



COLLEGE OF HEALTH SCIENCE SCHOOL OF MEDICINE

Magnitude of maternal satisfaction with labor epidural analgesia and factors associated with it in selected health care facilities (Black lion Hospital, Korean General Hospital and Grace maternity and children Hospital) in Addis Ababa, Ethiopia, 2023.

A Thesis Submitted to Addis Ababa University School of Medicine in Partial Fulfillment for the Requirement of Specialty Certificate in anesthesiology.

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The thesis here, entitled “Magnitude Maternal satisfaction with labour epidural analgesia and factors associated with it in selected health care facilities (Black lion Hospital, Korean General Hospital and Grace maternity and children Hospital) in Addis Ababa, Ethiopia, 2023” is accepted in its present form by the board of examiners as partial fulfillment of the requirement for specialty certificate In Anesthesiology.

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STATEMENT OF DECLARATION

I hereby declare and affirm that this thesis is my own original work as a partial fulfillment of the requirement for the specialty certificate training in Anesthesiology. I have followed all the ethical considerations in the preparation, data collection, data analysis and completion of this research. I affirm that I have cited and referenced all the sources used in this document.

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ABBREVIATIONS

AAU -----	Addis Ababa University
TASH.....	Tikur Anbesa Specialized Hospital
LEA.....	Labor epidural analgesia
SDM.....	Shared decision making
PI.....	Principal Investigator

ABSTRACT

Background: Maternal satisfaction with childbirth is a complex measure that is influenced by several factors. Among these labor pain management is one factor. There are different methods of labor pain management. Labor epidural analgesia is one method of analgesia. Currently labour epidural analgesia is widely practiced all over the world, and today in many developed countries labour epidural analgesia reflects standard obstetric care. In Ethiopia, over the past few years labour epidural analgesia is practiced in some health facilities but there is paucity of study regarding magnitude of maternal satisfaction with LEA.

Objective: the aim of this study was to determine the magnitude of parturient who are satisfied with labor epidural analgesia and factors associated with it.

Methods: A retrospective cross sectional study was conducted between the period of September, 2022 to march 2023 among 260 parturient who received labor epidural analgesia in selected health facilities located in Addis Ababa, Ethiopia. Data were collected using an interviewer-administered structured questionnaire. Demographic, obstetric and anesthetic data were collected. The patient was interviewed by phone call within 6 months of postpartum period. Satisfaction was measured using Likert scale and categorized into satisfied(likert scale 4 and 5) and dissatisfied(likert scale 1 upto 3). All demographic and clinical variables presented as categorical variables and summarized in Frequency tables, graph and pie chart. Binary Logistic Regression model were applied to do the analysis.

Results

260 parturient were included into the study, of which the magnitude of parturient who are satisfied with Labor epidural analgesia was about 83 percent. High satisfaction was positively associated with on timing of LEA initiation (p-value 0.01, AOR=15.08; 95% CI: 4.97, 25.71), spontaneous vaginal delivery (p- value 0.04, AOR=3.54; 95% CI: 1.25, 10.17) and absence of complication associated with LEA (p-value 0.02, AOR=6.48; 95% CI: 1.75, 12.62). Being housewife (p-value 0.007, AOR= 0.19; 95% CI: 0.10, 0.74) and primiparaous (p-value 0.004 AOR= 0.30; 95% CI: 0.12, 0.822) were associated with patient dissatisfaction.

Conclusion: the magnitude of satisfaction with LEA in the study population is 83%. Employment status, multiparity, timeliness of LEA administration, delivery through SVD and having no complications associated with LEA are positively associated with satisfaction with LEA. Therefore facilities currently providing LEA should formulate protocol to increase parturient information about LEA during ANC follow up so that mothers can promptly decide to have LEA. Also the study showed 74% of parturient were satisfied with the pain control with LEA so that government and concerned bodies should give due attention to increase availability of LEA service.

1. INTRODUCTION

1.1. Background

Labour is one of the most painful and distressful situations for the pregnant mother. It has 2 stages, the first stage which is transmitted by lower thoracic and lumbar spinal segments (T10 to L1) and second stage of labour which is transmitted via pudendal nerve to second, third and fourth sacral spinal segments (9).

Labor analgesia has come a long way since it was first administered by James Young Simpson in 1847. Modern obstetrics uses several methods to provide pregnant women pain relief during labor and childbirth. Women may be offered and choose a variety of pain relief options in labor, including non-pharmacological interventions like breathing exercises, bath, walking and massage and pharmacological interventions like inhaled nitrous oxide, intravenous opioids, intramuscular nonsteroidal anti-inflammatory drugs, local infiltration and neuraxial analgesia. Among these neuraxial analgesia is the only form of analgesia that provides complete analgesia for both stages of labor(11).

Labour epidural analgesia is widely practiced all over the world, and today in many developed countries the availability of labour analgesia services, primarily the epidural analgesia reflects standard obstetric care. Although the procedure may lead to adverse events like assisted vaginal deliveries and prolonged second stage of labor, recent studies have shown that LEA does not increase the rates of caesarean section.(1–3)

Maternal satisfaction with the childbirth experience has implications for the health and well-being of a woman and her newborn. A woman's satisfaction with her childbirth experience may have immediate and long-term effects on her health and her relationship with her infant. A satisfactory childbirth experience has contributed to a woman's sense of accomplishment and self-esteem and has led to maternal expectations for future childbirth positive while a negative experience promotes the risks of developing postnatal depression, poor breastfeeding and child neglect and abuse.[1, 2]

Maternal satisfaction with childbirth is a complex measure that is influenced by several factors including parity, maternal expectation about the childbirth process, maternal participation in decision making about the labour process, option of pain management, degree of pain relief with

the management option, complications associated with pain management option and also the environment of care from the family as well as the hospital.

Labor pain management is one factor that is related to mothers' satisfaction with childbirth. Women who have experienced less labor pain have reported higher levels of childbirth satisfaction compared with women with more labor pain. However, degree of labor pain is not the only factor which determines the overall satisfaction of parturient with LEA.(1,4,6)

Achieving high patient satisfaction in labor epidural analgesia is therefore, a reflection of the quality of epidural service delivery. However, there is a paucity of study in Ethiopia that explores magnitude of satisfaction with LEA and the factors influencing patient satisfaction with LEA. Hence, the aim of this study is to determine the magnitude of maternal satisfaction with LEA and to identify factors which affect maternal satisfaction with LEA in Addis Ababa, Ethiopia.

1.2. Statement of the problems

Labor epidural analgesia is currently practiced all over the world, and today in many developed countries the availability of labor analgesia services, primarily the epidural analgesia reflects standard obstetric care. LEA has been shown to improve maternal satisfaction during delivery and mothers' childbirth experience in several studies done in different countries(2,7–9). In Ethiopia, LEA is practiced in some specialized government and private hospitals in Addis Ababa. However, there is no study done regarding the patients' satisfaction with LEA and what factors determine maternal satisfaction with LEA. Therefore, in this study we aim to fill this evidence gap.

1.3. Significance of the study

Achieving high maternal satisfaction during peripartum period reflects quality of delivery service. Adequate pain management is a major contributor for the maternal satisfaction. LEA is the gold standard for labor pain management. To that end, optimal LEA would reflect the quality of delivery service. A major approach to determining whether LEA service is optimal is assessing maternal satisfaction with LEA. This helps to describe labour epidural analgesia service from the patient's perspective, measure the process of care and evaluate the LEA care as a function of patient satisfaction. These in turn would help identify weaknesses in the LEA care and design corrective measures to make maternal peripartum service to the maximum. Therefore, this study would inform future expansion of LEA service.

2. LITERATURE REVIEW

2.1. Magnitude of maternal satisfaction with LEA

A study done in Australia which involves 992 women, which were randomized to receive continuous midwifery support or labor epidural analgesia upon presentation for delivery. The result revealed a high satisfaction with LEA which is 85%. In addition, there was a high crossover rate from continuous midwifery support to LEA (61.2%) and a lesser noncompliance rate in the LEA group (27.8%). (2)

Another retrospective cohort study done in Singapore (January 2012 to December 2013) stated that patient satisfaction score on the LEA was reported by the parturient at 24 to 48 hrs post-delivery, 31.8% were 'not satisfied', 35.9% were 'satisfied', and 32.2% were 'very satisfied'. (5). In the same manner, a study done in India also reported a high maternal satisfaction rate 85% with LEA. Hence 85.7% parturient said they would recommend LEA to their friends and relatives, 66.7% said they would request LEA for their next pregnancy. (8)

In Africa a cross-sectional retrospective study done in Cameroon from February 2016 to August 2019, Sixty-three (60.56%) of study respondents expressed very satisfied and 20 (19.23%) were satisfied thus an overall satisfaction rate of 79.79% and 20.21% expressed overall dissatisfaction about the LEA. (7)

2.2. Factors associated with maternal satisfaction with LEA

Demographic characteristics and satisfaction with LEA

Studies done in India and Singapore showed that women who had more years of education and who were nulliparous had higher satisfaction with LEA. (3,8) But studies done in different other parts of the world showed mixed result regarding association between level of education and parity with satisfaction of LEA. (4-8)

Expectations and preparation for LEA and satisfaction with LEA

In general, maternal expectation is a key determinant of level of satisfaction—the higher their level of expectation, the lower their satisfaction and vice versa. A study that included 235 pregnant women who opted for LEA and 219 pregnant women who opted against LEA at a

tertiary care center in India showed that 15.74% of woman with LEA and 13.70% of women without LEA had a worse than expected experience of childbirth. But the mean pain score, measured with the VAS, in those who opted for LEA was two times lower than in those who did not opt for LEA. Women who opted for LEA had a better experience during the intense moments of labour; however, both groups had an experience that was significantly worse than expected during the moment of childbirth. However, the post-delivery satisfaction scores did not differ significantly between the two groups ($p < 0.001$). (3)

Another study done in China which compared parturient satisfaction receiving epidural analgesia after prenatal shared decision making (SDM) intervention vs another group of parturient received explanation of LEA after admission for delivery, showed that the prenatal SDM group reported significantly higher satisfaction with and understanding of LEA, and a significantly higher satisfaction with the information received, and the quality of pain relief. After SDM intervention, significant increment in the average satisfaction scores in question “my epidural is effective” (9.1%; mean difference: 0.38; 95% confidence interval, 0.17 ~ 0.59; $p < 0.001$) and “The effect of epidural is just as what I have expected” (10.41%; mean difference: 0.41; 95% confidence interval, 0.18 ~ 0.64; $p < 0.001$) was demonstrated.(6)

Pain control and maternal satisfaction rate

A Prospective randomized clinical trial in Australia, comparing a total of 992 women who were randomized to receive continuous midwifery support vs who received LEA showed that pain prior to the allocated analgesia did not differ significantly between the two groups, There was, however, a significant difference in the post-analgesia pain scores between the groups, with the median pain score for the CMS group remaining elevated at 75 (IQR 42, 86), while the LEA group score fell to 27 (IQR 5, 46) ($P = 0.0001$).

When the women’s expectations of intrapartum and delivery analgesia were reviewed, those allocated to CMS reported significantly greater levels of dissatisfaction with their allocated pain relief than those in LEA. 95% of women allocated to LEA reported their expectations of analgesic effectiveness in labour to be met as expected, or even better than expected. 10% of women in CMS reported negative or very negative feelings about their allocated pain relief compared with 1% in the LEA group. At the 6-month postpartum survey The factors associated with the planned use of epidural analgesia in a subsequent pregnancy were induction of labour in

the index pregnancy (OR 2.4, 95% CI 1.2, 4.7) and use of epidural analgesia in the index pregnancy (OR 28.1, 95% CI 14.5, 54.7).(2)

In a study done in India which assessed parturient satisfaction with LEA, With regards to analgesia 85.6% felt their overall pain relief was adequate and the mean satisfaction score with LEA was 7.1 (SD- 2.28). 31% of parturient had 'low satisfaction' (<7 score) and 68.9% of parturient had 'high satisfaction' (≥ 7 score). And also those who did not have overall pain relief had 4 (95% CI: 1.50- 11.06) times the odds of low satisfaction as compared to those who had overall pain relief, which was statistically significant ($p = 0.006$).(8)

A cross sectional study undertaken from November-December, 2006 at Gandhi Memorial Hospital (GMH), Addis Ababa, Ethiopia which assessed maternal satisfaction in labour and delivery services showed that pain control was the lowest source of satisfaction with 82% reporting dissatisfaction.(10)

Timing of LEA initiation and maternal satisfaction

The Indian study showed that women who did not receive the epidural 'on time' had nearly 5 (95% CI: 1.79-12.43) times the odds of low satisfaction as compared to those who received the epidural on time, which was statistically significant ($p = 0.002$). In addition, those who had a very short duration of epidural analgesia ≤ 120 minutes had 6 (95% CI: 1.27-25.57) times the odds of low satisfaction. as compared to women who had 121 to 600 minutes of epidural analgesia, which was also statistically significant ($p = 0.023$ and $p = 0.002$)(8). The study done in Singapore also showed that receiving LEA at a more advanced cervical dilation has significant association with dissatisfaction. (5)

Adverse events associated with LEA

A study in Singapore also reported that post-procedure complications such as headache ($p = 0.0006$), backache ($p < 0.0001$), urinary retention ($p = 0.0002$) and neural deficit ($p = 0.0297$) were also shown to be associated with patient dissatisfaction with LEA.(5)

Outcome of labour

In addition studies also showed that women who take LEA and whose labour outcome was assisted vaginal deliveries and emergency caesarian section were more likely to be dissatisfied as compared to parturient who had normal vaginal deliveries. (3,5,10).

3. OBJECTIVES

3.1. General objective

The overall aim of this study was to determine magnitude of parturient who are satisfied with LEA and its associated factors among women who gave birth from September, 2022 to February 2023 in selected health facilities in Addis Ababa, Ethiopia.

3.2. Specific objectives

- To determine the magnitude of parturient who are satisfied with labor epidural analgesia in the study period.
- To identify factors associated with maternal satisfaction with labour epidural analgesia.

4. METHODS

4.1. Study area and period

The study was conducted in Addis Ababa, the capital city of Ethiopia. It is geographically located at the heart of the nation, 9⁰²'N latitude and 38⁰⁴⁵'E longitude. Its average altitude is 2,400 meter above sea level, with the highest elevations at Entoto Hill to the north reaching 3,200 meters. Addis Ababa is a true primal city in Ethiopia in terms of population. Its population is 10 times more than the second most populous towns in the country(11). Based on 2012 (EFY) figures from the Central Statistical Agency (CSA) of Ethiopia, the Addis Ababa Region has an estimated total population of 3,686,068 consisting of 1,389,817 male and 1,527,478 female. 100% of the populations are urban dwellers.

According to the 2012 (EFY) Health and Health Related Indicators published by MoH, Addis Ababa has 111 public health facilities, 13 Hospitals & 98 Health Centers, and several private hospitals and clinics. The study was conducted in three selected health facilities, one government (Tikur Anbessa hospital) and two private facilities (Korea hospital and Grace MCH), where labour epidural analgesia is given as an option for labour pain management. The study was conducted from September, 2022 to February, 2023.

4.2. Study design

We conducted a cross-sectional retrospective study among women who used labour epidural analgesia between the period of September 2022 to February 2023 in three health facilities located in Addis Ababa, All the parturient who was given labor epidural analgesia during the study period were included.

4.3. Population

Source population

All laboring women during the study period.

Study population

All laboring women in the study health facilities who received labor epidural analgesia and fulfill inclusion criteria.

4.4. Inclusion and Exclusion criteria

Inclusion criteria

Laboring women who received labor epidural analgesia with or without medical co-morbidities were considered eligible to the study.

Exclusion criteria

Laboring women who met the inclusion criteria but did not have a valid phone number or did not respond to our phone calls or refused to provide informed consent for the study were excluded from the study.

4.5. sample size

The sample size for the study was estimated by using the single population proportion formula

$$N = \frac{z_{1-\frac{\alpha}{2}}^2 \times p \times (1 - p)}{d^2}$$

Where: N= Initial estimated sample size, Z = Confidence level (alpha, α), 1.96, P = prevalence from previous study (0.798)(7), d= marginal error (0.05), and $N = (1.96)^2 \times 0.799 \times 0.201 / (0.05)^2 = 247$

After considering 10% non-response rate, the final sample size was 272.

4.6. Sampling method

The study facilities were chose purposively where LEA service is provided. In each of the facilities, we included all laboring mothers who were given LEA during the study period.

4.7. Study variables

Dependent variable

- ✓ Maternal satisfaction with LEA

Independent variable

- ✓ Maternal age
- ✓ Parity
- ✓ Educational Status
- ✓ Occupational status
- ✓ Timing of LEA initiation
- ✓ Mode of delivery
- ✓ Adverse events associated with LEA

4.8. Operational Definition

- To evaluate women's satisfaction with the LEA, study participants were asked three questions 1) How satisfied are you with the care provided during LEA? 2) How satisfied are you with the degree of pain control? 3) How satisfied are you with the information given about the procedure of LEA before LEA initiation? Satisfaction was measured using Likert Scale(1, very dissatisfied to 5,very satisfied)
- Satisfaction with the care provided during LEA: women who responded 'satisfied' (Likert scale 4) and 'very satisfied'(Likert scale 5) for the question "how satisfied are you with the care provided during LEA service"
- Satisfaction with the pain control: women who responded 'satisfied' (Likert scale 4) and 'very satisfied' (Likert scale 5) for the question, "how satisfied are you with degree of pain control".
- Satisfaction with the information provided: women who responded 'satisfied' (Likert scale 4) and 'very satisfied'(Likert scale 5) for the question "how satisfied are you with the information given about the procedure of LEA before insertion" were considered as satisfied.

Scale: dichotomous (Satisfied=1, Not satisfied=0)

- Adverse event is defined as occurrence of an event which the mother perceived as it is a complication associated with LEA. (Yes=1, No=0)
- Lower limb weakness was defined as parturient inability to use or move their lower limbs after initiation of LEA.
- Urinary retention was defined as the need for indwelling urinary catheter insertion to void after initiation of LEA.
- “On time”: if the timeliness of LEA initiation was perceived by the mother appropriate or if she think that it was initiated before she was experiencing long duration of pain after the mother was admitted to the labour ward or diagnosis of true labour was made by obstetrician. Scale: dichotomous

4.9. Data collection procedure

The data were collected through a phone call interview using a validated structured questionnaire adapted from previous study done in China which is derived from Women’s Views of Birth Labor Satisfaction Questionnaire (WOMBLSQ). The questionnaire was translated into Amharic and pretested on 10 parturients who received LEA at Ethiotebib General Hospital before its use in actual data collection. Minor amendments (e.g., clarity) were done after the pretest. The questionnaire contains three parts, the first part is about socio-demographic characteristics of the parturient, second part is about past obstetric history and third part is about maternal satisfaction with the LEA. The final questionnaire is attached in Appendix III.

The data collected by the principal investigator and five first year residents of ACCPM. The residents received training by the principal investigator.

4.10. Data analysis procedure

Data was cleaned, entered and analyzed using SPSS version 26.0 software. Descriptive statistics and logistic regression models were used for the analysis. The total level of satisfaction score was calculated by adding response for the three questions. Demarcation threshold formula was

used to get the cutoff point to classify into satisfied and dissatisfied. Participants were classified as satisfied when the score (> 9 out of 15) and dissatisfied when they score (≤ 9 out of 15).

Demarcation threshold= $\{(\text{Total highest score} - \text{Total lowest score})/2\} + \text{Total lowest score}$

- Total highest score was 15 out of 15
- Total lowest score was 4 out of 15

$$N = \frac{(15 - 4)}{2} + 4 = 9.5$$

2

All demographic and clinical variables are presented as categorical variables were summarized in frequency tables, graph and pie chart.

Univariate and multivariable logistic regression models were used to identify the associations between potential covariates and level of patient's satisfaction. Associations from the logistic regression models were characterized using odds ratio (OR) and corresponding 95% confidence interval (95% CI). The multicollinearity of independent variables was checked using variable inflation factor. Variables with $p\text{-value} < 0.2$ in the univariate model were selected for the multivariable model. The Goodness-of-Fit Test was evaluated using Hosmer-Lemeshow Goodness-of-Fit tests ($p > 0.05$ indicates the appropriateness of the model). A $p\text{-value}$ of less than 0.05 was taken to determine statistical significance. Then, the result was presented in tables.

4.11. Data quality assurance

The data collectors were trained before data collection. Data were collected on a daily basis through phone call interview. Each questionnaire was reviewed by the principal investigator (PI) on a daily basis for completeness, consistency and quality. Additionally, the PI held meetings with data collectors every other day to clear up if there is any ambiguity during data collection and ensure data quality.

4.12. Ethical issue

Ethical clearance and support letter was obtained from department of Anesthesia and Critical Care and Pan Medicine at Addis Ababa University College of Health Science.

Oral consent was obtained from the participants after an explanation is given about the objective, procedure, potential risks and benefits of being participated in the study and the right to withdraw from the study at any time throughout their interview.

5. RESULTS

5.1. Sociodemographic Characteristics

A total of 260 women who gave birth between the periods of September 2022 to February 2023, at selected health facilities were included in this study. More than 75% of the participants are beyond secondary school and 67% of them are employed.(Table 1).

Table 1 Sociodemographic characteristics of women who received LEA at selected health facilities in Addis Ababa (N=260)

Variable	Category	Frequency	Percent
Age	15 to 24	67	25.8
	25 to 34	151	58.1
	Above 35	42	16.2
Place of residence	Addis Ababa	232	89.2
	Outside Addis Ababa	28	10.8
Highest level of education	Primary	8	3.1
	Secondary	56	21.5
	Beyond Secondary	196	75.4
Employment	Government employed	85	32.7
	House wife	80	30.8
	Private sector	16	6.2
	Self employed	74	28.5
	Student	5	1.9

5.2. Obstetrics and LEA History

193(52.7%) were primigravida and 123 (47.3%) were multigravida. From the multiparous only 7 (n=123) of them took LEA for their previous delivery. Majority of multiparous has no information about LEA during their previous pregnancy. About two-thirds (65.4 %) of parturient gave birth through spontaneous vaginal delivery. (Table 2).

Table 2: Obstetrics history and previous experience of women who received LEA at selected health facilities in Addis Ababa

Variable	Category	Frequency	Percent
Parity	Primipara	137	52.7
	Multipara	123	47.3
Place of delivery (Institution)	Government	61	23.5
	Private	199	76.5
Mode of Delivery	Cesarean section	68	26.2
	Instrumental delivery	22	8.5
	Spontaneous vaginal delivery	170	65.4
Receive LEA during previous delivery (n=123)	Yes	7	5.7
	No	116	94.3
Reason for not taking LEA in the previous pregnancy (n=123)	No information	74	60.16
	LEA wasn't available	27	21.9
	Fear of complication	22	17.8

5.3 Satisfaction with LEA

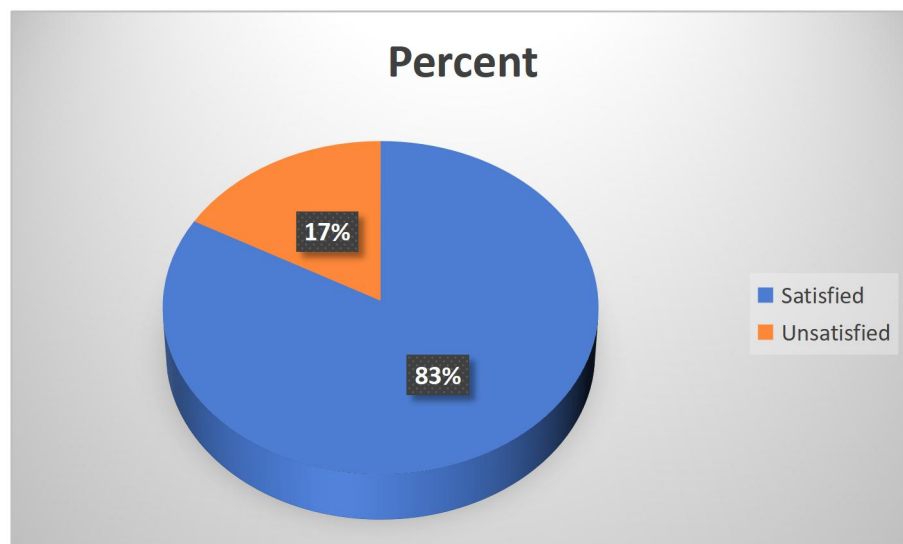
The parturient satisfaction regarding pain control with LEA was 74.6%, the parturient satisfaction with the information given about LEA was 71.2% and with the care provided during LEA was 56.2%.

Table 3: the level of satisfaction of women with three domains of LEA

Domain	Category	Frequency	Percent	95% Confidence Interval ^a	
				Lower	Upper
Satisfaction with the care provided during LEA	Satisfied	146	56.2	50.3	61.6
	Unsatisfied	114	43.8	38.4	49.7
Satisfaction with pain control with LEA	Satisfied	194	74.6	69.6	79.3
	Unsatisfied	66	25.4	20.7	30.4
Satisfaction with Information given about LEA	Satisfied	185	71.2	65.7	75.8
	Unsatisfied	75	28.8	24.2	34.3

The magnitude of parturients' overall satisfaction with LEA was 83% (95% CI: 78.1, 87.7) (Figure 1).

Figure 2:
of
satisfied
labour
analgesia



Percent
women
with
epidural

5.4 Information and Experience with LEA

About 35% of parturient had information about LEA before the current pregnancy. Only 65.4% parturient perceived that they get their LEA “on time”. About two third(75.4%) of the mothers intended to use LEA in their future pregnancy. Inadequate pain relief 18(29%) and complication associated with LEA 16(25.8%) were the commonest reason the parturient give for not taking LEA for their future pregnancy. On average, seven (68.5%) of the ten participants said they would be glad to suggest LEA to their family and friends (Table 3).

Table 4: women’s experiences with labour epidural analgesia and their plans for the future at selected health facilities in Addis Ababa

Variable	Category	Frequency	Percent
Received Information about LEA	After labour started	124	47.7
	Before the current pregnancy	91	35.0
	During ANC follow up	45	17.3
Perceived Timeliness of LEA administration	Yes	170	65.4
	No	90	34.6
Intention of taking LEA in the future	I am not sure	41	16.4
	No	21	8.4
	Yes	188	75.2
Reasons for not taking LEA in the future	Didn't relieve my pain	18	29
	Costly	9	14.5
	complications	16	25.8
	Other reasons*	31	20.8
Recommend LEA for others	Yes	178	68.5
	No	82	31.5

**Instrumental or C/s delivery (10), multiple needle insertion attempts (6), Negative neonatal outcome (6), may not try vaginal birth after cesarean (9)*

34% of parturient said they have complication associated with LEA.

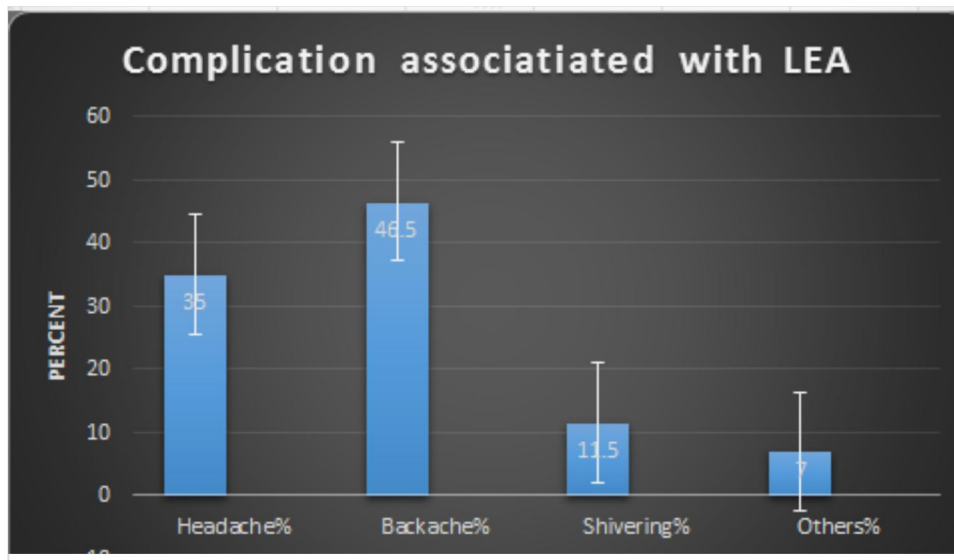


Figure 2: complications experienced after women receiving LEA

5.5. Factors Associated with LEA Satisfaction

In the bivariate model employment status, timeliness of LEA administration, adverse events had association at ($p < 0.05$) with satisfaction towards LEA. The final model was constructed using the above variables and those variables that meet cut-off p -value=0.2. Accordingly, employment status, parity, mode of delivery, perceived timeliness of LEA initiation and adverse events had significant association with women's satisfaction with LEA in multivariate. The odds of satisfaction for housewife decrease by 81 percent compared to employed parturient (p -value 0.02, AOR= 0.19; 95% CI: 0.10, 0.74). Primiparous women were less likely to be satisfied with LEA than multiparous (p -value 0.034, AOR= 0.30; 95% CI: 0.12, 0.822). The perceived timeliness of LEA initiation was associated with satisfaction. Mothers who perceived that the time of receiving LEA was appropriate were about 15 times more satisfied than those who perceived the timing was delayed (p -value 0.01, AOR=15.08; 95% CI: 4.97, 25.71).

The mode of delivery and experiences after LEA were also associated with women's satisfaction. Participants who gave birth through SVD after receiving LEA were 3.5 times more satisfied

compared to women who delivered through C/S or instrumental delivery (p-value 0.042, AOR=3.54; 95% CI: 1.25, 10.17). Experience of adverse events associated with LEA had negative association with women satisfaction. The likelihood of satisfaction was about 6.5 times higher for participants who had not encountered adverse events compared to those who had (p-value 0.02, AOR=6.48; 95% CI: 1.75, 12.62). (Table 5)

Table 5: Factors Associated with satisfaction of mothers who received LEA

Variable	Category	Satisfaction		P-Value	Bivariable	p-value	Multivariable
		Yes N (%)	No N (%)		COR (95%)		AOR (95%)
Age Category	Above 35	31 (73.8)	11 (26.2)				
	25 to 34	122 (80.8)	29	0.436	1.50 (0.67,	0.086	1.95 (0.52, 7.34)

			(19.2)		3.32)		
	15 to 24	63 (94.0)	4 (6.0)	0.234	5.59 (1.65, 12.32) **	0.236	4.57 (0.69, 11.65)
Employment	Government	76 (89.4)	9 (10.6)				
	House wife	57 (71.3)	23 (28.7)	0.02	0.29 (0.13, 0.68) **	0.02	0.19(0.10, 0.74) *
	Private sector	10 (62.5)	6 (37.5)	0.04	0.20 (0.10, 0.67) **	0.04	0.14 (0.03, 1.21)
	Self employed	73 (92.4)	6 (7.6)	0.187	1.44 (0.49, 4.25)	0.05	1.50 (0.37, 5.80)
Parity	Multipara	98 (79.0)	26 (21.00)				
	Primipara	118 (86.8)	18 (13.2)	0.158	0.58 (0.30, 1.11)	0.034	0.30 (0.12, 0.822) *
Place of Delivery	Government	47 (77.0)	14 (13)				
	Private	169 (84.9)	30 (15.1)	0.559	1.68 (0.82, 3.42)	0.657	0.71 (0.22, 2.26)
Mode of Delivery	C/S or instrumental	70 (77.8)	20 (22.2)				
	SVD	146 (85.9)	24 (14.1)	0.133	1.74 (0.90, 3.36)	0.042	3.54 (1.25, 10.17) *
Information about LEA	During Labour	100 (78.7)	27 (21.3)				
	Before Labour	116 (87.2)	17 (12.8)	0.678	1.84 (0.95, 3.58)	0.56	0.45 (0.16, 1.32)
Timing of LEA initiation	No	55 (61.1)	35 (38.9)				
	Yes	161 (94.7)	9 (5.3)	0.024	11.38 (5.25, 21.32) **	0.01	15.08 (4.97, 25.71) **
Encountered adverse event	Yes	58 (64.4)	32 (35.6)				
	No	158 (92.9)	12 (7.1)	0.035	7.26 (3.51, 15.05) **	0.02	6.48 (1.75, 12.62) **

6. DISCUSSION

The overall maternal satisfaction with labour epidural analgesia service in the study setting is about 83.1% (95% CI: 78.1, 87.7). This figure is comparable with the study done in Portugal (82.1%) and Cameroon (79.8%). Other studies conducted in different parts of the world reported higher or lower level of maternal satisfaction with LEA. The magnitude of parturient satisfaction reported from Indonesia and Nigeria are higher than the finding of this study(15,16). On the other hand, evidence from Singapore (68%) showed lower levels of maternal satisfaction compared to the finding of this study. The difference may be explained by lack of standardized measurement of outcome and lack of universally agreed standard technique to give LEA. Hospitals may have different local anesthetic type, concentration, mode of administration (intermittent bolus vs continues), using additives like opioids and management strategy to manage breakthrough pain may affect the effectiveness of analgesia so that affecting patients' satisfaction with LEA.

The evidence is weak about the association between sociodemographic characteristic of parturient and satisfaction with LEA. Almost all studies didn't get significant association of satisfaction with sociodemographic characteristics. In this study only employment status has association with satisfaction. Housewives may have limited opportunity to get information about LEA than employed parturient. Low level of satisfaction in housewives could be explained by their lack of information about LEA.

On related terms, only 35% of parturient had information about LEA before the current pregnancy and 7 out of 122 multiparous mothers received LEA for their previous pregnancy. The parturient satisfaction with the information given about LEA was 71.2% and only about 50% of the study participants had intention to use LEA in their future pregnancy. This figure is lower than a study done in Southern India in which 90% are satisfied with the information given about LEA and 66% said they will request LEA for their next pregnancy. This difference in our study could be explained by parturient are offered LEA when they had uncontrolled pain after which the attending anesthesiologist will be communicated and will give counseling about LEA at the time the women is in severe pain and stressful condition that she cannot properly hear and understand the whole effects of LEA. Therefore parturient might not get adequate time to give the consent. Another study also found association between childbirth preparation and satisfaction. Women who had childbirth preparation had higher satisfaction than women who did not have

childbirth preparation. Because preparation may help the woman to have realistic expectations for the experience.(4) According to the finding of a study done in China, parturient who received LEA after prenatal shared decision-making interventions had higher level of satisfaction (6).

Primiparous participants of this study had lower satisfaction than multiparous counterparts. This could be explained by most of the multipara mothers did not receive LEA in their previous pregnancy and they have the opportunity to compare labour pain with and without LEA. labour is more painful for those women giving birth for the first time and their expectation is high. (21) Therefore they may find even labouring with LEA be painful since their expectation is high. Studies showed that women who had unmet expected level of analgesia had lower total childbirth satisfaction. (4)

Our study also showed that 65.4% of parturient received LEA “on time”. This figure is much lower than study in Southern India (86%). According to studies, the perceived timeliness of LEA administration had significant association with satisfaction. Women who perceived that they received LEA ‘on time’ had higher satisfaction. This finding is supported by two studies conducted in Southeast Asian countries. The study in India reported that parturient who had a very short duration (<120 min) of epidural analgesia had lower satisfaction (p=0.023). Similarly, evidence from the Singapore study indicated that receiving LEA at a more advanced cervical dilation decreases satisfaction. (5,8). These parturient had already been through most of the labour pain so that satisfaction will be low.

The study participants who gave birth through spontaneous vaginal delivery (SVD) had higher satisfaction. This finding is supported by other similar studies(3,5). The dissatisfaction of women who delivered through C/S or instrument may come from perception that LEA could change the outcome of labour. A study in Portugal also showed that about 4% of pregnant women in the study had a myth “If I have an epidural, I’m more likely to end up needing a C-section”. On the other hand, south Indian study showed that Mode of delivery did not affect satisfaction scores, though there were 16 patients who strongly attributed their caesarean section to the epidural. (12, 8)

This study also revealed that encountering adverse events after receiving LEA was negatively associated with parturients' satisfaction. Women who did not encounter any complication had higher satisfaction than those who had. In line with the finding of the study, a cohort study done in Singapore and Cameroon reported that the presence of post-procedure complications such as headache, backache, urinary retention and neural deficit were associated with patient dissatisfaction with LEA (7, 15).

Though initially condemned by religious bodies; once administered by John Snow to Britain's Queen Victoria in 1853, labour analgesia gained popularity. After having gone through a period known as the "dark ages of obstetric anesthesia" between 1930s to the 40s, vast improvements in the safety of regional analgesia were made in the 1950s and advances continue to be made (11,12). There is increasing need to improve the quality of care in healthcare; patients' satisfaction is one of the measures of healthcare quality. The importance of knowing parturient satisfaction with LEA could reflect the quality of analgesia and factors associated with dissatisfaction with LEA. which could be useful to the attending anesthesiologist to institute strategies for improving the quality of the LEA services and expanding its availability to all health facilities who give delivery service. So that the likelihood of the mother to use regional analgesia in future deliveries will increase.

Only few specialized government and private hospitals in Ethiopia provide LEA services. This study provides empirical evidence regarding the magnitude of maternal satisfaction with LEA and its associated factors.

The findings of this study revealed key information about maternal satisfaction with LEA and its associated factors. Maternal satisfaction is a complex phenomenon consisting of multiple dimensions. Childbirth satisfaction is a multidimensional construct consisting of different contextual components of the birth experience. One of the component of it is labor pain management. There is a research which is done in Ethiopia about maternal satisfaction with the childbirth process but evidence are scarce about maternal satisfaction with specifically LEA in Ethiopia. Maternal satisfaction with delivery services is multifactorial by factors related to other service providers and health facilities. Consequently, this study did not assess overall maternal

satisfaction with the delivery service, but rather satisfaction refers to the experience mothers have after receiving LEA.

7. Strength and limitation of the study

- The study involves three centers and the sample size is fairly large.
- The use of pretested questionnaire
- Daily checkup of filled questionnaires for completeness.
- It is the first study done in Ethiopia which assesses the magnitude of parturient satisfaction with LEA
- The study interviewed parturient within 6 months of their delivery which may result in recall bias.
- The study includes subjective measurements (parturient interview) so that it lacks objective measurements for some of the associated variables.

8. CONCLUSION AND RECOMMENDATION

8.1. Conclusion

The results of this study indicate that parturients who are satisfied with the information given and the care provided during LEA is lower. It also showed that parturients who perceived that their LEA initiation is late are less satisfied. This can be improved by incorporating awareness creation about LEA during ANC follow up so that it gives the chance to acquire adequate information before labor started and so that mothers can promptly decide to have LEA. Also the study showed 74% of parturient were satisfied with the pain control with LEA this figure is relatively fair can be improved by which indicates so that government and concerned bodies should give due attention to increase availability of LEA service

8.2. Recommendation

Based on the finding of the study, the following recommendations are forwarded for the concerned bodies. Achieving high maternal satisfaction during peripartum period reflects quality of delivery service. Adequate pain management is a major contributor for the maternal satisfaction. Studies showed that Labour epidural analgesia is the most effective pain management compared to other methods of pain management. Therefore Government and concerned bodies should give due attention for the expansion of LEA service to all health facilities giving delivery service. Facilities currently providing LEA should design intervention to increase women's awareness and readiness towards LEA during their ANC follow up. Concerned bodies should work to prepare national protocol of LEA to address issues like timing of administration. Further research is needed through a prospective study to objectively measure associated factors and to assess the quality of LEA service from the perspective of service providers.

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ANNEX

Annex 1: subject information sheet

Addis Ababa University

School of medicine

Subject information sheet

Hello, my name is -----, I am here on behalf of Dr. Misgana Tadesse, a year three Resident in Anesthesiology Critical care and Pain Medicine, School of medicine, Addis Ababa University. She is conducting a research on the magnitude of maternal satisfaction with labor epidural analgesia and factors associated with it. The study is being conducted in three hospitals including this one. She has received permission from Addis Ababa University School of medicine and Tikur Anbessa Specialized Hospital officials to conduct the study.

You are selected to participate in this study because you received LEA service for this childbirth. The outcome of the study will help to estimate the magnitude of patient satisfaction with LEA and its determinants. The information will help inform future expansion of LEA services in Ethiopia. Your participation in this study will be based only on your willingness to participate. You have the right to choose not to take part in this study. If you are willing, you have the right to stop at any time or withdraw without giving any reason and you will not be subjected to any ill-treatment. There will be no direct benefit from participating in this study but in the future information gathered by this study will help policymakers, programmers, and researchers to give appropriate attention to issues of interest and design specific treatment options.

The information that you provide will be used only for the purpose of the study and kept confidential by using only code numbers and locking the data. Only the members of the study team will have the access to the non-coded data and the data will not be used for purposes other than the study. Your willingness and active participation are very important for the success of this study.

If you need any further information or explanation regarding the study, you can have this address to contact.

Name: Dr. Misgana Tadesse
misganatadesse9385@gmail.com

Tel- +251-911938516

Email-

Annex II: Consent Form

TITLE OF STUDY

Assessment of magnitude of maternal satisfaction with epidural analgesia and associated factors at TASH, Addis Ababa, Ethiopia,

PRIMARY RESEARCHER

Name –Dr. Misgana Tadesse, Final year ACCPM resident

Primary Advisor- Dr Getachew Jiregna

Address – Addis Ababa Phone – (+251) 911938516

Email – misganatadesse9385@gmail.com

PROCEDURES: Cross-sectional study using semi-structured questionnaire and checklist by trained data collectors.

RISKS: There is no anticipated risk to you if you participated in this study.

BENEFITS: You will be contributing to the improvement of anesthesia services in the hospital and Ethiopia as a whole.

CONFIDENTIALITY: Every effort will be made by the researcher to preserve your confidentiality including the following by assigning code names/numbers for participants that will be used on all research notes and documents.

CONTACT INFORMATION

If you have questions at any time about this study, you may contact the researcher whose contact information is provided above.

VOLUNTARY PARTICIPATION: Your participation in this study is voluntary. If you decide to take part in this study, you will be asked to sign a consent form. After you sign the consent form, you are still free to withdraw.

CONSENT

I have read and understand the provided information and have had the opportunity to ask questions. I consent to take part in the research study "Assessment of incidence of adverse events in out of OR pediatrics procedural sedation and associated factors at Addis Ababa university college of health science, TASH Ethiopia"

Participant's Signature _____ **Date** _____

Data collector's name and signature _____ **Date** _____

Annex III: Questionnaire

1, Socio-demographic characteristics

1.1 How old are you? -----

1.2 Marital Status

- I. Single
- II. Married
- III. Divorced
- IV. Widow

1.3 Highest education level

- I. No education
- II. primary
- III. secondary
- IV. more than secondary

1.4 Where do you live

- I. Addis Ababa
- II. Outside Addis Ababa

1.5 Employment status

- I. House wife

- II. Government employed
- III. Self employed
- IV. Other

1.6 which institution you attend your delivery

- I. government
- II. private

2, Past obstetric history

2.1 Parity

- I. Nulliparous
- II. Multiparous(≥ 2)

2.2 if multiparous did you receive LEA for your previous delivery?

- I. Yes
- II. No

2.3if no for question no 2.2, why? You Can choose more than one

- I. I have no information about LEA
- II. LEA wasnot available at the facility
- III. I wasnot sure that LEA can relieve my labor pain
- IV. Fear of the complicaions associated with LEA
- V. Other

2.4Is the current pregnancy planned

- I. Yes
- II. No

2.5 Mode of delivery

- I. Spontaneous vaginal delivery
- II. Instrumental delivery
- III. Emergency C/S

3. Satisfaction with LEA and associated factors LIKERT Scale (1,very dissatisfied to 5,very satisfied)

3.1 How satisfied are you with the care provided during LEA?

3.2 how satisfied are you with degree of pain control?

- I. Very dissatisfied
- II. Dissatisfied
- III. Neutral
- IV. Satisfied
- V. Very satisfied

3.3 how satisfied are you with the information given about the LEA?

- I. Very dissatisfied
- II. Dissatisfied
- III. Neutral
- IV. Satisfied
- V. Very satisfied

3.4 when do you hear about LEA for the first time?

- I. Before the current pregnancy
- II. During the current ANC follow up
- III. After labor started

3.5 will you take LEA for the next pregnancy?

- I. Yes
- II. No
- III. I am not sure

3.6 If your answer is no or I am not sure for the above question, why?

- I. LEA didn't relieve my pain
- II. I had complications related to LEA
- III. LEA was the reason why I delivered by instrumental delivery or C/S
- IV. Because LEA is costly
- V. Other

3.7 Will you recommend to use LEA for your family member or friends?

- I. Yes
- II. No

3.8 Do you think you received LEA "on time" or before you experience long duration of pain?

- I. Yes

II. No

3.9 Did you encounter any adverse event associated with LEA?

I. Yes

II. No

3.10 Which of the following complications did you encounter with the LEA?

I. Backache

II. Headache

III. Lower limb weakness

IV. Drug related complications

V. Urinary retention

VI. other

1, ማህበራዊ-ስነ-ሕዝብ ባህሪያት

1.1 ዕድሜ ስንት ነው? ----

1.2 የጋብቻ ሁኔታ

I. ያላገባ

II. ያገባ

III. የተፋታ

IV. መበለት

1.3 ከፍተኛ የትምህርት ደረጃ ሽ

I. ያልተማረች

II. የመጀመሪያ ደረጃ

III. ሁለተኛ ደረጃ

IV. ከሁለተኛ ደረጃ በላይ

1.4 የት ነው የሚኖረው

I. አዲስ አበባ

II. ከአዲስ አበባ ውጪ

1.5 የቅጥር ሁኔታ

I. የቤት እመቤት

II. የመንግስት ተቀጣሪ

III. በግል ተዳዳሪ

IV. ሌላ

1.6 በትኛው ተቋም ነው የውለድ ሸው?

I. መንግስት

II. የግል

2, ያለፈው የወሊድ ታሪክ

2.1 የስንት ልጆች እናት ነሽ

I. አንድ

II. ከአንድ በላይ (≥ 2)

2.2 ከአንድ በላይ ከሆነ ለቀድሞው ማድረስዎ LEA ተቀብለዋል?

I. አዎ

II. አይ

2.3 የለም ከሆነ ለጥያቄ ቁጥር 2.2፣ ለምን? ከአንድ በላይ መምረጥ ይችላሉ።

I. ስለ LEA ምንም መረጃ የለኝም

II. LEA በተቋሙ አልተገኘም።

III. LEA የምጥ ህመሜን ማስታገስ እንደሚችል እርግጠኛ አልነበርኩም

IV. ከ LEA ጋር የተዛመዱ ውስብስቦችን መፍራት

V. ሌላ

2.4 አሁን ያለው እርግዝና በእቅድ ነው

I. አዎ

II. አይ

2.5 በየትኛው መንገድ ነው የወለድሸው?

I. በማህፀን

II. በመሳሪያ እገዛ

III በማህፀን ቀዶ ጥገና

3. በLEA እርካታ እና ተያያዥ ምክንያቶች ልኬት (1 በጣም አልረካሁም፣ 5 በጣም ረክቻለሁ)

3.1 በLEA ወቅት በተሰጠው እንክብካቤ ምን ያህል ረክተዋል?

3.2 በህመም ቁጥጥር ምን ያህል ረክተዋል?

I. በጣም አልረካሁም።

II. አልረካሁም

III. ገለልተኛ

IV. ረክቻለሁ

V. በጣም ረክቻለሁ

3.3 ስለ LEA በተሰጠው መረጃ ምን ያህል ረክተዋል?

I. በጣም አልረካሁም

II. አልረካም።

III. ገለልተኛ

IV. ረክቻለሁ

V. በጣም ረክቻለሁ

3.4 ስለ LEA ለመጀመሪያ ጊዜ መቼ ነው የሰሙት?

I. አሁን ካለው እርግዝና በፊት

II. አሁን ባለው ክትትል ወቅት

III. ምጥ ከጀመረ በኋላ

3.5 ለሚቀጥለው እርግዝና LEA ይወስዳሉ?

I. አዎ

II. አይ

III. እርግጠኛ አይደለሁም

3.6 መልስዎ የለም ከሆነ ወይም ከላይ ላለው ጥያቄ እርግጠኛ ካልሆንኩ ለምን?

I. LEA ህመሜን አላስወገደውም።

II. ከ LEA ጋር የተያያዙ ችግሮች አጋጥመውኝ ነበር።

III. LEA በቀዶ ጥገና እንድወልድ ምክንያት ስለ ነበር።

IV. LEA ውድ ስለሆነ

V. ሌላ

3.7 LEAን ለቤተሰብዎ አባል ወይም ለጓደኞችዎ እንዲጠቀሙ ይመክራሉ?

I. አዎ

II. አይ

3.8 LEA በትክክለኛው ሰዓት የወሰድሽ ይመስልኛል?

I. አዎ

II. አይ

3.9 ከLEA ጋር የተያያዘ ምንም ዓይነት አሉታዊ ክስተት አጋጥሞታል?

I. አዎ

II. አይ

3.10 ከሚከተሉት አሉታዊ ክስተት ውስጥ ከLEA ጋር ያጋጠሙዎት የትኛው ነው?

I. የጀርባ ህመም

II. ራስ ምታት

III. የታችኛው እግር ድክመት

IV. ከመድኃኒት ጋር የተዛመዱ ችግሮች

V. ሽንት አለመሸናት

VI. ሌላ