings of the study will not reflect anything specific to individual participants.

Benefits of the study: For your participation in the study no payment will be granted or has no any special privilege to you. But, participating in the study and giving your genuine information will provide great input to bring change in quality of health service to labour pain management practice.

Risks of the study: The procedure does not bear any risk, but you may feel some discomfort in wasting your time (a maximum of 50 minutes). Furthermore, you will not be forced to respond to information you do not know.

Rights:

Participation in this study is completely voluntary. You may choose whether or not to take part. If you agree to participate, you may withdraw at any time, and you are also free to skip any questions you do not wish to answer.

Do you consent to take part in this research?

1. Yes _____
2. No _____

We appreciate your willingness to cooperate.
If you have any questions about the study or wish to receive the findings once it is completed, please reach out to the principal investigator.

Address of the principal investigator:

Dr. Mekonnen Gebre

Phone Number: +251910945826

Annex II: Participants consent sheet

I have been fully informed about this study by getting written information to understand the aim of this study. I also understand that the result will be helpful to improve the practice of labor analgesia among obstetric care providers. I am aware that participating in this study involves no risks. I voluntarily agree to participate and understand that I will not receive any special services, payment, or gifts for my participation. I have been assured that all information collected will remain confidential, and any personal identifiers will be excluded from reports or publications. This consent applies only to this study.

Are you willing to participate in the study?

1 – Yes

2 – No

1) If the participant agrees, thank them and proceed with the interview. If they decline, express appreciation for their time. Participation must be fully voluntary, and individuals should not feel any form of pressure to take part.

2) Interviewer's code: _____

   Name: _____

   Signature: _____

   Date of interview: _____ (day/month/2017 E.C.)

3) Time interview started: _____ (hours: minutes)

   Time interview ended: _____ (hours: minutes)

4) Review date: _____ (day/month/2017 E.C.)

   Interview status: Complete [ ] Incomplete [ ] Other (specify): _____

ANNEXS III: Questionnaire

Part I: Socio-demographic profile of respondents (Mark √ in the boxes that apply)

1. Gender: Male □ Female □
2. Age (in years): ≤30 □ 31–40 □ 41–50 □ 51–60 □ ≥61 □

3. Profession: Obstetrician/Gynecologist□ Residents □ Intern doctors □ Midwife □ Anesthetist □

4. level of education_____

A. Diploma B. BSc C. MSc D. Intern E. General practitioner F. Obgyn (including residents)

5. Duration of practice (years): ≤5 □ 6-10 □ 11-15 □ 16-20 □ ≥21 □

6. Hospital of practice: TASH □ ZMH □ GMH □

Part II. Knowledge on analgesia practice

1. Know labor analgesics

A. Yes

B. No

2. Analgesics methods

A. Systemic opioids

B. Systemic nonopioids

C. Regional analgesics

D. Inhalational

E. Cervical

3. Ever asked to provide labor pain analgesics

A. Yes

B. No

4. Best method for managing labor pain

A. Nonpharmacologic

B. Pharmacologic

C. Slapping

D. Nothing

5. Heard about WHO pain ladder

A. Yes

B. No

Part III. Attitude toward obstetric analgesia among obstetric care providers

1. Obstetric analgesia should be given for labor pain management

A. Strongly Agree B. Agree C. Neutral Disagree F. Strongly disagree

2. Every laboring women should be managed with analgesics

A. Strongly Agree B. Agree C. Neutral Disagree F. Strongly disagree

3. Women should endure labor pain

A. Strongly Agree B. Agree C. Neutral Disagree F. Strongly disagree

4. Labor analgesia influences labor

A. Strongly Agree B. Agree C. Neutral Disagree F. Strongly disagree

5. Labor analgesia causes late presentation

A. Strongly Agree B. Agree C. Neutral Disagree F. Strongly disagree

6. Labor analgesia causes fetal distress

A. Strongly Agree B. Agree C. Neutral Disagree F. Strongly disagree

7. Labor analgesia offers a better birth experience

A. Strongly Agree B. Agree C. Neutral Disagree F. Strongly disagree

Part IV: Pattern of utilization and type of labour analgesia administered by maternal healthcare providers who have offered obstetric analgesia: (Mark √ in the boxes that apply)

1. Frequency of use: Regularly □ Occasionally □ Only upon maternal request □ Never used □

2. Which types of obstetric analgesia do you have offered for normal vaginal delivery?

2.1 Opioid:

Pethidine □

Morphine □

Fentanyl □

Remifentanil □

Others

(specify_____)

2.2 Non-opioid: paracetamol □ aspirin □ Diclofenac □

2.3 Entonoux (nitrous oxide, N2O inhalation) □

2.4 Regional analgesia:

Spinal □

Epidural □

Combined spinal epidural □

Other nerve block technique

Used (specify :_____)

2.5 Nonpharmacologic:

Yoga □

Subcutaneous water injection □

Water immersion □

Psychological support □

Others(specify: _____)

Part V: Challenges and reasons cited by maternal healthcare providers who do not routinely administer, or have never administered, obstetric analgesia: (Mark √ in the boxes that apply)

1. No specific reason □
2. Lack of necessary drugs and equipment (e.g., epidural analgesia set) □
3. Concern about potential fetal distress □
4. Concern about possible adverse effects on the mother □
5. Women arriving late in labour □
6. Concern that it may prolong the second stage of labour □
7. Belief that childbirth should occur naturally (preference for natural birth) □
8. Perception that labour analgesia is unnecessary □
9. Patient declined pain relief □
10. Insufficient number of trained personnel (e.g., for regional analgesia procedures) □
11. Inadequate prioritization of labour pain management within the healthcare system □
12. Other (please specify: _____)

Part IV: In your opinion, does pain relief during labour enhance the overall childbirth experience?

Yes □ Not sure □ No □

PART V: Does your previous pre-service or in-service training include the administration of labour analgesia for normal vaginal delivery as a core competency?

Yes □ I don't remember □ No □

Name of supervisor _____signature _____date _____