



BMH Med. J. 2021;8(2):68-76. **Research Article**

Labour Epidural Analgesia: Patient Satisfaction and Outcome of Labour at a Quaternary Care Center - A Prospective Observational Study

Afham Abdul Gafoor, Ramkumar P, Jyothilakshmi Nair, Nisha Rajmohan, Suresh G Nair

Department of Anesthesia and Critical Care, Aster Medcity, Kochi, Kerala, India

Address for Correspondence: Dr. Nisha Rajmohan, Consultant, Department of Anesthesia and Critical Care, Aster Medcity, Kochi, Kerala, India.

Abstract:

Background and Aims: Patient satisfaction during labour is a multifactorial entity which is difficult to quantify. This study was undertaken to assess patient knowledge, satisfaction and attitude towards labour epidural in a quaternary care center in South India.

Methods: After getting approval from Institutional Ethics Committee, we included 120 parturients admitted for delivery at our institution between January 2017 and June 2019 in the prospective observational study. Demographic details and vital parameters were obtained at admission. Twenty-four hours after delivery under labour epidural analgesia, a questionnaire was distributed to them. All continuous variable were compared using unpaired "t" test / Mann-Whitney test between groups and paired "t" test within groups at various follow-ups. Pearson Chi-square test, Fisher's exact test was used to find the association between the categorical variable.

Results: 87.5% of our study population gave opinion of being satisfied or above regarding labour epidural analgesia. Adequate pain relief ($p < 0.001$), timely introduction of epidural, ($p < 0.001$), and absence of side effects were the major factors influencing satisfaction in our study. We did not find any association between demographic variables, mode of delivery and satisfaction.

Conclusion: Maternal satisfaction is a complex phenomenon. Epidural labour analgesia has created an increased satisfaction among parturients by providing them a pain free labour. Proper education of patients and creating a core team for labour analgesia can improve maternal satisfaction.

Keywords: Analgesia epidural, Labour pain, Maternal satisfaction

Introduction

Labour epidural analgesia is a tried and tested method of pain relief for the parturient with good foetal and maternal safety profile [1,2]. Patient satisfaction during labour, an important patient-centric outcome, is complex phenomenon dependent on multiple factors. There might be disparity between the actual and the envisaged experience of labour. The actual satisfaction during labour might be difficult to gauge [1,2]. This survey was taken up to see the level of satisfaction regarding

pain relief during labour epidural in women during parturition and their knowledge and attitude towards the epidural labour analgesia in a quaternary care center in South India.

Methods

After getting approval from Institutional Ethics Committee, 120 parturients admitted for delivery at our quaternary health care institution between January 2017 and June 2019 and who demanded labour analgesia and gave valid written consent were included in the prospective observational study. They were all aged between 18-40 years, either primigravida or multiparous, ASA 2 at term with singleton cephalic foetus. The parturients who were in active labour with at least 2 cm cervical dilatation were given labour epidural after recording their baseline blood pressure, pulse rate and oxygen saturation (SpO₂).

An epidural test dose of five ml of ropivacaine 0.1% and 2 mcg/cc fentanyl was given. Any motor block and changes in haemodynamic parameters were noted. This was followed by a top-up bolus dose of 10 ml of 0.1% ropivacaine containing 2 mcg/ml fentanyl. An infusion of ropivacaine 0.1% with fentanyl 2mcg/ml was started at the rate of 5-8ml/hour. Additional boluses of ropivacaine 0.1% with fentanyl 2mcg/ml was given on demand or when VAS score is greater than 4. When necessary intravenous paracetamol 1gm and intravenous tramadol 50 mg was also used as rescue analgesia. Vital parameters such as pulse rate, systolic blood pressure, diastolic blood pressure, mean arterial pressure, respiratory rate, SpO₂, foetal heart rate, VAS score and motor block using Modified Bromage score were monitored throughout the labour.

Adverse effects like hypotension, bradycardia, pruritus, nausea and vomiting, post-dural puncture headache or breathlessness if present, were noted and treated appropriately. These patients were cared for and monitored as per the routine institutional protocol of epidural labour analgesia. Twenty-four hours after delivery, the questionnaire was given to each parturient and they were asked to record their answers.

Questionnaire

The parameters that were observed in the questionnaires/study were-

- 1) Overall satisfaction of the parturient regarding labour epidural (by grading into 5 categories).
 - Perfect
 - Very satisfied
 - Satisfied
 - Less satisfied/ helped little
 - Not at all satisfied
- 2) Was the patient given prior information regarding the epidural labour analgesia in the antenatal period?
- 3) Are you aware of the various methods of labour analgesia and which according to you is the best method of analgesia?
- 4) If the patient were to come for delivery in future would they opt for epidural analgesia again
- 5) Pain score before and after insertion of the epidural for evaluating pain relief.
- 6) Patients were asked to describe whether they had a good or bad experience during labour and delivery. If they had a bad experience, were asked to give the reasons for it.
- 7) Was the epidural placed at the proper time?
- 8) Were there any unpleasant symptoms or discomfort during or after epidural catheter insertion (giddiness, nausea and vomiting, pruritis, backache, headache, breathlessness)
- 9) Patient's opinion regarding epidural labour analgesia being available for all the obstetric cases.
- 10) Was the patient aware of the availability of the obstetric epidural analgesia service in the institution.
- 11) Outcome of labour with respect to normal vaginal delivery assisted delivery or LSCS.

Other data collected included demographic data, and basic vitals, including heart rate (HR), systolic blood pressure (SBP), diastolic blood pressure (DBP), respiratory rate (RR), and temperature.

Statistical analysis

Taking into account the level of maternal satisfaction observed in a previous study, with 90% power and 95% confidence interval, minimum sample size required to obtain statistically significant results were 100 [3]. However, we recruited 120 cases in our study.

The statistical analysis was performed by IBM SPSS Statistics 20 version. All categorical variables will be described as frequency and percentage. All continuous variable was described as mean +/- SD and compared using unpaired "t" test / Mann-Whitney test between groups and paired "t" test within groups at various follow-ups. Normality will be checked by the rule of thumb method. Pearson Chi-square test, Fisher's exact test was be used to find the association between the categorical variable. Pearson's correlation coefficient was used to identify correlations between quantitative variables. A "p" value of < 0.05 was considered to be statistically significant. Independent "t" test was used to find the association between demographic variables and satisfaction.

Results

Among the 120 patients included in the study, we did not find any statistically significant effect of demographic variables like age ($p = 0.31$) and patient weight ($p = 0.22$) on satisfaction. 87.5% of our study population gave opinion of being satisfied or above regarding labour epidural analgesia. (Figure 1). VAS score was significantly reduced from 7.34 (1.61) to 2.61 (2.21) following the initiation of epidural analgesia ($p < 0.001$). We found that there was a significant association between satisfaction and pain relief ($p < 0.001$) and 97.8% of patients who were satisfied had a VAS score less than 4 (Table 1).

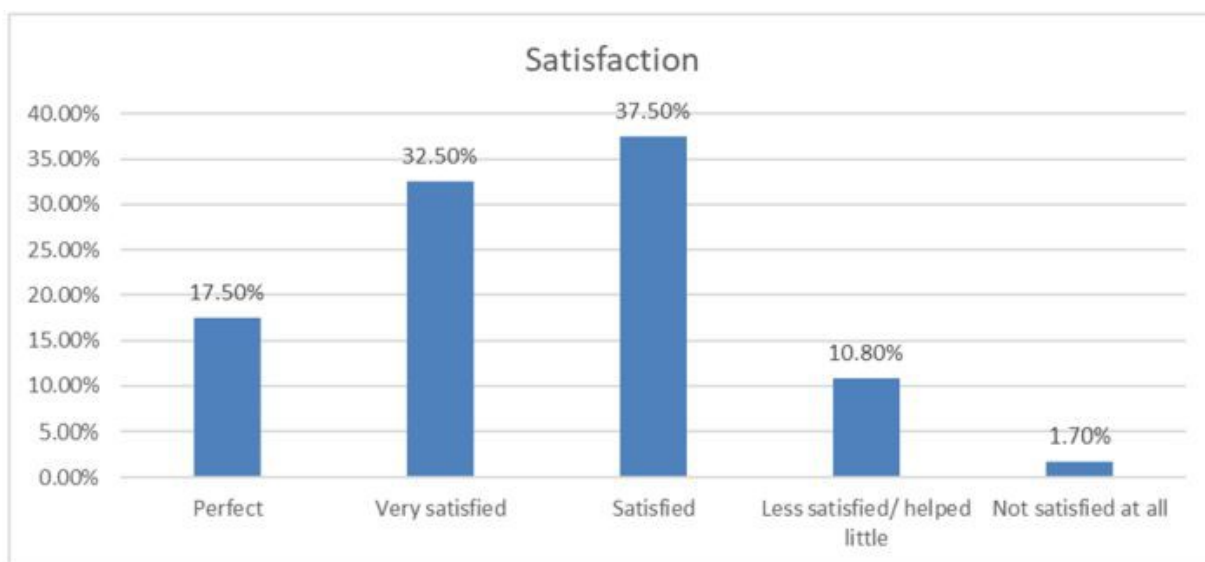


Figure 1: Satisfaction among patients. 87.5% of our study population gave the opinion of satisfied or above regarding labour epidural.

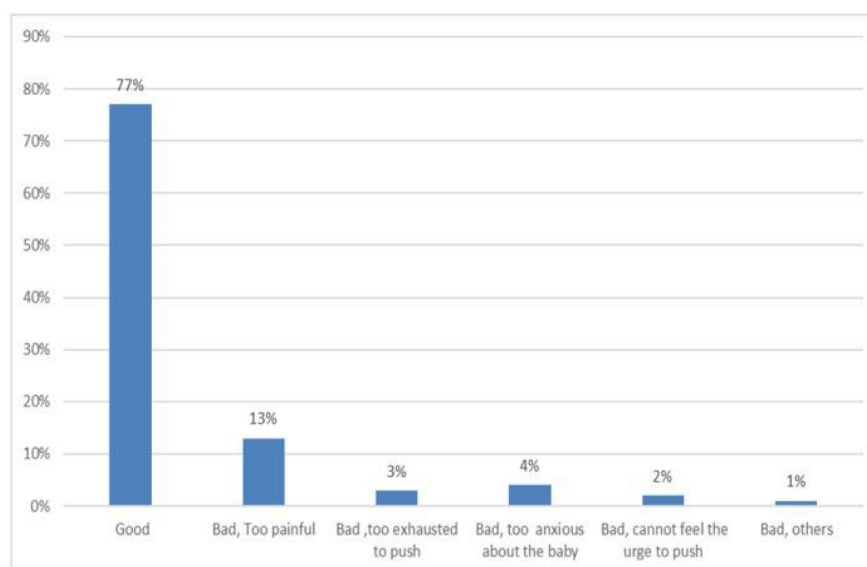
Table 1: Analysis of association between Pain score (VAS) and patient satisfaction.

			Satisfaction	
			Not satisfied at all	Satisfied
Pain score (after)	greater than 4	Count	13	14
		% within Pain score (after)	48.1%	51.9%
	Less than and equal to 4	Count	2	91
		% within Pain score (after)	2.2%	97.8%

P value obtained is $P < 0.001$ indicating there is significant association between satisfaction and pain score

A bad experience during labour was reported by 23% of our patients. Lack of adequate pain relief has been cited by 13% as a major reason for a bad experience (**Figure 2**). Appropriate timing of epidurals was strongly related to satisfaction ($p < 0.001$). Twenty seven percent of our patients had the epidural only late in the labour resulting in significant suffering for these patients (**Table 2**).

Figure 2: Experience of labour



Pain was the main reason for bad experience during labour

Table 2: Association between timing of insertion and satisfaction

			Satisfaction	
			Not satisfied at all	Satisfied
Timing of insertion	Exact time	Count	5	82
		% within Timing of insertion	5.7%	94.3%
	Inserted after pain	Count	8	21
		% within Timing of insertion	27.6%	72.4%
	inserted when about to deliver	Count	2	2
		% within Timing of insertion	50.0%	50.0%

P value obtained is 0.001 indicating there is significant association between satisfaction and timing of insertion.

77.5% of the parturients said they will request epidural in the future. 76.7% were of the opinion that epidural was the choicest analgesia for labour pain and 63.3% would definitely recommend it for all the obstetric patients (**Figure 3 a, b and c**).

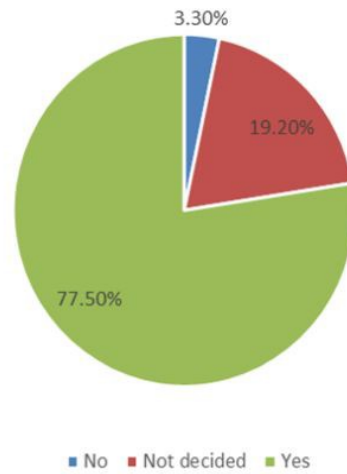


Figure 3a: Whether they would request epidural in future

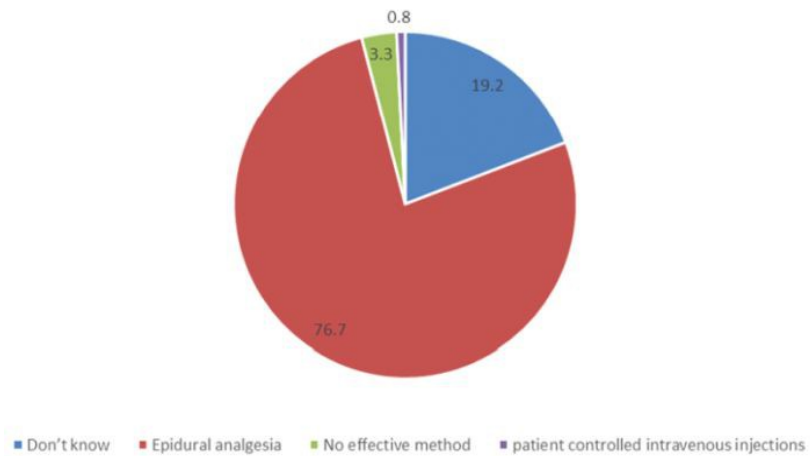


Figure 3b: Opinion about effective means of labour pain control

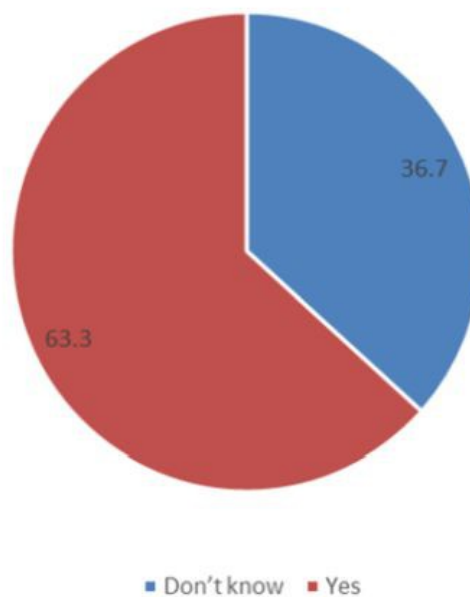


Figure 3c: Whether they would recommend for all obstetric patients

We found that 59% of the total population did not have any side effects. Three patients had more than one symptom hence the discrepancy in numbers. We found that 63.7% of patients who were satisfied were asymptomatic (**Table 3**). Normal vaginal delivery was conducted in 77% parturients. We found that 72% of patients who were satisfied had normal vaginal delivery (**Table 4**).

Table 3: Association between side effects and satisfaction

		Satisfaction		Total
		Not satisfied at all	Satisfied	
Symptoms/ Discomfort	Back pain	1	3	4
	Breathlessness	0	2	2
	giddiness	1	5	6
	Giddiness	1	1	2
	Giddiness, breathlessness	0	1	1
	Headache	2	5	7
	Nausea	2	5	7
	Nausea, vomiting, giddiness, breathlessness	0	1	1
	No symptoms	6	67	73
	Pruritis	1	7	8
	Vomiting	1	7	8
	Vomiting, giddiness	0	1	1
Total		15	105	120

Note: 55% of patients who were satisfied were asymptomatic

Table 4: Association between outcome of labour and satisfaction

			Satisfaction	
			Not satisfied at all	Satisfied
Outcome of labour	LSCS	Count	0	11
		% within Outcome of labour	0.0%	100.0%
	Normal Vaginal Delivery	Count	14	78
		% within Outcome of labour	15.2%	84.8%
	Vacuum assisted vaginal delivery	Count	1	16
		% within Outcome of labour	5.9%	94.1%

No association between the outcome of delivery and satisfaction

In our study population, 86% was familiar with the epidural technique. Antenatal talks, friends or relative, media and previous experience were the sources of awareness about epidural. However, we found that 19% of patients in our study were not aware of the availability of epidural in our institution. Only 37% of our patients attended the antenatal classes.

Discussion

A good experience during childbirth has a positive impact on health of the mother and results in strong maternal bonding. Post-natal psychological problems, poor breast-feeding and child abuse are some of the after effects of a bad experience in the mother. Instrumental delivery, post epidural pain, epidural catheter repositioning, delay in epidural catheter insertion, multiparity, post procedure complications like headache, backache, urinary retention, neural deficit, ethnicity, lack of respectful treatment, emotional support and privacy were some factors responsible for poor patient satisfaction [1-5]. However, there is a paucity in the literature regarding the factors influencing patient satisfaction with labour epidurals in the Indian population. This study was undertaken to explore the

factors responsible for patient satisfaction and outcome following labour epidural analgesia.

We found that good analgesia (a drop in VAS score below 4), timely insertion of epidural catheter and absence of complications was some of the factors that ensured satisfaction in parturients who received epidural analgesia. Effective analgesia is probably the most significant factor impacting patient satisfaction ($p < 0.001$) and the parturients who gave a "perfect" satisfaction score were found to report a post epidural VAS score of 0. Pain after insertion of labour epidurals has been described as one of the factors responsible for a dissatisfied patient [1]. Epidural analgesia are often found to provide better analgesia hence better patient satisfaction [1,6-10]. Patients who expected more pain were more satisfied after analgesia. 87.5% of the parturients gave the opinion of satisfied or above, which points to a happy experience as far as analgesia is concerned. However, although analgesic effectiveness contributes to the satisfaction with epidural techniques, it is not the sole determinant of patient satisfaction [2,5,11-13].

Another tool of satisfaction was the experience of labour. On investigating the reason for the bad experience in 23% of patients we found that labour was painful in 13%. Pain experienced whilst being on "labour analgesia" was a significant factor for dissatisfaction [1]. Exhaustion, anxiety about the baby and some undisclosed reasons were the other factors responsible for low satisfaction in a small percentage of our patients. Fear of the experience of childbirth, anxiety, emotional liability, nervousness and pain were some of reasons for dissatisfaction reported by Anim-Somuah M et al which was similar to our own conclusions [8].

Due to the heavy patient load in our hospital, 27% patients had a delay in epidural insertion. We found that the level of satisfaction increased when the timing of epidural is appropriate ($p < 0.001$). It increases patient satisfaction by producing timely pain relief, minimizing first stage of labour without increasing the risk of cesarean deliveries [1,14]. Forming a dedicated team of anaesthesiologists, timely decision on the need for the epidural by the patient and obstetrician would ensure delivery of epidural on time.

Patient satisfaction during neuraxial techniques would be a deciding factor in selecting a similar technique in future [1,3]. In our study, we found that 77 % of the parturients would request epidural in the future, 63% would advocate this method of pain relief to all the parturients. 18% of our patients who demanded epidurals had working epidurals during the previous delivery.

Complications or discomfort during labour epidurals can be a major dissuading factor in the choice of neuraxial techniques for future labour analgesia [1,10,14]. In our survey, we found that 59% of the total population were asymptomatic. We found that 67% of patients who were satisfied did not have any side effects. In others, there were mild symptoms which were corrected immediately by medications and reassurance. Many of these side effects could be also be attributed to multiple issues including physiological changes due to pregnancy and labour. Prompt alleviation of symptoms and reassurance can work wonders in such situations.

In our study, incidence of vacuum assisted vaginal deliveries were 14% and LSCS was 9%. There is conflicting evidence regarding the increase in instrumental delivery following epidural analgesia. 84.8% of our patients who were satisfied had a normal vaginal delivery. We could not however find an association between instrumental delivery and satisfaction similar to the findings of Hitanshu Bh et al [2].

Proper education of the expecting mothers may help reduce the disparity between expectation and reality of epidural analgesia thereby increasing satisfaction among the parturients [19]. 80.8% of the study population was aware of the availability of epidural in our institution and 76% rated epidural as the most effective means of labour analgesia. Only 37% of the study population heard it from the

antenatal classes conducted at our institute on a regular basis. Increasing attendance of antenatal clinics may help clear all the misgivings regarding epidurals. Role of obstetricians in promoting attendance to these classes cannot be stressed enough. Our hospital caters to the upper social economic strata. So, the increased awareness of epidural analgesia among our patients may not be a reflection of society at large. Parity has been found to have an association with satisfaction in some of the studies [1]. However, we did not include this in our study.

There are a few limitations in our study. Patient satisfaction is a multidimensional parameter, which could be related to patient, obstetric, anaesthetic and psychological factors. We did not consider cultural or religious aspects of epidural labour analgesia. Epidurals were placed by different anaesthesiologists in the study. The competence of the anaesthesiologist could be a limiting factor in the study. We did not take in to account the number of epidural top-ups required and its effects on patient satisfaction.

Conclusions

Maternal satisfaction is multidimensional. Pain relief is one of the main factors influencing satisfaction. Epidural labour analgesia has increased satisfaction by providing them a pleasant labour. Well-informed patients, well timed epidurals and well managed complications can tilt the balance towards a more satisfied parturient. Creating a core team of anesthesiologists specializing in labour analgesia should also be advocated.

References

1. Tan DJA, Sultana R, Han NLR, Sia ATH, Sng BL. Investigating determinants for patient satisfaction in women receiving epidural analgesia for labour pain: a retrospective cohort study. *BMC Anesthesiol.* 2018 May 9;18(1):50.
2. Bhatt H, Pandya S, Kolar G, Nirmalan PK. The impact of labour epidural analgesia on the childbirth expectation and experience at a tertiary care center in southern India. *J Clin Diagn Res.* 2014 Mar;8(3):73-6.
3. Gredilla E, Perez Ferrer A, Martlnez B, Alonso E, Diez J, Gilsanz F. Satisfaccion materna con la calidad de la analgesia epidural para control del dolor del trabajo de parto [Maternal satisfaction with the quality of epidural analgesia for pain relief in labor]. *Rev Esp Anestesiol Reanim.* 2008 Mar;55(3):160-4.
4. Bhattacharyya S, Srivastava A, Avan BI. Delivery should happen soon and my pain will be reduced: understanding women's perception of good delivery care in India. *Glob Health Action.* 2013; Nov 22; 6:22635.
5. Hodnett ED: Pain and women's satisfaction with the experience of childbirth: a systematic review. *Am J Obstet Gynecol.* 2002; 186(5 Suppl Nature): S160- S172.
6. PandyaST .Labour analgesia: Recent advances. *Indian J Anaesth* 2010,54:400-8.
7. Marenco-Arellano V, Ferreira L, Ramalle-Gomara E, Crespo A, Ruperez A, Fraile E. Valoracion de la satisfaccion materna con la analgesia epidural para el control del dolor del trabajo de parto [Assessment of maternal satisfaction with epidural analgesia for pain control during labour]. *Rev Calid Asist.* 2017 May-Jun;32(3):166-171.
8. Anim-Somuah M, Smyth R, Jones L. Epidural versus non-epidural or no analgesia in labour. *Cochrane Database Syst Rev.* 2011;12:CD000331.

9. Reynolds F. Labour analgesia and the baby: good news is no news. *Int J Obstet Anesth.* 2011; 20:38-50.
10. Rani P, Hemanth KVR, Ravishankar M. Awareness, knowledge and attitude about labour analgesia among providers and parturients; a survey-based study. *Anaesth Pain & Intensive Care* 2018; 22(1):73-80.
11. Kannan S, Jamison RN, Datta S. Maternal satisfaction and pain control in women electing natural childbirth. *Reg Anesth Pain Med.* 2001 Sep-Oct;26(5):468-72.
12. Richardson MG, Lopez BM, Baysinger CL, Shotwell MS, Chestnut DH. Nitrous oxide during labor: maternal satisfaction does not depend exclusively on analgesic effectiveness. *Anesth Analg.* 2017; 124:548-53.
13. Thomson G, Feeley C, Moran VH, Downe S, Oladapo OT. Women's experiences of pharmacological and non-pharmacological pain relief methods for labour and childbirth: a qualitative systematic review. *Reprod Health.* 2019 May 30;16(1):71.
14. Wong CA, Scavone BM, Peaceman AM, McCarthy RJ, Sullivan JT, Diaz NT, et al. The risk of cesarean delivery with neuraxial analgesia given early versus late in labor. *N Engl J Med.* 2005; 352:655-65.
15. Nora TS, Sahruh T. Impact of Epidural Analgesia in labour on neonatal and maternal outcomes. *Open Journal of Obstetrics and Gynecology.* 2018; 8: 767-779.
16. Rimaitis K, Klimenko O, Rimaitis M, Morkūnaitė A, Macas A. Labor epidural analgesia and the incidence of instrumental assisted delivery. *Medicina (Kaunas).* 2015;51(2):76-80.
17. Cambic CR and Wong CA. Labour Analgesia and Obstetric Outcomes. *British Journal of Anaesthesia.*2010; 105: i50-i60.
18. Wu CL, Naqibuddin M, Fleisher LA. Measurement of patient satisfaction as an outcome of regional anesthesia and analgesia: a systematic review. *Reg Anesth Pain Med.* 2001; 26:196-208.
19. Lally JE, Murtagh MJ, Macphail S, Thomson R. More in hope than expectation: a systematic review of women's expectations and experience of pain relief in labour. *BMC Med.* 2008 Mar 14; 6:7.