



## Measurement and characteristics of post-cesarean section pain and the relationship to limitation of physical activities\*

*Mensuração e características de dor após cesárea e sua relação com limitação de atividades*

*Medida y características del dolor después de una cesárea y su relación con la limitación de actividades*

**Lígia de Sousa<sup>1</sup>, Ana Carolina Rodarti Pitangui<sup>2</sup>, Flávia Azevedo Gomes<sup>3</sup>, Ana Márcia Spanó Nakano<sup>4</sup>, Cristine Homsí Jorge Ferreira<sup>5</sup>**

### ABSTRACT

**Objectives:** To measure and characterize post cesarean section pain and to verify its relationship with limitations of physical activities. **Methods:** Descriptive study with 60 women in the post-operative period of cesarean section. Pain was measured with both the Numeric Scale and the McGill Pain Questionnaire. Limitations of physical activities were measured with a specific instrument developed for the study. **Results:** Sitting down and stranding up were the physical activities with the highest pain scores. All participants reported that the pain limited their movements for sitting down and standing up and characterized the pain as “annoying”, “grasping” and “straining.” **Conclusion:** Post cesarean section pain was rated as moderate. The pain led to limitations of physical activities for sitting down, standing up, and walking. **Keywords:** Cesarean section; Pain; Activities of daily living; Mobility limitation

### RESUMO

**Objetivo:** Mensurar e caracterizar a dor após cesárea e verificar sua relação com a limitação de atividades. **Métodos:** Pesquisa descritiva com 60 puérperas após cesárea. Para avaliação da dor foram usadas a Escala Numérica e o Questionário de Dor McGill. As limitações de atividades foram avaliadas por instrumento elaborado pelas pesquisadoras. **Resultados:** A dor após a cesárea apresenta maiores escores no movimento de sentar e levantar. A dor é caracterizada como “incômoda”, “que prende” e “que repuxa”. Todas as participantes relataram que a dor limitava o movimento de sentar e levantar. **Conclusão:** Foi possível observar que a dor após a cesárea é caracterizada como moderada. A dor promove limitação principalmente nas atividades de sentar e levantar e caminhar. **Descritores:** Cesárea; Dor; Atividades cotidianas; Limitação da mobilidade

### RESUMEN

**Objetivo:** Medir y caracterizar el dolor después de una cesárea y verificar su relación con la limitación de actividades cotidianas. **Métodos:** Investigación descriptiva con 60 puérperas después de una cesárea. Para evaluar el dolor fueron usadas la Escala Numérica y el Cuestionario del Dolor McGill. Las limitaciones de actividades fueron evaluadas por un instrumento elaborado por las investigadoras. **Resultados:** El dolor después de la cesárea presenta mayores puntajes en los movimientos de sentarse y levantarse. El dolor es caracterizado como “incómodo”, “que sujeta” y “que se estira”. Todas las participantes relataron que el dolor limitaba los movimientos de sentarse y levantarse. **Conclusión:** Fue posible observar que el dolor después de la cesárea es caracterizado como moderado. El dolor promueve limitaciones principalmente en las actividades de sentarse, levantarse y caminar.

**Descriptores:** Cesárea; Dolor; Actividades cotidianas; Limitación de la movilidad

\* Research developed at the Maternity Hospital of Complexo Aeroporto – Ribeirão Preto (SP), Brazil.

<sup>1</sup> Graduate student (PhD) in Nursing and Public Health by the Escola de Enfermagem de Ribeirão Preto (EERP – Nursing College of Universidade de São Paulo (USP) – Ribeirão Preto (SP), Brazil.

<sup>2</sup> Graduate student (PhD) in Nursing and Public Health by EERP - USP – Ribeirão Preto (SP), Brazil.

<sup>3</sup> PhD. Professor of the Nursing and Public Health Program of EERP - USP – Ribeirão Preto (SP), Brazil.

<sup>4</sup> Associate Professor of the Nursing and Public Health Program of EERP - USP – Ribeirão Preto (SP), Brazil.

<sup>5</sup> PhD. Professor of the Biomechanics, Medicine, and Rehabilitation of the Locomotor system Department of the Medicine College, Ribeirão Preto – USP – Ribeirão Preto (SP), Brazil.

## INTRODUCTION

Brazil presents a high number of cesarean sections, which may consist of a public health problem<sup>(1)</sup>. According to the Sistema de Informação de Nascidos Vivos (Information System about the Babies Born Alive) in 2004, 41.75% of the Brazilian women had a cesarean section giving birth to their children, 58.03% gave birth by vaginal delivery, and in 0.22% of the cases, data were ignored<sup>(2)</sup>. This index differs among Brazil's state regions: it is higher in the Southeast and South regions, difference related to medical and hospital factors in the different regions<sup>(3)</sup>.

The World Health Organization recommends that cesarean sections are 10% to 15% of total labors<sup>(4)</sup>. The cesarean section should be utilized when, during the pregnancy evolution, labor or delivery, there are specific situations where the surgical procedure becomes necessary in order to preserve the mother's and/or fetus' life<sup>(5)</sup>. This delivery type was recognized as a safe technique in order to obtain better obstetrical results, which became one of the reasons to justify why the number of cesarean sections increased. However, its usage did not lead to a reduction of mothers' morbidity or mortality. On the contrary, the cesarean section increases mortality and morbidities, such as bleeding, infections, pain, among others<sup>(6)</sup>.

The pain presented after a cesarean section makes the recovery difficult and delays mothers' contact with the newborns, besides being an obstacle to a good breastfeeding position, self-care, newborn care, and to perform daily activities, such as sitting down and standing up, walking, performing personal hygiene activities, among others<sup>(7)</sup>. The post-cesarean section pain is characterized as acute, that is, it presents a subtle beginning with a predictable end, and is closely related to the damage caused to the tissue due to the inflammatory reactions derived from a traumatic process, which produce pain<sup>(8)</sup>. Even presenting a universal occurrence, the post-cesarean section pain is frequently ignored, which may affect the patient's satisfaction and diminish her quality of life<sup>(9)</sup>.

It is important highlighting that the parous woman who had a cesarean section presents a particular condition after the operation when compared to the clients who went through other surgical procedures, for she presents more movement needs in order to take care of the newborn and herself, therefore, is subjected to more pain in the surgical section location.

It is worth highlighting the need for resources to assess and characterize the post-cesarean section pain, aiming to reach a humanized care during the postpartum and adequate resources for its treatment. However, because pain is a personal and subjective event, with a multi-dimensional characteristic and modeled by a variety of influences that involve the psychological, emotional, cognitive, social, and cultural dimensions, its assessment is difficult<sup>(10-11)</sup>. It is necessary to assess pain, not only by uni-dimensional instruments, able to quantify pain, but also by multi-dimensional instruments, which assess the pain globally, presenting its qualitative characteristics<sup>(12)</sup>.

Therefore, the global assessment of pain and its repercussions to some activities are essential for the post-cesarean section. Based on this context, the present research objective was to measure

and characterize the post-cesarean section pain and verify its relationship with daily activity limitations.

## METHODS

This study is a descriptive research, with a quantitative approach. The data collection took place at the Maternity Hospital of Complexo do Aeroporto, located in a city in the countryside of São Paulo state, and part of the Sistema Único de Saúde (SUS – Public Health System), which provides care to low risk pregnant women exclusively.

The research project was accepted by the institution where it took place and by the Research Ethics Committee of the Nursing College of Ribeirão Preto – SP, under Protocol number 0660/2006.

Sixty parous women who had cesarean sections were invited and accepted to participate in the research, and there were no losses. All participants were guaranteed the right to leave the study at any phase, and that the research was not going to interfere in the care provided to them and the newborns in the maternity hospital. After agreeing with the research procedures, the parous women signed the Informed Consent Term, according to Resolution number 196/96, so as to guarantee the research ethical standards.

In order to do so, a uni-dimensional scale to assess pain was used, the Numeric Category Scale<sup>(13)</sup>, and a multi-dimensional scale was used to characterize pain, the McGill Pain Questionnaire, in its adapted and validated version in Portuguese, performed by Castro<sup>(14)</sup>.

The research participants should present the following inclusion criteria: being more than 18 years old, either primipara or multipara, which have had a Pfannestiel section type, non-submitted to surgical sterilization, literate and able to understand the Pain Scales utilized. A parameter was established determining that all participants who presented any post-cesarean section complications, such as bleeding or infections, would be excluded from the study.

The study was developed from February to May 2007. The data collection was initiated 24 hours after the cesarean section, when movement needs increase due to breastfeeding and care provided to the newborn, besides self-care, which contribute to generating more pain<sup>(15)</sup>. For the data collection, a period of six to eight hours after the anti-inflammatory and analgesic administration, respectively, was respected. This period considers the medication action time, avoiding their effect when assessing pain.

The Numeric Category Scale was used to assess pain. Such Pain Scale is easy to apply and understand, and is commonly used in studies that assess pain<sup>(13,15)</sup>. It is a horizontal scale, whose left extremity, or 0 pain, represents the absence of pain and gradually increases up to the right extremity, or 10, which represents an extreme level of pain. Instructions regarding the scale usage and application were verbally given (0 = no pain; 1-3 = mild pain; 4-6 = moderate pain; 7-10 = strong pain). After that, the parous women were questioned as follows about the Numeric Scale: "What number corresponds to the pain you are

feeling now?"<sup>(12)</sup>. This scale was answered to in three different situations: with the patient at rest, when making movements such as sitting down, standing up and walking, aiming to analyze the different pain scores during basic activities.

The McGill Pain Questionnaire, adapted and validated in Portuguese, was used to qualitatively assess pain. The participants informed the Pain Time Standard (continuous, rhythmic, momentaneous), its Location (localized or diffuse), and the Pain Type (superficial, deep, or mixed). After that, participants reported the pain qualities: a group of 68 words divided into four categories by McGill – sensorial, affective, subjective, and mixed – which describe painful experiences in general. The study participants were oriented to choose only one or no words of each category. The Present Pain Intensity was also assessed through anchor words: (0) no pain, (1) mild pain, (2) moderate pain, (3) strong pain, (4) very strong pain, (5) unbearable pain<sup>(14)</sup>.

In order to characterize the daily limitations caused by post-cesarean section pain, a Functional Limitation Questionnaire was developed by the researchers in this study. The questionnaire presented some of the activities daily performed, and the participants had to say yes (if the activity had been limited by pain), no (if the activity had not been limited by pain) and not performed (if the activity had not been performed at all). This questionnaire assessed the limitations for the following activities: sitting down and standing up, walking, urinating, excreting, performing personal hygiene, bathing, among others, eating, and breastfeeding.

The data analysis was preceded by the elaboration of a database in the Excel application, used to codify the variables in a data dictionary, and for the data double entry (typing) validation. In order to statistically analyze data, the program "*Statistical Package for Social Sciences*" (SPSS), version 11.5 for Windows was used. The chi-squared test was used to analyze the significance level associations of 0.05.

## RESULTS

The age average of the 60 women participating in the study was 26.3 years old, ranging between 18 and 44 years of age. Regarding the socio-demographic variables, 91.6% lived with a partner, 68.3% presented a remunerated activity, most of the participants had gone through high school (53.4%), however, not all of them had finished it. As to skin color, 51.7% classified themselves as white, 26.7% as black, and 21.7% as multiracial. In this study, 50% of the participants presented an appropriate Body Mass Index (BMI) according to the pregnancy age, 38.3% presented overweight, 6.7% low weigh, and 5% presented obesity.

Among the participants, 93.3% presented full-term gestational age, and the rest of the participants, preterm. Seventy six percent of the participants did not have any abortion previous to the study. As to parity, 41.7% were primipara women, and 58.3% were multipara women. Only one participant did not have any pre-birth appointments. Among the rest of them, the pre-birth appointments ranged between 1 and 13 appointments.

Having the cesarean section indicated due to the fact they had had one before was the main cause for c-section indication among

the participants (30%), followed by acute fetus suffering (27%), and lack of labor progress (26.7%) The fetus pelvic presentation and fetal macrosomy summed up represented 10% of the cases, the imminence of a uterine rupture comprised 8.3% of the c-section indication cases. The cesarean section was chosen in 23.3% of the cases.

When analyzing the pain level for the 60 participants, measured by the Numeric Category Scale, lower pain scores were presented at rest, with an average of 4.3, ranging from 1 to 9 and a standard deviation of 2.1. Walking presented a pain average of 6.2, and values ranging from 1 to 10 with a standard deviation of 2.4. Sitting down and standing up presented the highest levels of pain, with an average of 6.9, and values ranging from intensities 3 to 10, and a standard deviation of 2.1.

There were no significant statistical associations after applying the chi-squared test for the age, BMI, parity, number of previous c-sections, c-section indication, and c-section by choice in relation to the scores of pain at rest (age=0.626, BMI=0.835, parity=0.365, number of previous c-sections=0.156, c-section indication=0.698 and c-section by choice=0.962), when sitting down and standing up (age=0.672, BMI=0.488, parity=0.820, number of previous c-sections=0.506, c-section indication=0.719 and c-section by choice=0.832) and when walking (age=0.452, BMI=0.441, parity=0.785, number of previous c-sections=0.423, c-section indication=0.955 and c-section by choice=0.626), as assessed by the Numeric Category Scale, showing that this variables did not interfere in the levels of pain.

As to pain characterization through the McGill Pain Questionnaire, Table 1 shows how frequently the selected descriptors and respective categories were selected, classified in a decreasing order.

The scores obtained through the Present Pain Intensity (PPI) are presented in Table 2.

The present pain in parous women who went through a cesarean section was characterized as rhythmic (50%), continuous (45%) and brief (5%). For 75% of the participants, the pain was located around the surgical section area and for 41.7%, it was described as mixed, that is, felt in a superficial and deep way. The daily activity limitations was present for 100% of the participants with regard to sitting down and standing up, 95% regarding walking, and 55% concerning personal hygiene. Activities like urinating, breastfeeding, sleeping, eating, and excreting were limited, respectively, in 45%, 40%, 35%, 15% and 5% of the parous women.

## DISCUSSION

Sixty women with an average of 26.3 years of age, ranging from 18 to 44 years, participated in this study. The authors<sup>(5)</sup> studied the pregnant women biological conditions which could be risk factors for the cesarean section, and found associations between age and cesarean section indication. According to these authors, the literature presents associations between 28 years of age or more with a risk of clinical complications in cesarean sections, which differs from the data found in the present study.

**Table 1** – McGill Pain Questionnaire descriptors distribution according to the frequency obtained from parous women who went through a cesarean section. *Ribeirão Preto, 2008.*

| Descriptors | Category   | Frequency (n) | Percentage (%) |
|-------------|------------|---------------|----------------|
| Annoying    | Subjective | 33            | 55             |
| Tight       | Mixed      | 33            | 55             |
| Pulling     | Sensorial  | 30            | 50             |
| Boring      | Affective  | 25            | 41.7           |
| Cramping    | Sensorial  | 23            | 38.3           |
| Sore        | Sensorial  | 23            | 38.3           |
| Punishing   | Affective  | 21            | 35             |
| Spreading   | Sensorial  | 21            | 35             |
| Numb        | Sensorial  | 19            | 31.7           |
| Exhausting  | Affective  | 18            | 30             |
| Throbbing   | Sensorial  | 16            | 26.7           |

**Table 2** – PPI scores distribution assessed from parous women who went through a cesarean section. *Ribeirão Preto, 2008.*

| PPI scores | Frequency | Percentage |
|------------|-----------|------------|
| weak       | 11        | 18.3       |
| moderate   | 31        | 51.7       |
| strong     | 12        | 20.0       |
| unbearable | 6         | 10.0       |
| Total      | 60        | 100.0      |

The cesarean section most frequent indication case was having had it previously, failure in the labor progress, and acute fetus suffering. The maternity hospital where the present study was developed complies with the humanized labor principles, justifying the main cesarean-section indications for the study sample. The c-section indication because of a previous c-section is described as the main risk factor in several studies<sup>(5,16)</sup>.

Most of the parous women in this study were multipara women. The literature indicates parity as a confusion factor variable to assess pain. Authors<sup>(17)</sup> reported that primipara women have a considerably different post-cesarean section pain experience than multipara women. In a study developed with post-cesarean section women<sup>(18)</sup>, primipara women and women who had second deliveries were assessed, aiming to avoid sample biases regarding pain. Regarding the pain during the labor, it tends to be minimized and better taken by women who had more than two deliveries<sup>(19-20)</sup>. However, during the search to the databases, no studies were found describing the difference between primipara and multipara women and the pain presented after a c-section. In this study, there was no significant difference in the pain intensity between primipara and multipara women,

at rest, and sitting down, standing up, and walking.

The post-cesarean section pain was characterized according to the time standard, location and pain type. The results found were that 50% of participants described the pain as rhythmic, 45% as continuous, and 5% as brief. According to authors<sup>(17)</sup>, most of the parous women describes the pain as continuous. The present study found localized pain (75%) around the section area and mixed pain – either superficial or deep (41.7%), the most reported ones. Contrary to these findings, authors<sup>(17,21)</sup> observed that most of the parous women assessed mention the deep pain as the most present after a cesarean section.

In this study, it was possible to observe the most frequently reported pain qualities, according to the four McGill categories: sensorial, affective, subjective, and mixed. The categories with most words were the subjective and mixed, followed by the sensorial and affective. When analyzing 88 post-cesarean section patients, a study<sup>(22)</sup> verified that most of the participants chose more words from the sensorial category, for McGill's Questionnaire presents most of its descriptors focused on this category (50% - 34 words), followed by the affective category (25% - 17 words), evaluative (7,3% - 5 words) e mixed (17,7% -

12 words). One author<sup>(23)</sup> criticizes the irregular distribution of McGill's Questionnaire, revealing that such disproportion interferes in the patients' choice, more concentrated in the sensorial category. However, this fact was not observed in the present study.

When evaluating patients who had gone through abdominal, orthopedic, vascular, and gynecologic surgeries, researchers<sup>(24)</sup> observed that descriptors related to the sensorial, evaluative, and affective categories expressed the pain characteristics when applied to a Magnitude Estimation Method, based on the validated version of McGill Pain Questionnaire into Portuguese.

Only one study<sup>(17)</sup> refers having used McGill's tool to assess the post-cesarean section pain, however, the most reported descriptors were not mentioned. However, there are studies which report only a visceral pain (colic), frequently mentioned by the parous women<sup>(17,21)</sup>. In the present study, the descriptor colic was mentioned by 38.3% of the parous women, and the most mentioned descriptors were: annoying (55%), tight or squeezing (55%) and tugging or pulling (50%).

The McGill Pain Questionnaire presented understanding difficulties to the parous women, once some of the descriptors are unknown to most of them, who found it tiring and long to fill out. The bibliography states that it might take from 15 to 20 minutes to fill it out<sup>(25)</sup>. However, its usage in studies about pain is necessary, for the McGill Pain Questionnaire has the advantage of being universal and frequent in scientific researches in order to assess the qualitative pain standards<sup>(26)</sup>.

The Present Pain Intensity scores indicate that 51.7% of the participants reported the pain as being moderate, followed by strong (20%), weak (18.3%), and unbearable (10%). High pain scores were found<sup>(9)</sup> in several post-surgery patients assessed by the Present Pain Intensity, verifying that the post-surgery pain was usually moderate to severe.

Concerning the pain scores assessed by the Numeric Category Scales, high scores can also be observed. The pain average was 4.3 at rest, 6.2 walking and 6.9 when sitting down and standing up, which, according to authors<sup>(12)</sup>, represents the moderate pain level. Others<sup>(18)</sup> found an average of 6.9 through the Numeric Scale for parous women who had gone through a cesarean section. In a study with post-abdominal surgery patients<sup>(15)</sup>, high scores were observed through the Numeric Scale, however, the Scale used was 21 points, different from the scale used in this study, with 11 points, which makes comparisons impossible<sup>(15)</sup>.

The pain scales presented some limitations and difficulties during the data collection<sup>(27)</sup>. The Numeric Scale overestimates the results, when compared to the Analog Visual Scale<sup>(22)</sup>, which was not possible to observe in this study, for only the Numeric Scale was applied to the parous women, making it impossible to assess whether the pain scores were overestimated. The Numeric Scale may present difficulties associating the pain and differing pain scores pre and post-treatment<sup>(28)</sup>. The present study, like other studies elaborated by other authors<sup>(13,15)</sup>, observed that the Numeric Scale was simple to apply and participants showed a good understanding and acceptance of it, as a uni-dimensional scale, however, it does not replace the multi-dimensional scales usage to characterize pain.

In order to characterize the daily activity limitations due to post-cesarean pain, a questionnaire elaborated by the researchers was used, and it assesses the limitations to activities such as sitting down and standing up, walking, urinating, excreting, performing personal hygiene routines, eating, and breastfeeding. One hundred percent of the parous women presented difficulties to sit down and stand up, and 75% presented limitations to walking due to the pain. Besides these functions, most of the parous women reported difficulties trying to perform their personal hygiene activities. In literature searches, no articles were found, so far, describing the limitations presented by parous women performing activities right after the cesarean section. In a study<sup>(15)</sup> with post-abdominal and thoracic patients, the long distance walking was one of the activities limited by pain, as well as fast walking and breathing maneuvers associated to the pain in post surgery patients. Considering the questionnaire was developed by the researchers and showed important limitations regarding some activities, it is worth considering the development of validated questionnaires so as to assess the activity limitations in the parous period.

During the national literature search, no pain assessment or post-cesarean daily activities studies were found, making it difficult to compare pain in this situation. It is worth highlighting that the presence of pain is influenced by psychological factors, that are altered in the puerperal phase<sup>(7)</sup>. In this context, the need of future studies validating a specific pain questionnaire for this population, for during the puerperium, the woman is tired and confused, making it difficult for them to answer the pain-related questions, mainly the ones related to the McGill Pain Questionnaire, which is a compromising fact for the participants answers.

This study is relevant for it approaches the commonly found aspects after a cesarean section. The pain compromises activities, makes movements more difficult, and delays the first mother-child contact. Based on the process of humanized care to women in the pregnancy-puerperal cycle and in the limited bibliographic resources regarding puerperium, it is worth highlighting the necessity of elaborating studies that approach the women's reproductive life phase. After the delivery, women are the secondary care focus, and most of the attention is directed to the newborn.

This research confirms the presence of post-cesarean section pain and its results should be directed to all who aim for a humanized care and intend to plan pain relief strategies which are mainly based in non-pharmacological resources, in an attempt of diminishing medication and side effects triggered after their usage. The pain reduction after a cesarean-section would contribute to an early release of the parous women, enabling them to take care of the newborns and themselves, promoting well-being and disposition for the daily activities.

## CONCLUSION

It is possible to conclude that the pain presented by the study participants was moderate, and more intense when sitting down and standing up, followed by walking and rest. The McGill Pain Questionnaire most reported descriptors were "annoying", "tight

or squeezing”, “tugging or pulling”, “boring”, “cramping”, “sore”, “punishing” and “spreading”. One hundred percent of the participants reported that sitting down and standing up were limited by the pain, and 75% of them felt limited when trying to walk. This study enabled a quantitative and qualitative pain assessment. Future studies are necessary to assess pain relief

resources, making the puerperal phase more comfortable.

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