

# Intrapartum analgesia as a condition of human satisfaction at hospital

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## Abstract

The study investigates parturients' satisfaction with intrapartum analgesia. It aims to assess their opinions about hospital and health staff involved in delivery, besides investigating emotional control, locus control and bond between mothers and their newborn infants. A multidimensional approach has been used to investigate the variable of *woman* as a person, the variable of *context* and the variable of *bond* with the newborn infant. The study was conducted according to a quasi-experimental design, with a control group.

The study was performed within the Analgesia and Intensive Care Operational Unit of the Maternal-Infant Department of the P. Giaccone University General Hospital of Palermo. It involved 60 women subdivided into two groups of 30 women each, the experimental group (women who requested intrapartum analgesia) called the A group, and the control group (women who refused it) called the B group.

The following tools were administered: the STAI-Y (State-Trait Anxiety Inventory, form Y) scale; the Depression Questionnaire of CBA (Cognitive Behavioural Assessment) scale; the Locus of Control questionnaire; and an interview designed for the purpose.

The experimental A group women exhibited lower levels of state anxiety and depression post-partum than those of the control B group; moreover, the women in the A group exhibited higher levels of external locus of control and evaluated delivery more positively than those of the B group. There were no significant differences with regard to the relationship with their newborn infants.

The study shows that intrapartum analgesia provides hospitals with the possibility to satisfy women's needs for safety and well-being.

## Keywords

Pregnant women, intrapartum analgesia, human satisfaction, anxiety, locus of control, depression.

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## Introduction

Intrapartum epidural analgesia, which is the most efficient technique used for providing pain relief during labour [1, 2], besides being the ultimate method for reducing the caesarean section rate, is considered as one of Italian LEAs (Essential Levels of Assistance) [3]. However, while the United Kingdom and the United States administer it in 20% and 58% of cases respectively [4-6], Italy still employs it in only 10% of cases [2]. Choosing intrapartum analgesia can be read not only in relation to specific characteristics of pregnant women's psychological functioning, but also as a sign of a relationship between women and labour. This choice is in fact closely related to the emancipative decisional role of women played to control their bodies and the intense, prolonged pain that usually accompanies labour [7] as well as avoiding the emotional, cognitive disorientation due to the pain itself [8-12].

In the light of such considerations, this study deals with the valence of intrapartum analgesia, according to the demands of several analgesia operational midwifery units, which try to enhance the quality of support and accompaniment of parturients during their labour. It attempts to help such units to satisfy pregnant women's needs as persons rather than only patients, as mothers rather than only women [13]. The Bill of 21/05/2008 of the Italian Senate on the promotion of painless childbirth clearly asserts the need to satisfy the demands of mothers and infants, starting from childbirth, as a condition of health protection. This therefore means to focus on human satisfaction [14, 15], which is meant as more than the quality felt by a customer (customer satisfaction) or a patient (patient satisfaction). With regard to pregnant women it comprises a healthy relationship with infants and recognizes the needs of unborn infants [16, 17].

Human satisfaction would appear to be the right way to make pregnant women's role a primary one played by aware women as well as enhancing the quality of health assistance in dealing with the complexity of giving birth. Therefore, intrapartum analgesia likely represents the human satisfaction [14, 15] required by pregnant women, who will

be provided with a better quality of assistance as patients during their labour [18] and as persons with their psychological needs. The latter are related to the three areas of emotion, reason and ethics [14, 15]. The area of emotion deals with a woman's emotional control and state of mind, which are characterized by the fear of not succeeding in coping with labour, the feeling of inadequacy, the fear of not supporting the physical pain, etc. For this reason, the study focuses on the possibility of intrapartum analgesia to control the probable anxious and/or depressive experiences that pregnant women usually bring with them.

An analgesic method would appear to make women more objective with regard to the context and, in particular, to the health workers involved in pregnancy and labour and hospital facilities (ethics area). Finally, it is hypothesized that intrapartum analgesia may also meet the requirements related to the area of reason. Parturients, in fact, could use a locus of control, balanced between internality, which is the belief of being responsible for anything that may happen, and externality, which means they believe that anything that may occur during labour is due to external forces beyond their control. These aspects are not only significant with regard to the relation between users and health service, based on co-responsibility and reciprocal confidence, but also, in a wider meaning, with reference to health service in the field of midwifery and gynaecology, which is more and more harshly criticized.

Several surveys on patient satisfaction with midwifery [19-21] have been performed, but they rarely refer to patient satisfaction linked to the complex idea of human, which also implies the psychological complexity of patients and their relationship with their unborn babies [16, 17]. This means adopting a multidimensional approach that considers patients' personal variables (e.g. anxiety, depression, locus of control), together with their relationship with the health workers involved as well as the variables of the organizational structure (e.g. accessibility, convenience, costs, facilities, etc.).

Therefore, intrapartum analgesia, besides being a favoured practice for supported pregnancies, should become the chance, for any parturient to contextualize herself within the labour event, together with her own functioning profile at the emotional and cognitive levels. Such an enhancement of the woman's well-being may be important in her relationship with her baby in terms of perception of the quality of the relationship itself,

or in terms of the possibility of choosing whether or not to breastfeed.

In the light of such considerations, the study aims at assessing the outcomes of intrapartum analgesia with regard to the satisfaction of pregnant women's needs as well as the early relationship between mother and child.

## Methods

### *Study objectives and hypotheses*

The objectives of the study are the following:

- to investigate human satisfaction of women who requested intrapartum epidural analgesia, since patient satisfaction is a significant indicator of quality of intrapartum analgesia service;
- to study the impact of intrapartum analgesia on neonatal relationship between mother and her newborn infant;
- to study the impact of intrapartum analgesia on perceived pain during labour.

Therefore, the related hypotheses are the following:

- to verify the likely statistically significant differences between experimental and control groups in relation to levels of state and depression anxiety, which are emotional indicators of human satisfaction;
- to verify the likely statistically significant differences between experimental and control groups in relation to the indicators of locus of control, which are indicators of human satisfaction with regard to reason;
- to verify the likely statistically significant differences between experimental and control groups in relation to satisfaction with health workers and sanitary structure (human satisfaction with regard to ethics);
- to verify likely connections between choosing intrapartum analgesia and assessing the quality of the mother's early relationship with her newborn infant;
- to verify likely connections between the request for intrapartum analgesia and the choice to breastfeed;
- to verify the possible statistically significant differences between experimental and control groups in relation to levels of perceived pain during labour.

### *Context and Participants*

The study was performed in the Analgesia and Intensive Care Operational Unit of the Maternal-Infant Department of the P. Giaccone University General Hospital of Palermo, which for some years has provided the possibility to benefit from intrapartum analgesia. Pregnant women, after undergoing a check-up, can follow a prenatal course with an anaesthetist, an obstetrician and a gynaecologist, to learn what to expect during their labour and delivery.

To be more precise, after assessing the well-being of women and foetus, the anaesthetist gives clear and detailed information about epidural analgesia during labour and delivery, and the different types of anaesthesia available in the case of C-section. Pregnant women are asked to sign the informed consent, which will be reconfirmed on performing the analgesia/anaesthesia procedure [22].

The study was performed on a group of 60 women at the end of gestation at the aforementioned Operational Unit. They signed the informed consent after approval by the local bioethical committee. The group was subdivided into an experimental group (A group) and a control group (B group). They were composed of the same number of individuals and the same variables, such as average age (28 years old), gestational age (39<sup>th</sup> week), anaesthesiological risk (level ASA I-II) and cervical dilation (2 cm  $\pm$  1.5), and the *intrapartum-analgesia-request-for* variable. Unlike the A-group women, the B-group ones decided that they would not benefit from intrapartum analgesia for different reasons, such as religious belief, fear of side effects, desire of intensely experiencing their delivery. All women involved in both groups followed the delivery course, their labour was not induced, nor did a premature rupture of membranes occur. Of them, 68% were nulliparous and 32% were pluriparous. Finally, women who had had twin pregnancies, malformed neonates, maternal midwifery pathology, genetic neonatal abnormalities, macrosomy, detected use of maternal drugs, and uterine abnormalities or pathologies were not admitted to the selection.

### *Procedure to administer analgesia*

Epidural analgesia was administered to A group women by inserting a needle pipe into a peripheral vein with a 20G needle-pipe before placing the epidural catheter (patient in lateral decubitus or seated). During administration of the block, heart

rate, arterial pressure and saturimetry in O<sub>2</sub> were monitored (ibidem). The epidural catheter was placed into the L3-L4 interspace during valid uterine contractions coming at regular intervals with cervical dilation of 2 cm. Analgesia was obtained via Ropivacaina (2 mg/ml) with or without Sufentanyl with codified dosage. When Visual Analogue Scale (VAS) pain score reached values > 4, the proper refill of local anaesthetic was administered epidurally. In contemplation of possible episiotomy, a further dose of lidocaine was administered (20 mg/ml). After performing the epidural block, arterial pressure, cardiac frequency and SpO<sub>2</sub> were checked, a cardiographic test was performed, the first and second labour was timed, VAS, the Bromage Scale, the Sedation Score and the modality of delivery at first and fifth minute by means of the Apgar score were also noted.

### Instruments and procedures

The study was performed by means of the following instruments:

- the STAI-Y (State-Trait Anxiety Inventory, form Y) [23] to evaluate the levels of women's anxiety related to childbirth (state anxiety) and the levels of women's trait anxiety. Form Y, its most popular version, has 20 items for assessing trait anxiety and 20 for state anxiety. State anxiety items include: "I am tense; I am worried" and "I feel calm; I feel secure". Trait anxiety items include: "I worry too much over something that really doesn't matter" and "I am content; I am a steady person". All items are rated on a 4-point scale (e.g., from "Almost Never" to "Almost Always"). Higher scores indicate greater anxiety. Internal consistency coefficients for the scale ranged from .86 to .95; test-retest reliability coefficients ranged from .65 to .75 over a 2-month interval [23]. Test-retest coefficients for this measure in the present study ranged from .69 to .89. Considerable evidence attests to the construct and concurrent validity of the scale. The scale was administered during both the first anaesthesiological check – 36<sup>th</sup> week of gestation – and peripartum;
- the Record 8: Questionnaire of Depression (QD) of the CBA (Cognitive Behavioural Assessment) [24] to evaluate the presence of likely depressive symptoms during pregnancy and postpartum, by investigating human satisfaction at the emotional level. The scale was administered during both the first anaesthesiological check – 36<sup>th</sup> week of gestation – and peripartum;
- the LCB (Locus of Control of Behaviour) questionnaire [25], which is administered during peripartum, focuses on human satisfaction with regard to reason level. It detects a pregnant women's trend to feel able to manage the delivery event or, on the contrary, to give responsibility of what occurred during delivery to external factors. It is a scale based on Rotter's locus of control idea (1966), which claims that if a person is very confident about his/her own capability of managing his/her life, s/he will be more interested in contexts that provide useful information for managing his/her behaviour, more focused on his/her abilities, and more resistant to external conditioning actions. The questionnaire provides an array of seventeen answers, with a rating scale from 0 ("I totally disagree with") to 5 ("I totally agree with"). It evaluates the type of (internal/external) control on a person's behaviour in different situations. Questions 1, 5, 7, 8, 13, 15 and 16 evaluate internal control, while the remaining ones evaluate the external one;
- a phone interview was designed specifically to investigate pregnant women's satisfaction with health providers and sanitary structure in relation to the delivery experience. It also detects women's perception of the quality of their relationship with their newborn infant and their choice to breastfeed. The interview, which is performed after about 60 days from childbirth, offers five possible answers according to the Likert scale. With regard to the indicators of human satisfaction at the ethical level, it allows evaluation of:
  - satisfaction with the intrapartum analgesia technique (Likert scale from 1 = "I am not satisfied at all" to 5 = "I am very satisfied");
  - evaluation of the delivery experience (Likert scale from 1 = "very negative" to 5 = "very positive");
  - general evaluation of the assistance provided by the medical staff (Likert scale from 1 = "very bad" to 5 = "excellent");
  - evaluation of the medical staff's behaviour during the delivery (Likert scale from 1 = "detached" to 5 = "empathic").
- Finally, the interview investigates mothers' perception of quality of the early relationship

with their newborn infants (Likert scale from 1 = “*bad relationship*” to 5 = “*excellent relationship*”, and to choice of whether or not to breastfeed (answer: YES or NO).

## Results

The data collected were analyzed by means of both parametric and non-parametric statistics, considering the different kinds of data. To be more precise, the Mann-Whitney U-test was used to verify the likely presence of significant differences with regard to the marks of state and trait anxiety, pre- and post-partum depression and internal and external locus of control, between the group of women who chose intrapartum analgesia, and that of women who refused it. Considering the nominal kind of data, instead, a  $\chi^2$ -test was used to compare the two groups with regard to the women’s satisfaction with health workers and the sanitary structure and to evaluate the quality of mothers’ relationship with their newborn infants and the choice to breastfeed. The Mann-Whitney U-test was also used to compare the median VAS score of the two groups at the inter-ranges of 30 minutes, 60 minutes, 6 hours and during active labour (i.e., the expulsion period), whereas Friedman’s test was used to compare the VAS scores related to the inter-ranges for each group.

Analysis of the data (**Tab. 1**) shows the presence of statistically significant differences between the two groups in relation to pregnant

women’s levels of state anxiety ( $U = 208$ ,  $Z = -3.58$ ,  $p < .05$ ); the parturients who refused intrapartum analgesia (B group) show higher levels of state anxiety. The differences are not statistically significant with regard to the anxiety trait ( $U = 417$ ,  $Z = -.490$ ,  $p > .05$ ).

Data related to pre-partum depression show absence of statistically significant differences between the two groups of parturients ( $U = 347$ ,  $Z = -1.54$ ,  $p > .05$ ), even though the women who refused intrapartum analgesia displayed higher scores (**Tab. 1**). Moreover, as concerns depressive symptoms during the period after delivery, the data showed no statistically significant differences between the two groups ( $U = 445$ ,  $Z = -.075$ ,  $p > .05$ ) (**Tab. 1**).

The data of the locus of control showed statistically significant differences only with regard to the external locus ( $U = 190.05$ ,  $Z = -2.6$ ,  $p < .05$ ). The women who chose intrapartum analgesia, display a propensity to ascribe control over what occurred during delivery to external causes such as health workers’ behaviour or the characteristics of the delivery suite (**Tab. 1**).

Data regarding the levels of perceived pain (VAS) at 30’, 60’, 6 hours and during the expulsion period, show significant differences between the two groups (at 30’:  $U = 19.50$ ,  $Z = -6.54$ ,  $p < .001$ ; at 60’:  $U = .001$ ,  $Z = -7.019$ ,  $p < .001$ ; at 6 hours:  $U = .001$ ,  $Z = -6.75$ ,  $p < .001$ ; during active labour:  $U = .001$ ,  $Z = -6.92$ ,  $p < .001$ ). The pain perception of the women who underwent epidural analgesia was always lower than that of the women who did not

**Table 1.** Results of the state and trait anxiety, locus of control and pre/post-partum depression.

Variables	Group A (experimental group) Mean and Standard Deviation	Group B (control group) Mean and Standard Deviation	Mann Whitney test
Trait anxiety	29.40 (4.1)	31.60 (3.4)	$U = 417$ $Z = -.490$ $p = .624$
State anxiety	22.43 (2.3)	34.78 (3.6)	$U = 208^*$ $Z = -3.58$ $p = .001$
Internal locus of control	29.04 (2.1)	38.57 (2.1)	$U = 410.2$ $Z = -.45$ $p = .61$
External locus of control	19.02 (2.4)	16.01 (3.00)	$U = 190.05^*$ $Z = -2.6$ $p = .008$
Pre-partum depression	27.07 (4.8)	33.93 (3)	$U = 347$ $Z = -1.54$ $p = .12$
Post-partum depression	26.07 (2)	30.33 (1.5)	$U = 445$ $Z = -.075$ $p = .400$

\* Statistically significant differences between the two groups.

undergo it, and it decreased during the three phases ( $F_{(3)}(N = 30) = 80.84, p = .001$ ) whereas the pain perceived by the women in the control group ( $F_{(3)}(N = 30) = 22, p = .001$ ) increased.

With regard to the results of indicators of human satisfaction at the ethical level, neither those concerning pregnant women's satisfaction with medical staff and general assistance provided by health workers, nor those concerning pregnant women's satisfaction with the chosen technique, were statistically significant.

As for the descriptive assessment, the women's satisfaction with the medical staff during labour was almost satisfying for both groups. Twenty out of 30 women who underwent intrapartum analgesia (A group) and 18 out of 30 who did not (B group) defined medical behaviour as "empathic" (number 5 of Likert's scale) (Tab. 2). Conversely, the women's satisfaction with the technique chosen was partially reached by both groups (Tab. 2). However, the difference concerning the perception of the labour event would appear to be significant, since the women who chose intrapartum analgesia (A group) evaluated the experience much more positively than did the other women ( $\chi^2 = 9.75, p$

$= .05, df = 4; \chi^2$  critical = 9.49). More precisely, 18 out of 30 women of the A group evaluated it as a "very positive experience" (number 5 of Likert's scale) (Tab. 2).

The data regarding parturients' perception of the quality of the relationship with the new-born infant showed no significant difference between the women who chose intrapartum analgesia and those who did not (perception of the quality of the relationship with the newborn infant:  $\chi^2 = 1.64, p = .05, df = 3, \chi^2$  critical = 7.82). Twenty-two women of the A group and 20 of the B group defined their relationship with the newborn infant as excellent; similarly, there is no significant difference between the data relating to the women who chose to breastfeed and those who did not (Tab. 2 – choice of breastfeeding:  $\chi^2 = 3.66, p = .05, df = 1, \chi^2$  critical = 3.84).

However, the difference concerning the perception of childbirth would appear to be significant since women who chose intrapartum analgesia (A group) evaluated the experience much more positively than the other women ( $\chi^2 = 9.75, p = .05, Df = 4; \chi^2$  critical = 9.49).

Finally, data on likely correlations between choosing epidural analgesia or not, women's

**Table 2.** Results of the interview: frequencies of each response.

Item	A Group (experimental) (N = 30)					B Group (control) (N = 30)				
	Likert scale (1-5)					Likert scale (1-5)				
Satisfaction with the intrapartum analgesia technique	Not satisfying	Little satisfying	Almost satisfying	Satisfying	Very satisfying	Not satisfying	Little satisfying	Almost satisfying	Satisfying	Very satisfying
	2	1	8	9	10	0	1	12	5	12
Evaluation of the delivery experience	Likert scale (1-5)					Likert scale (1-5)				
	Very negative	Negative	Negative and positive for different reasons	Positive	Very positive	Very negative	Negative	Negative and positive for different reasons	Positive	Very positive
	0	0	4	8	18	0	0	12	10	8
General evaluation of assistance provided by medical staff	Likert scale (1-5)					Likert scale (1-5)				
	Very negative	Negative	Negative and positive for different reasons	Positive	Very positive	Very negative	Negative	Negative and positive for different reasons	Positive	Very positive
	0	0	2	3	25	0	0	2	8	20
Evaluation of the medical staff's behaviour during delivery	Likert scale (1-5)					Likert scale (1-5)				
	Detached	Almost detached	Alternatively detached and empathic	Almost empathic	Empathic	Detached	Almost detached	Alternatively detached and empathic	Almost empathic	Empathic
	2	0	4	4	20	0	0	4	8	18
Quality of the early relationship with infant	Likert scale (1-5)					Likert scale (1-5)				
	Bad	Average	Discrete	Good	Excellent	Bad	Average	Discrete	Good	Excellent
	0	0	2	6	22	0	0	0	10	20
Choice of breastfeeding	YES = 16, NO = 14					YES = 14, NO = 16				

perception of the relationship with their newborn infants and breastfeeding showed no statistically significant differences (*perception of the quality of the relationship with newborn infant*:  $\chi^2 = 1.64$ ,  $p = .05$ ,  $Df = 3$ ,  $\chi^2$  critical = 7.82; *choice of breastfeeding*:  $\chi^2 = 3.66$ ,  $p = .05$ ,  $Df = 1$ ,  $\chi^2$  critical = 3.84).

## Discussion

The research appears to confirm the hypothesis that intrapartum analgesia may be a way of experiencing delivery in harmony with aspects characterizing psychological functioning of an individual whose emotional, rational and ethical needs in relation to this delicate period of life are properly satisfied.

Considering that the women in both groups showed similar not very high scores for the anxiety trait while they showed statistically significant differences with regard to the anxiety state, a correlation between choosing intrapartum analgesia or natural delivery and individual functioning variables appears to be possible.

More specifically, most primiparae who choose natural delivery appear in all cases to exhibit higher anxiety in relation to the environment and life events. They show a distrustful aptitude towards anything never experienced before by themselves and that they cannot control, such as the analgesic technique and medical staff who administer it.

On the contrary, women who choose intrapartum analgesia show a propensity to control their anxiety for the labour event by trying to find possible solutions, even external, to properly manage it. Thus, intrapartum analgesia may represent one of those external solutions for satisfying their need to control anxiety, which life events such as delivery usually bring with them. Moreover, the study appears to confirm that intrapartum analgesia has the capability of dealing with pregnant women's emotional/affective dimension since those who chose it exhibited lower levels of depressive symptoms post-partum than those displayed by women who chose natural delivery.

Therefore, it appears that the experience of a painless delivery favours a rapid recovery of life energies, self-control, interest in self and one's own life, besides making it possible to cope with the emotional unease (feeling of sadness, dysphoria, propensity to cry easily) typical of depression. Even more interesting appears the fact that signs of anxious-depressive symptomatology during

pregnancy are more frequent than in post-partum depression.

With regard to the reason level, considering that women who choose intrapartum analgesia exhibit a higher propensity for external loci of control, this leads to hypothesize that relaxation brought about by analgesia may favour pregnant women's propensity to trust health workers and their practices for a successful delivery.

On the contrary, this technique appears neither to affect significantly women's perception of the quality of their relationship with their newborn infant, nor the choice of whether or not to breastfeed. Therefore, it can be claimed that the memory of delivery as an extremely painful experience or instead as a controlled and aware one, is a variable of little significance in the process of forming the mother-child bond which starts in the prenatal phase.

The valence of intrapartum analgesia, instead, appears to be relevant since it takes into account a pregnant women's needs at ethical levels. In fact, women who deliver painlessly evaluate the event more positively, they are more satisfied with health workers and the sanitary structure, and experience their motherhood with a more positive approach.

In conclusion, the positive valence of intrapartum analgesia is also confirmed by a few data concerning the monitoring of characteristic maternal-foetal outcomes according to which the decrease in the perception of pain during labour with epidural analgesia along the inter-range examined is associated with a condition in which the woman's sensitivity, lucidity and discrete motility is high and lasting, whether she has decided to choose epidural analgesia or not. It is shown by the values of Aldrete's scale regarding sensitivity (10 = experimental group; 10 = control group) and Sedation score (0 = experimental group; 0 = control group), and by Bromage's scale, which assesses motility (4 = experimental group; 4 = control group).

A further very interesting datum concerns the APGAR index which, since it is very high for both groups (9-10), disproves the hypothesis of some clinicians according to whom epidural analgesia may greatly interfere with the baby's vitality and cause hypotonicity, respiratory and heart depression.

## Conclusion

In the light of such outcomes, it appears very important to add intrapartum analgesia in delivery assistance paths aimed at addressing the psychological

well-being of women at the end of gestation and the relationship with their newborn infants. However, it is quite clear that intrapartum analgesia has to be supported by an informative, motivational path for women, in which every professional involved in delivery should participate [26].

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## Declaration of interest

The Authors declare that there is no conflict of interest.

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