



# SATISFACTION OF PARTURIENTS WITH EPIDURAL ANALGESIA DURING DELIVERY: ANALYSIS OF QUESTIONNAIRE AT A SINGLE HOSPITAL CENTER

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**ABSTRACT** – Epidural analgesia is one of the most common methods of relieving labor pain. The objective of this study was to examine the effectiveness of epidural analgesia, maternal satisfaction and relationship between the effectiveness of epidural analgesia and various factors. Data were analyzed retrospectively and collected during 2022. A total of 60 parturients participated in the study. Data were collected through a questionnaire before the parturient was discharged from the hospital. The mean assessment of pain on a 1–10 numeric rating scale before epidural analgesia was 7.7 and 3.4 after administration of epidural analgesia. The median assessment of pain before epidural analgesia was 8 (7–8), and the median assessment of pain after epidural analgesia was 3 (2–5). The average satisfaction with epidural analgesia on a 1–10 scale was 8.11, and the median satisfaction was 10 (7–10). Total of 35 (58.3%) parturients rated satisfaction with 10. Statistically significant association between the effectiveness of epidural analgesia and parity, dilution of administered levobupivacaine, fentanyl administration, and level of education was not found. Childbirth pain is significantly alleviated by the application of epidural analgesia and the satisfaction of parturients is very high.

**Keywords:** *epidural analgesia, labor pain relief, effectiveness of epidural analgesia, maternal satisfaction*

## Introduction

Epidural analgesia is a central nerve block technique achieved by injection of local anesthetic close to nerves that transmit pain and is widely used as a form of pain relief in labor (1, 2). The most significant benefit of regional analgesia in childbirth during a normal pregnancy is the elimination of childbirth suffering in

mothers, while in high-risk pregnancies it also ensures a safer outcome for both mother and child. It also enables the mother to be awake and actively experience childbirth and establish first contact with the newborn child. Performed technically correctly and professionally, it is not a source of complications for either the mother or the child. In case of necessity to complete the delivery by caesarean section, analgesia is very easily upgraded to regional anesthesia with application of anesthetics and analgesics via an already placed catheter, which enables relaxation of the musculature and uninterrupted work of the obstetrician (3, 4). When epidural analgesia is administered to the parturient in labor, different management choices must be made

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by the anesthetist: how will we initiate analgesia; how will analgesia be maintained; which local anesthetic will we use for epidural analgesia and which adjuvant drugs will we combine? (5, 6). The aim of this study is to examine the effectiveness of epidural analgesia and maternal satisfaction.

## Material and Methods

Data were analyzed retrospectively and collected through a questionnaire, after delivery with epidural analgesia and before parturient was discharged from the hospital. Data were obtained from parturient and from medical records. A total of 60 parturients participated in the study. All parturients received 0.25% or 0.125% of levobupivacaine using 2 µg/ml fentanyl through intermittent bolus continuous infusion of 8-10 ml/h on epidural catheter. The pain was assessed on a 1–10 numeric rating scale (NRS) and maternal satisfaction on a 1–10 scale. Exclusion criteria were parturients with comorbidities and previous headaches.



*Fig.1 Anatomical (A) and technical application epidural needle (B) catheter (C) and fixation (D)*

B initial puncture with a peridural needle and detection of peridural space by the *hanging drops* method;

C introduction of an epidural catheter in place; D attached superficially to the skin

## Ethics

This study was carried out in accordance with the Helsinki Declaration of 1975, as revised in 1983. The Ethics Committee of the University Hospital Center Osijek and the Faculty of Dental Medicine and Health Osijek approved the study. Each parturient signed informed consent to participate in the study.

## Statistics

Numerical variables are age and pain assessment, described by the median, all other variables are categorical. The existence of a relationship between categorical variables was tested using the Chi-square test. For certain categorical variables, data were further grouped to perform a Chi-square test. The significance level of all tests was set to Alpha = 0.05. The statistical program used for statistical analysis was R Core Team (2020). R: A language and environment for statistical computing (*R Foundation for Statistical Computing, Vienna, Austria*; <https://www.R-project.org>; 2020).

## Results

Basic characteristics of parturients in a single center are showed in Table 1.

*Table 1 Basic characteristics of the subjects*

	N = 60 N(%)
Gender	
Women	60 (100.0)
Body mass index before pregnancy	
<25	35 (61.7)
>25	23 (38.3)
Weight gain during pregnancy	
<15	31 (51.7)
>15	29 (48.3)
Parity	
Primipara	49 (81.7)
Secundipara	9 (15.0)
Terti- and multipara	2 (3.3)
Residence	
Village	20 (33.3)
City	40 (66.7)

Level of education	
High school level	22 (36.7)
Higher and highest level	38 (63.3)
Number of persons in a household	
Two persons	39 (65.0)
Three persons	9 (15.0)
Four persons	4 (6.7)
More than four persons	8 (13.3)

The mean assessment of pain before epidural analgesia was 7.7 and 3.4 after administration of epidural analgesia (Table 2, Fig. 2).

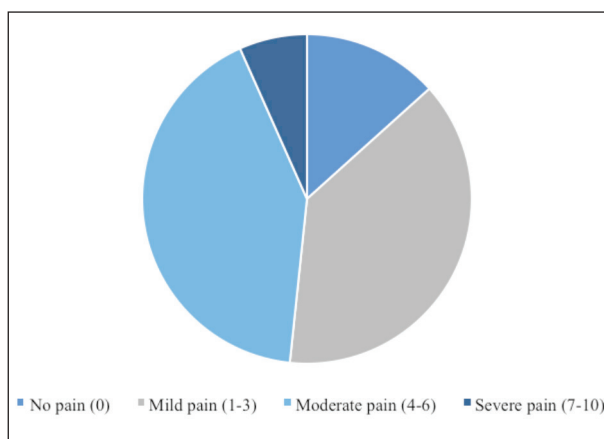


Figure 2 Assessment of pain after administration of epidural analgesia

Table 2 Assessment of pain before and after administration of epidural analgesia

	N = 60	N (%)
Assessment of pain before administration of EA*		
No pain (0)	0	(0.0)
Mild pain (1–3)	0	(0.0)
Moderate pain (4–6)	11	(18.3)
Severe pain (7–10)	49	(81.7)
Assessment of pain after administration of EA*		
No pain (0)	8	(13.3)
Mild pain (1–3)	23	(38.3)
Moderate pain (4–6)	25	(41.7)
Severe pain (7–10)	4	(6.7)

\*epidural analgesia

The median assessment of pain before epidural analgesia was 8 (interquartile range of 7 to 8) and the median assessment of pain after epidural analgesia was 3 (interquartile range of 2 to 5). The average reduction in pain was 4.3 units on the numeric rating scale, i.e. a reduction of 55.2% (Table 3, Fig. 3).

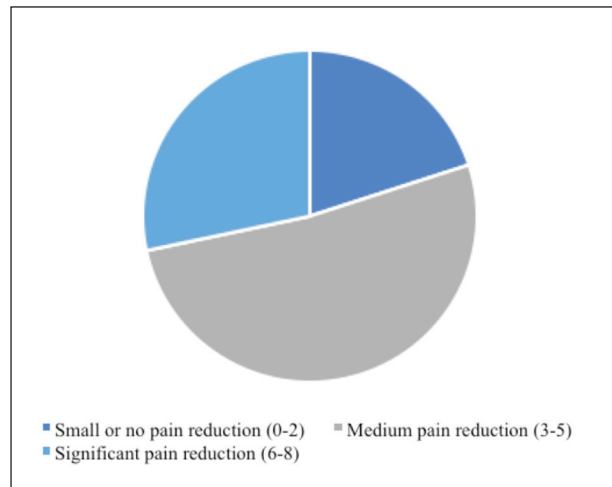


Figure 3 Reduction in pain after administration of epidural analgesia

Table 3 Reduction in pain after administration of epidural analgesia

	N = 60	N (%)
Reduction in pain after administration of EA		
Small or no pain reduction (0–2)	12	(20.0)
Medium pain reduction (3–5)	31	(51.7)
Significant pain reduction (6–8)	17	(28.3)

\*epidural analgesia

The pain reduction range was between 0 and 8 units on the numeric rating scale. Lidocaine 2% was used as an epidural test dose in all subjects. Levobupivacaine was used in all subjects, in dilutions of 0.25% or 0.125%. Total of 34 parturients received one bolus, which is 56.7% of the sample. Total of 39 parturients received 0.25% levobupivacaine in at least one bolus, which is 65% of the sample. Total of 43 parturients received fentanyl in combination with levobupivacaine, which is 71.7% of the sample. Total of 36 parturients did not breastfeed in the first 60 minutes after delivery,

accounting for 60% of the sample. Total of 49 mothers breastfed in the first 24 hours after delivery, accounting for 81.7% of the sample. The association between fentanyl administration and breastfeeding failure in the first 60 minutes after delivery was tested. No statistically significant association was found between fentanyl administration and breastfeeding in the first 60 minutes after delivery (Chi-squared test,  $P = 0.18$ ) (Table 4).

Table 4 Breastfeeding in the first 60 minutes and 24 hours after delivery

	N = 60 N (%)
Breastfeeding in the first 60 minutes after delivery	
Yes	24 (40.0)
No	36 (60.0)
Breastfeeding in the first 24 hours after delivery	
Yes	49 (81.7)
No	11 (18.3)

One parturient had a headache, which is 1.7% of the sample. Satisfaction was assessed on a scale of 1 to 10. The average satisfaction with epidural analgesia was 8.11, the median satisfaction was 10 (interquartile range of 7 to 10). Total of 35 parturients rated satisfaction with 10, which is 58.3% of the sample (Fig. 4).

The following fears were monitored: fear of chronic pain (back pain, headache), fear of loss of feeling or movement (in legs, for example), fear of the impossibility of natural (vaginal) completion of labor due to epidural analgesia and the fear of the impact of analgesia on the newborn. Total of 25 parturients stated that they did not have any of these fears, which is 41.7% of the sample. Total of 22 parturients reported having fear of chronic pain, accounting for 36.7% of

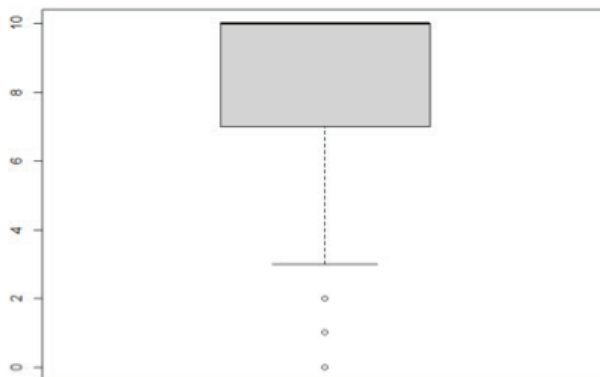


Figure 4 Box plot for satisfaction variable – median satisfaction

the sample. Total of 10 parturients reported having two or more fears, accounting for 16.7% of the sample showed in Table 5.

Table 5 Fears present in parturients

	N = 60 N (%)
Fears present in parturients	
Fear of chronic pain (back pain, headache)	22 (36.7)
Fear of loss of feeling or movement	7 (11.7)
Fear of the impossibility of natural (vaginal) completion of labor due to epidural analgesia	3 (5.0)
Fear of the impact of analgesia on the newborn	13 (21.7)
No fear	25 (41.7)

Parturients were categorized into those who had fear and those who did not have fear showed in Table 6.

No statistically significant relationship was found between the level of education and fears present in parturients (Chi-squared test,  $P > 0.99$ ).

Table 6 Relationship between education level and fears present in parturients

Group	Number of subjects	Fears present in parturients		P*
		Fear present	Fear not present	
High school level	22	13	9	>0.99
Higher and highest level	38	22	16	

\*chi-squared test

## Discussion

Pain relief has an important impact on women in labor. In our investigation, we confirmed the high effectiveness of epidural analgesia with levobupivacaine and fentanyl on maternal pain relief and satisfaction in relation to various factors such as complications, fear and breastfeeding. Pain intensity before epidural analgesia was 7.7 and 3.4 after administration of epidural analgesia, with a reduction of 55.2%. The need for pain relief in labor is also influenced by the type of labor onset (spontaneous or induced) and medical interventions, such as instrumental vaginal delivery and episiotomy. Several methods of relieving pain in labor and various coping strategies have been advocated, ranging from limited interventions such as breathing exercises to medical techniques like epidural analgesia. The level of pain experienced and the effectiveness of pain relief may influence a woman's satisfaction with labor and birth and may have immediate and long-term emotional and psychological effects (7). Women experience varying degrees of pain in labor and exhibit an equally varying range of responses to it. Our data of the presented study analyzed the average satisfaction with epidural analgesia of 8.11 (scale of 1 to 10) and 58.3% of parturients rated satisfaction with 10 points with epidural analgesia. The type of pain relief used in labor may impact breastfeeding and mother-infant interaction (8). In our study, a total of 36 (60%) parturients did not breastfeed in the first 60 minutes after delivery, but no statistically significant association was found between fentanyl administration and breastfeeding. A total of 49 (81.7%) mothers breastfed in the first 24 hours after delivery without significant side effects and complications. Only one (1.7%) parturient had a headache.

An individual's reaction to labor pain may be influenced by the circumstances of her labor, the environment, her cultural background, preparation for labor and the support available to her (9, 10, 11). Our parturients who had fear of chronic back pain, headache, loss of feeling or movement, natural completion of labor and fear of the impact of epidural analgesia on the newborn and those who did not have fear showed no statistically significant relationship between the middle and highest level of education and fears. Regardless of the intensity of the pain experienced and response generated, it is important that whatever method is used to ameliorate maternal dis-

comfort, it is both effective and safe for the mother and baby.

Postpartum pain causes a number of stress responses of the organism visible in cardiovascular (hypertension, tachycardia, increased peripheral vascular resistance, total stroke volume), respiratory (hyperventilation, hypocapnia, respiratory alkalosis), neuroendocrine-adrenal stimulation adrenocorticotrophic hormones, cortisol, antidiuretic hormone, renin and angiotensin II,  $\beta$ -endorphins,  $\beta$ -lipotropins, etc.), metabolic (increased need for consumption and utilization of oxygen, lactic acidosis, hyperglycemia and lipolysis), and gastrointestinal disorders, uterine (uncoordinated contractions of the uterus), uteroplacental (reduction of uteroplacental blood flow), fetal (fetal acidosis) and psychological effects (suffering, fear of the mother) (12–17). The modern obstetric analgesia in childbirth is the use of minimally invasive techniques with a selection of administered neuraxial anesthetics and analgesics, depending on the status of the pregnant woman, which will allow good analgesia without unwanted motor paralysis (18).

## Conclusion

The results of our study show that childbirth pain is significantly alleviated by the application of epidural analgesia and the satisfaction of parturients very high. Although the study sample was fairly small, the incidence of complications of epidural analgesia in the form of headache is low and we can conclude that the benefit-risk balance is in favor of epidural analgesia. Categorizing the data, which was necessary due to the small sample, reduced the accuracy of the statistical tests. A larger sample is necessary in order to draw conclusions about the association of the effectiveness of epidural analgesia with various factors.

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#### Sažetak

### ZADOVOLJSTVO RODILJA EPIDURALNOM ANALGEZIJOM TIJEKOM PORODA: ANALIZA ANKETE U JEDNOM BOLNIČKOM CENTRU

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Epiduralna analgezija jedna je od najčešćih metoda ublažavanja porodne boli. Cilj ovog istraživanja bio je ispitati učinkovitost epiduralne analgezije, zadovoljstvo roditelja i povezanost između učinkovitosti epiduralne analgezije i pariteta, razrjeđenja primijenjenog levobupivakaina, primijenjenog fentanila te razine obrazovanja. Podatci su analizirani retrospektivno, prikupljeni su tijekom 2022. godine. Ukupno 60 roditelja sudjelovalo je u istraživanju. Podatci su prikupljeni pomoću anketnog upitnika prije otpusta roditelje iz rodišta. Prosječna procjena boli na numeričkoj skali od 1 do 10 prije primjene epiduralne analgezije iznosi 7,7, a nakon primjene epiduralne analgezije 3,4. Medijan procijenjene boli prije primjene epiduralne analgezije iznosi 8 (7 – 8), a nakon primjene epiduralne 3 (2 – 5). Prosječno zadovoljstvo epiduralnom analgezijom na skali od 1 do 10 iznosi 8,11, medijan zadovoljstva je 10 (interkvartilni raspon od 7 do 10). 35 roditelja je zadovoljstvo ocijenilo sa 10, što čini 58,3% uzorka. Statistički značajna povezanost između učinkovitosti epiduralne analgezije i pariteta, razrjeđenja primijenjenog levobupivakaina, primjene fentanila i razine obrazovanja nije pronađena. Porodna bol je značajno umanjena primjenom epiduralne analgezije i zadovoljstvo roditelja je vrlo visoko.

*Ključne riječi: epiduralna analgezija, ublažavanje porodne boli, učinkovitost epiduralne analgezije, zadovoljstvo roditelja*