

Original Article

Assessment of Maternal Satisfaction and Associated Factors Regarding Epidural Labor Analgesia at Hemen Medical Center, Addis Ababa, Ethiopia (2023/24): A Facility Based Cross-Sectional Study

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Abstract

Background: Although labor epidural analgesia is considered the most effective method of pain relief and its use is increasing in Ethiopia, maternal satisfaction with this technique has not been assessed in our country. The growing demand for enhanced healthcare quality underscores the importance of evaluating patient satisfaction. Understanding maternal satisfaction with labor epidural analgesia is crucial, as it provides insights into the quality of care and identifies factors contributing for dissatisfaction.

Objective: The purpose of this study is to determine the level of satisfaction of mothers toward labor epidural and to identify factors associated with it in pregnant mothers who received labor epidural analgesia at Hemen Maternal and Child Health Center.

Methods: A prospective cross-sectional study was conducted on patients who had received epidural analgesia for delivery from May to November, 2023. Data were collected from volunteer mothers who gave birth using labor epidural 1 day after delivery and before they are discharged. A structured self-administered questionnaire was used to collect the data. The level of satisfaction was measured using a 5-point Likert Scale. Descriptive statistics was used to present frequency and percentages, and a logistic regression was conducted to analyze the association between dependent and independent variables.

Results: One hundred and fifty mothers age ranging from 18 – 37 years were included in this study. The rate of satisfaction with the Labor epidural analgesia service was 98%. We couldn't find any association between level of satisfaction and independent variables, mainly due to lack of a sizable comparative group, a small subset of dissatisfied patients (only 2%).

Conclusion: The magnitude of satisfaction with Labor Epidural Analgesia service at Hemen MCH is remarkably high. The use of a customized labor epidural analgesia protocol, developed based on feedback and self-reflections from previous techniques, is a possible reason for the high satisfaction rate.

Key words: Analgesia, Epidural; Labor Pain; Patient satisfaction; Maternal Health Services

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Introduction

Labor is an extremely painful and distressing experience for expectant mothers. It consists of two phases: the first phase, which involves pain signals transmitted through the lower thoracic and lumbar spinal segments (T10 to L1), and the second phase, in which pain is conveyed via the pudendal nerve to the second, third, and fourth sacral spinal segments (1,2).

Different techniques have been employed to alleviate pain for women during labor and childbirth. Options available to women include both non-pharmacological methods, such as breathing exercises, baths, walking, Transcutaneous Electrical Nerve Stimulation (TENS), massage, and pharmacological approaches, like inhaled nitrous oxide, intravenous opioids, intramuscular nonsteroidal

anti-inflammatory drugs, and neuraxial analgesia. Notably, neuraxial analgesia is the sole method that offers complete pain relief for both stages of labor (3).

Labor epidural analgesia (LEA) is a widely used technique for pain management during labor and delivery. Although epidural analgesia is considered the most effective method of pain relief, maternal satisfaction with the technique is an important factor to consider, as it can have an impact on the overall birth experience. For women in labor, epidural analgesia is an effective option for pain relief(4)(5)(6)(7). This offers great safety characteristics for the mother and fetus while effectively relieving pain (8)(9)(10).

Healthcare practitioners are becoming more and more concerned with enhancing the long-term results of the care they offer. When it comes to a patient's experience and outcome during childbirth, patient satisfaction is crucial. Positive labor and delivery experiences boost moms' self-confidence and ability to care for their newborn (12)(13)(14), while a bad experience increases the chances of getting postnatal depression, having trouble nursing, and, possibly, neglect and abuse of children (13)(14,15)(16). Also, patient happiness is a sign of high-quality healthcare, thus it is crucial for medical personnel to give priority to the the patient and customize treatments to provide the best possible care(17)(18).

Maternal satisfaction during child birth is influenced by multiple factors including expectations about childbirth, the number of previous deliveries, effectiveness of the chosen pain relief method, and the support environment provided by family and the hospital (19)(20,21).

The growing demand for enhanced healthcare quality underscores the importance of assessing patient satisfaction. Understanding maternal satisfaction with Labor Epidural Analgesia (LEA) is crucial, as it provides insights into the quality of analgesia and identifies factors contributing to dissatisfaction. Such knowledge is invaluable for developing strategies to improve LEA services and broadening their availability in all healthcare facilities offering delivery services. By enhancing the quality and accessibility of LEA, we can increase the likelihood that mothers will opt for regional analgesia in future deliveries, ultimately improving their childbirth experience.

Therefore, the aim of this study is to assess the level of satisfaction and look into variables linked to low patient satisfaction in pregnant mothers who receive labor epidural analgesia at Hemen MCH, Addis Ababa, Ethiopia.

Methods

Study design, area and period

After obtaining ethical approval and a written signed

informed patient consent, an institution-based prospective cross-sectional study was conducted at Hemen Maternal and child health facility from May 8/2023 to October 31/2023.

Hemen Maternal and child health center (Hemen MCH) is a privately owned hospital established in 2013, which has been delivering comprehensive care in obstetric, gynecologic and pediatrics since its establishment.

Population

Source Population

All obstetric mothers who gave birth at Hemen Medical Center Using Labor epidural analgesia.

Study Population

All obstetric mothers who gave birth at Hemen Medical Center Using Labor epidural analgesia during the data collection period.

Inclusion and exclusion criteria

Inclusion criteria

Age above 18 years old, ASA physical status II and III,

Exclusion criteria

Those who did not give informed consent, GCS <15

Study variables

Dependent variables

The primary outcome variable is rate of satisfaction

Independent variables

Age,
parity,
duration of labor,
level of education
level of pain relief achieved,
adverse effects, and
the quality of information and support provided by healthcare professionals.

Sample size determination

Single population proportion formula was used to calculate the sample size. The sample proportion (P) was determined based on a study conducted in Spain assessing maternal satisfaction with LEA reporting a satisfaction rate of 91%.

$$n = \frac{(Z\alpha/2)^2 P (1-P)}{d^2}$$

where: where $\alpha=5\%$, $P=0.91$, $Q=1-P=0.09$ and $d=0.05$, Z at 95 % CI=1.96, Given that the study utilized a self-administered questionnaire, we included an additional 20% to account for non-response, bringing the final sample size to 152.

Sampling technique

The estimated number of mothers expected to deliver using labor epidural within the study period, 6 months, is about 150. Therefore, all volunteer moth-

ers who gave birth at Hemen medical center using labor epidural during the data collection period were included in the study.

Data collection instrument and procedure

The study used a self-administered questionnaire, which was given to volunteer mothers the day after delivery. The level of satisfaction was measured using a 5-point Likert Scale and categorized as satisfied (Likert Scale level 4 and 5) or Dissatisfied (Likert Scale level 1, 2, and 3). Volunteer mothers who delivered at Hemen Medical Center using labor epidural analgesia completed and returned the questionnaire prior to discharge.

Data quality control and management

Ward nurses were used to facilitate the data collection process. To ensure data quality, the data collectors received orientation and clarification on how to assist study participants in completing the questionnaire. Every day, the collected data were reviewed and checked for completeness and consistency by the investigators.

Data Analysis

The collected data were reviewed and coded before entered into a computer. Data from the completed questionnaire was analyzed using SPSS version 26. Descriptive statistics and logistic regression were employed for data analysis.

Ethical considerations

The data collection was started after securing an ethical approval from The Institutional Research Ethics Review Committee (IRERC) of the Ethiopian Association of Anesthetists (EAA). Written informed consent was acquired from participants. To assure confidentiality of information, name of respondents was omitted from the questionnaire and the confidentiality of information given by the participants was maintained.

Results

Sociodemographic characteristics

Twelve participants were excluded from the study due to incomplete questionnaires. A total of 150 mothers between age of 18-37 years who received labour epidural analgesia at Hemen MCH in the periods of May 2023 to November 2023 completed the questionnaire and were included in the study. The mean age of the participants was 28.08 with a standard deviation of 3.8. Regarding educational status, 75% of the participants had a degree or higher. In terms of obstetric history, majority of mothers (72%) were nulliparous and 75.3% had SVD (table 1).

Table 1: Sociodemographic and obstetric characteristics of women who received LEA at Hemen MCH from May – November 2023, Addis Ababa, Ethiopia.

Variables	Category	Frequency(n)	Percentage
Level of Education	Primary School	4	2.7%
	Secondary School	13	8.7%
	Diploma	18	12%
	Degree	67	44.7%
	Masters and above	46	30.7%
Parity	Nulliparous	108	72%
Duration of Labor	Multiparous	42	28%
	Short (<6hrs)	42	28%
	Medium (6-18hrs)	70	46.7%
	Long (>18hrs)	32	21.3%
Mode of delivery	SVD	113	75.3%
	Assisted delivery	12	8%
	Cesarean Section	23	15.3%

Satisfaction with LEA

About 98% of parturient who took LEA were satisfied with the overall experience of LEA they took and the pain control (Table 2).

Table 2: Satisfaction level of mothers who received LEA at Hemen MCH from May – November 2023, Addis Ababa, Ethiopia.

Variables	Category	Frequency(n)	Percentage
Satisfaction with explanation provided about LEA prior to administration	Satisfied	140	93.4%
	Not satisfied	10	6.6 %
Satisfaction with pain control from LEA	Satisfied	147	98%
	Unsatisfied	3	2%
Satisfaction with follow-up care during LEA	Satisfied	148	98.7%
	Unsatisfied	2	1.3%
Satisfaction with the overall experience of LEA	Satisfied	147	98%
	Unsatisfied	3	2%

Experience of mothers with LEA

About 78% of mothers reported that the LEA they received didn't cause any side effects and 26% believed that the LEA affected their pushing ability during delivery (Table 3).

Table 3: Overall experience of mothers who received labor epidural analgesia at Hemen MCH from May – November 2023, Addis Ababa, Ethiopia

Variables	Category	Frequency(n)	Percentage
Perceived impact of LEA on ability to push during delivery	Yes	39	26%
	No	90	60%
	I don't know	21	14%
Reported side effects of LEA	Yes	33	22%
	No	117	78%
Types of side effects experienced from LEA	Shivering	24	16%
	Others*	11	6%
	Yes	103	68.7%
Intention to use LEA in future deliveries	No	6	4%
	Not sure	41	27.3%
	Yes	130	86.7%
Recommendation of LEA to family and friends	No	4	2.7%
	Not sure	16	10.7%
	Yes	130	86.7%

Others* nausea and vomiting, itching, blurring, headache

Factors Associated with satisfaction of LEA

We performed a binary logistic regression analysis to evaluate factors associated with overall maternal satisfaction with Labor Epidural Analgesia (LEA). Bivariate logistic regression was conducted for each independent variable (age, parity, education level, dura-

tion of labor, mode of delivery, satisfaction with pain control and follow-up care, side effects, and impact on pushing) in relation to the dependent variable to determine if any variable demonstrated an association with a p-value of less than 0.2. However, no variable showed significant association in

the bivariate analysis, largely due to the absence of a sizable comparative group. The proportion of patients who reported dissatisfaction was notably low—only 3 out of 150 respondents, or approximately 2%. This small subset of dissatisfied patients severely limits the statistical power of our analyses, preventing any meaningful associations from being established.

Discussion

In our study, 98% of mothers who received Labor epidural Analgesia reported satisfaction with the overall LEA services. However, we were unable to identify any associations between independent factors and the level of dissatisfaction due to the lack of a sizable comparable group, as only 2% of study participants reported dissatisfaction with the service.

In this study, we found out that, 98% of satisfaction level with the overall epidural analgesia service. This figure is comparable with studies conducted in Canada and Spain with the satisfaction rates above 90%. A study published in 2013 in Canada to assess quality of LEA and maternal satisfaction reported that 92% mothers who received LEA were satisfied with the service (2). Another similar study conducted in Spain reported a satisfaction rate of 91.3% (3). Both of these findings are in close proximity to our finding, even though our study finding was higher at rate of 98%.

On the contrary, the satisfaction rate in our study is much higher than studies conducted in developing and middle-income countries. For instance, in an unpublished study conducted in Ethiopia reported that the overall satisfaction level with LEA of 83% (12n). Similarly, the rate of satisfaction with LEA was reported to be about 80% in 2 studies conducted in Nigeria and Cameroon (10, 14). Similarly, a study conducted in Israel reported a satisfaction rate of 70% (7). Another study published in 2019, conducted in India also reported a satisfaction rate of 76% with LEA (11).

One possible reason for the higher maternal satisfaction rate in our study could be most of the mothers who received LEA are nulliparous. 72% of study participants in our study are nulliparous. Although we couldn't find significant association in our study, many studies reported that being nulliparous is associated with increased rate of maternal satisfaction. An Indian study published in 2014 reported that being nulliparous is associated with increased level of maternal satisfaction with LEA service (8). Another retrospective cohort study involving 10, 170 parturient receiving LEA reported that nulliparous mothers are more likely to be satisfied with the service than multiparous mothers (15n).

Another reason for the high maternal satisfaction rates observed in our study may be attributed to the use of a customized LEA service protocol. Over the past five years, nearly 1,000 LEAs have been administered by a dedicated team of only three providers. This consistency

has allowed for the fine-tuning of dosages to achieve effective pain relief without excessive motor blockade, both of which are crucial for patient satisfaction. Based on this extensive experience, we developed the LEA service protocol to ensure the service is consistent and standardized. As a result, patients are thoroughly informed about what to expect during and after LEA administration, enhancing their satisfaction levels. As part of our commitment to quality care, we perform urinary catheterization to minimize discomfort related to urine retention, and we conduct continuous monitoring of vital signs and fetal conditions for all clients who receive LEA. This helps minimize complications associated with the procedure and further reduce the likelihood of dissatisfaction.

Additionally, LEA is administered upon request from laboring mothers, often when the pain becomes unbearable. This timing allows them to fully appreciate the contrast in pain relief provided by the epidural, which significantly enhances their satisfaction.

In our study, we encountered significant limitations in identifying factors that influence patient satisfaction with Labor Epidural Analgesia (LEA). A major challenge was the absence of a sizable comparative group, as the proportion of patients who reported dissatisfaction was notably low—only 3 out of 150 respondents, or approximately 2%. This small subset of dissatisfied patients severely limits the statistical power of our analyses, making it difficult to draw meaningful conclusions or detect subtle associations between patient characteristics or procedural variables and overall satisfaction levels. Moreover, the lack of a control group of patients who either opted out of LEA or received alternative pain management strategies prevented us from comprehensively understanding the specific impacts of LEA on patient satisfaction compared to other methods. This shortfall suggests a need for further research involving a broader demographic with varied experiences to validate and expand upon our findings.

Strength of the study: Since the data were collected just 1 day after delivery, it significantly minimizes a recall bias.

Limitation of the study: Because the data were collected using a self-administered questionnaire just a day after delivery, there could be biases related to the influence of immediate postpartum emotions. The mothers' responses might also be influenced by their relief at the outcome of the delivery process, potentially leading to more favorable evaluations of their LEA experiences.

Conclusion:

The study conducted at Hemen Maternal and Child Health Center revealed a remarkable maternal satisfaction rate with LEA (98%). The high satisfaction rate is attributable to several factors, including the expertise of the healthcare team, effective pain relief protocols, thorough patient education, and the consistent administration of LEA by a dedicated team. Moreover, the majority of mothers who received LEA were nulliparous, a group known to have a higher likelihood of satisfaction with the procedure.

Declarations

Acknowledgement

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Ethical Consideration

Before the start of data collection, we received ethical clearance from the Institutional Research Ethics Review Committee (IRERC) of the Ethiopian Association of Anesthetists (EAA), with protocol number

EAA/16/30895/005. Written informed consent was obtained from all participants. To ensure the confidentiality of the information, respondents' names were omitted from the questionnaire, and the confidentiality of the information provided by the participants was maintained.

Authors contributions

All authors were actively involved in the development of the proposal, creation of data collection tools, data analysis, and drafting of the manuscript.

Conflict of Interest

The authors declare that they have no conflicts of interest related to this work. All findings presented in this article are solely the authors' own and are not influenced by any affiliations, financial arrangements, or personal relationships with organizations or entities that could be perceived as sources of bias.

Data Availability

The data supporting the findings of this study are available upon reasonable request from the corresponding author. Due to privacy and ethical considerations, the data are not publicly accessible. Access to the data may be granted to qualified researchers, subject to approval by the relevant ethics committee.

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