Effectiveness of non-pharmacological strategies in relieving labor pain*

EFETIVIDADE DE ESTRATÉGIAS NÃO FARMACOLÓGICAS NO ALÍVIO DA DOR DE PARTURIENTES NO TRABALHO DE PARTO

LA EFECTIVIDAD DE ESTRATEGIAS NO FARMACOLÓGICAS EN EL ALIVIO DEL DOLOR DE PARTURIENTAS EN EL TRABAJO DE PARTO

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ABSTRACT

The study objective was to evaluate the effectiveness of non-pharmacological strategies to relieve pain in parturients in labor. This is a *before and* after therapeutic intervention clinical trial, performed at a public maternity in the city of Natal, in the state of Rio Grande do Norte, Brazil, with 100 parturients applying breathing exercises, muscle relaxation, lumbosacral massage, and showers. A visual analogue scale was used for data collection. Most parturients were between 20 and 30 years old (60%), had incomplete primary-level education (85%), family income of up to 2 minimum salaries (74%), and 78% had a companion with them at the hospital. Oxytocine was administered in 81% of cases, but 15% did not receive any medication. A significant difference was observed in pain relief after using non-pharmacological strategies, showing reduced pain as cervix dilation increased. It was concluded that the strategies were effective in reducing the intensity of pain in the studied parturients in labor.

KEY WORDS

Parturition.
Labor, obstetric.
Labor pain.
Obstetrical nursing.

RESUMO

Objetivou-se no estudo avaliar a efetividade de estratégias não-farmacológicas para o alívio da dor de parturientes no trabalho de parto. Ensaio clínico do tipo intervenção terapêutica *antes e após,* realizado em uma maternidade pública de Natal/RN – Brasil, com 100 parturientes na aplicação de exercícios respiratórios, relaxamento muscular, massagem lombossacral e banho de chuveiro. Utilizou-se a escala analógica visual para coleta de dados. A maioria das parturientes tinha entre 20 a 30 anos de idade (60%), ensino fundamental incompleto (85%), renda familiar de até 2 salários mínimos (74%) e 78% estavam com acompanhantes. A ocitocina foi administrada em 81% dos casos, mas 15% não receberam qualquer medicação. Verificou-se diferença significativa no alívio da dor após a aplicação das ENF, demonstrando redução dessa dor à medida que aumentava a dilatação do colo. Conclui-se que as estratégias foram efetivas no alívio da intensidade da dor das parturientes estudadas durante o trabalho de parto.

DESCRITORES

Parto.
Trabalho de parto.
Dor do parto.
Enfermagem obstétrica.

RESUMEN

El objetivo del estudio fue evaluar la efectividad de las estrategias no farmacológicas para aliviar el dolor de parturientas en el trabajo de parto. Se trata de un ensayo clínico con un tipo de intervención terapéutica *antes y después,* realizado en una maternidad pública de Natal/RN – Brasil, con 100 parturientas en la aplicación de ejercicios respiratorios, relajamiento muscular, masaje lumbosacra y baño de ducha. Se utilizó, para recolectar los datos, la escala analógica visual. La mayoría de las parturientas tenía entre 20 y 30 años de edad (60%), enseñanza fundamental incompleta (85%), renta familiar hasta 2 salarios mínimos (74%), 78% estaban con acompañantes. La oxitocina fue administrada en 81% de los casos y 15% no recibieron ningún medicamento. Se verifico una diferencia significativa en el alivio del dolor después de la aplicación de las ENF, demostrando una reducción de ese dolor en la medida que aumentaba la dilatación del cuello del útero. Se concluye que las estrategias fueron efectivas para aliviar la intensidad del dolor de las parturientas de este estudio durante el trabajo de parto.

DESCRIPTORES

Parto.
Trabajo de parto.
Dolor de parto.
Enfermería obstétrica.

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INTRODUCTION

Most health professionals working on maternity wards view the pain felt by parturient women as inevitable suffering, and working with women who are complaining about pain is an unpleasant experience for these professionals. It is important to remember that lack of emotional support and excessive medical intervention in the care of parturient women are factors that may be related to increased intensity of pain, and little or nothing is offered for its relief [1]. The care for parturient women is currently the target of increasing medical intervention as the birth scenario has quickly become unknown territory for women, while appropriate and aseptic for health professionals[2].

Even when we observe innovative new positions in the nursing field, it is understood that difficulties will still remain and perpetuate for decades. Breaking off from the traditional model, mainly biologic, is a lasting process in some ways, since it requires behavioral and attitudinal changes from health professionals throughout the years[3].

It is important for health professionals to understand that sharing the patient's private experience with pain, and the self-achievement, is needed, so they can understand this person in this world with pain. These professionals must be prepared and aware of the humanistic dimension scope, with a view to the individual living in a world guided by pain while also experiencing fear and anxiety, with the right to search for relieving it[4].

These professionals play an important role in this experience and have the opportunity to offer their knowledge and service to the well-being of parturient women, their partners and the newly-born, by recognizing critical moments with the necessary interventions to minimize delivery pain, being at their side, giving comfort, resolving, guiding, and helping in delivery and birth. However this role is not easy for most health professionals who see pregnancy and delivery as mainly biologic processes, where pathology is expected. However, pregnancy and delivery are two events that usually occur with no complications[5].

Therefore, the professional assisting parturient women should meet and understand the socio-cultural, environmental, and physiologic factors of the labor process that may cause fear and uncertainty in these women, with a view to promoting humanized and holistic care[6].

Hence, it is understood that parturient women may use pharmacological and non-pharmacological methods for pain relief, including the health professional, partners, and family members' support, before and after labor[7].

Therefore, it is acknowledged that non-pharmacological methods can reduce this perception of pain, also considered to be non-invasive methods. Among these methods, the following are stated: shower or bath, lower back massage, standard breathing, verbal conditioning and relaxing the muscles. These methods may be applied in isolation or combined and in addition to promoting labor pain relief, they can reduce the need for pharmacological methods of pain relief, preserving the delivery experience[7].

Considerations regarding pain, labor, birth and non-pharmacological methods of pain relief guided the interest in studying parturient women. The motivation arose from this researcher's experience as an obstetric nurse and as a member of the academic team of the graduate and post-graduate programs in obstetric nursing specialization for more than 20 years. Throughout the years, as an assistant academic member in the professional daily life of these parturient women in public obstetric centers, I have observed parturient women who have been isolated, separated from their partners or companions, and have witnessed lack of care from health professionals regarding these parturient women's complaints regarding pain. This lack of care can be explained, partially because most of the time health professionals see labor pain as a predominantly biological, physiological and temporary process, viewing pain as a pathologic clinical condition as it occurs.

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In an intervention study, as a progressive muscle relaxation technique was applied on parturient women, it was demonstrated that this technique results in the relief of pain for these women. It is relevant as the interference effects of researchers for data collection while applying the technique demonstrated important reductions in the level of pain in parturient women[8].

In 2006, a study proposed to examine the pain during labor with or without lower back massage in the three phases of cervical dilation; acceleration, maximum slope and deceleration. Results demonstrated that lower back massage probably does not change pain characteristics in parturient women, but it can effectively reduce intensity in phases 1 and 2 (acceleration and maximum slope). The authors concluded that lower back massage is helpful in the reduction of pain intensity during delivery[9].

Supporting this study, a therapeutic intervention study was performed in 2007, aiming at assessing non-pharmacological strategy effectiveness of interventions such as respiratory exercises, muscle relaxation, lumbosacral region massage and showers for pain relief during the active labor phase by using a visual analogical scale. The sample was comprised of 30 pregnant women admitted to the pre-childbirth ward of a public maternity hospital in Natal/Rio Grande do Norte (RN), Brazil. The study demonstrated that these strategies were effective in the three stages of the active phase of labor (acceleration, maximum slope and deceleration), showing pain reduction in the parturient women of the study, proving that the interventions are appropriate for using during labor[10].

Supporting the need for study, pharmacological and non-pharmacological methods for pain relief in parturient women are not always used; however, the combination of both of these methods can provide appropriate relief, minimizing pain and discomfort for these women.

Therefore, since the humanized approach is considered as fundamental to help parturient women experience a less painful labor process, the effectiveness of combined non-pharmacological strategies (respiratory exercises, muscle relaxation and lumbosacral region massage) or an isolated strategy (shower) were the object of this study to provide pain intensity relief for women in the active phase of labor.

METHOD

The study is a therapeutic intervention clinical trial that describes the treatment on a single group of individuals who received the same intervention as this study. It can also be termed a *before and after* study, where all subjects received the same treatment and their conditions are checked *before* and *after* different stages of the treatment. Therefore, each parturient woman in this study was her own control in a real labor process situation[11].

The study was performed in the Unidade de Parto Humanizado (Humanized Labor Unit - UPH) of Maternidade Escola Januário Cicco (Maternity Hospital)(MEJC/UFRN) located in the city of Natal/RN, in the Northeast region of Brazil, considered as a reference maternity hospital in the State of Rio Grande do Norte and a Hospital Amigo da Criança (Child-friendly Hospital) since 1994. Because it is a teaching hospital, this maternity unit received students from different areas of health study from UFRN (Federal University of Rio Grande do Norte), from both the nursing technical level and from the graduate and post-graduate programs, aiming the study activities to provide improved care to parturient women.

Before the investigation was initiated, the study was authorized by the MEJC board, and submitted to the UFRN Research and Ethics Committee (CEP-UFRN), where it was authorized under the registration number 045-2005 on July 10 of 2005, according to the resolution 196/96 of the National Council of Health (CNS)[12].

The study population inclusion criteria selected low gestational risk parturient women who were admitted for active labor to the labor ward of the institution mentioned above. A low gestational risk[2] parturient woman is considered as one who has experienced a normal pregnancy according to clinical evaluation, including different vital signs (blood pressure, pulse and temperature), mucosa evaluation in order determine whether anemia is present, the absence of edema or cardiac and pulmonary auscultation. Other inclusion criteria were that the subject had to be in her second pregnancy, in the active phase of labor and presenting a maximum of 6 centimeters of cervical dilation, be at least 20 years old and accept to take part in this research. Adolescents, primipara women, those indicated for a C-section, previously C-sectioned women or women presenting any obstetric pathology were excluded, and also those who had experienced a miscarriage in their first pregnancy.

The women with indications for a C-section and that had previously gone through a C-section were excluded as high gestational risk patients, since they required medical intervention. High gestational risk patients are those with mental disabilities, cardiac diseases, diabetes, and pulmonary diseases; also excluded were those presenting intra-uterine growth retardation of the fetus (IUGR), and those with polyhydramnios, oligohydramnios, premature abruptio placentae, placenta previa, and fetus malformation, among other clinical disorders that require medical intervention.

Sample selection was performed by a previous survey of MEJC files, from 2004, for a total of 2040 natural labors with an average of 170 per month. Since data collection of 10% of the population was intended over a 6-months period (1020 labors), 100 parturient women were researched. Data collection was developed over the period spanning September 2005 to February 2006, composed of 100 parturient women selected in order to apply the pharmacological strategies.

For data collection, an interview form composed of three stages was used: characterizing the parturient women, the labor graph and labor pain evaluation *before and after*, applying non-pharmacological strategies. The first stage comprised the characterization of the parturient women according to the following variables: age, education, religion, origin, family income, parity, prenatal care attendance, pregnancy week, presence of a companion, identity of the companion, and the prescribed medication. The second stage, the labor graph, evaluates labor evolution and the third stage comprises the women's pain evaluation with the use of non-pharmacological strategies during the active phase of labor.

In order to evaluate pain intensity the visual analog scale was used, which uses a 10-centimeter line on which the individual points out the pain intensity corresponding to the appropriate area along the line[13]. Since there is no scale for measuring the pain in parturient women, this study chose the visual analog scale developed by the Pain Control Team in the Anesthesiology department of the São Paulo Medicine College Clinical Hospital[14], as shown in Figure 1.

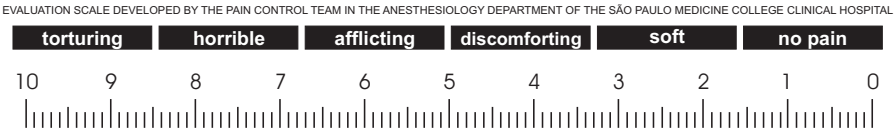

Figure 1 - Evaluation Scale developed by the Pain Control Team in the Anesthesiology department of the São Paulo Medicine College Clinical Hospital[14] - Natal, RN - 2008

Data collection was performed over three working periods (day, evening, and night shifts). The researcher stayed in the study field for 6 months since it was an academic internship area for the graduate and post-graduate nursing degree programs of UFRN, enabling her availability at MEJC/UFRN to develop the study.

Each parturient woman who fit the inclusion criteria for the study provided written consent and after orientations on her participation, of free and intended will, her rights to confidentiality and anonymity were assured. In addition, they received explanations on data collection, which was intended to meet the study objective and improve the quality of obstetric care delivery. For the non-pharmacological strategies application, the researcher adopted a standard procedure for the development and application of these techniques according to what is described in Chart I, with a view to reducing the possibility of study bias, as the researcher herself was responsible for the whole data collection process.

Chart 1 - Description of combined and isolated non-pharmacological strategies - Natal, RN - 2008

COMBINED STRATEGIES	TECHNIQUES
Respiratory exercises: The woman was guided, as the uterine contractions began, to inhale and exhale, breathing through the mouth slowly, as if she were smelling a rose and blowing a candle. **2) Muscle relaxation:** The woman was coached to relax, loosening arms and legs until the contraction stopped. **3) Lumbosacral region massage:** The woman was oriented to the massage. At the beginning of the contraction, the researcher placed her open left hand over the projection of her uterus, in the lumbosacral region, and massaged with circular movements, until the uterine contraction stopped.	These techniques were used at 6 cm, 8 cm and 9 cm of cervical dilation in the active phase of labor, from the beginning of the uterine contraction until its relaxation. The woman's position at the time of the application of this strategy varied between laying in the decubitus position, standing or squatting.
ISOLATED STRATEGY	**TECHNIQUE**
4) Shower: The parturient woman was oriented to and invited for a bath, staying in the shower at room temperature during uterine contractions. When the parturient woman reached the end of the shower, she was wrapped in a towel or sheet; after that she was dressed and moved back to her pre-childbirth environment.	The technique was used at 8 cm and 9 cm of cervical dilation, after the active phase of labor. The technique period of time was at the discretion of the parturient woman, who stayed as long as she wanted in the shower.

Regarding cervix dilation for the inclusion of the parturient woman in the study, the information was obtained from the medical files of the patients, or by vaginal exam upon the admission of the parturient woman. From that point in time, the researcher followed the cervical dilation followed by the uterine dynamic features and the vaginal exam observed in the labor graph detailing labor evolution.

In the SPSS 14.0 program, a descriptive statistics treatment was performed with absolute and relative frequencies, by applying the Fisher's exact test and simple paired t-test. All tests adopted a statistics significance level of $p<0.05$.

RESULTS

From 100 parturient women researched, 76% were between 20 and 30 years old and 24% between 31 and 42 years old; 85% had not completed primary education level. These women were mostly (64%) from the capital (Natal), 90% were catholic and 85% had family income of up to 2 minimum wages. Regarding parity, 76% were already mothers of up to 2 children, 24% had more than 3 children and 100% fully attended the prenatal visits during this pregnancy, according to their appointment card. Regarding the length of pregnancy in gestational weeks, 85% of these women were between 37 and 40 gestational weeks, and 15% between 41 and 42 weeks.

Since the research location is an institution that promotes and encourages the presence of companions during labor, 78% of them appointed a companion, with 44% of the companions being the woman's own partner. In regards to pharmacological interventions, 85% of the parturient women in the study were found to have used some type of medication during the active phase of labor, and most (81%) used oxytocin; only 15% did not receive any medication during the period of this investigation.

When comparing before and after pain intensity averages, the application of combined NPS (non-pharmacological strategies) at 6, 8 and 9 cm of cervix dilation with a simple paired t-test showed significant difference ($\rho=0.000$) at the three stages of active labor, indicating the effectiveness of NPS [respiratory exercises, muscle relaxation and lumbosacral massage] to relieve pain in labor, as shown in Figure 2.

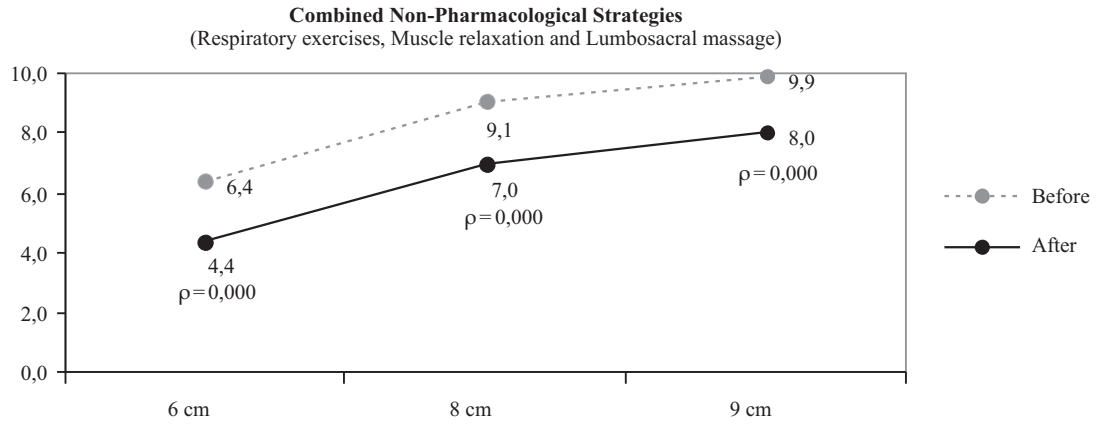

Figure 2 - Pain intensity average before and after the application of combined non-pharmacological strategies in labor active phase between 6 cm, 8 cm and 9 cm of cervical dilation in parturient women in the study using paired t-test - Natal, RN - 2008

When comparing before and after pain intensity averages to the application of isolated NPS at 8 and 9 cm of cervix dilation with a simple paired t-test, a significant difference (ρ=0.000) was observed at two stages of the active labor, indicating the effectiveness of the shower technique to relieve labor pain in this study, as shown in Figure 3.

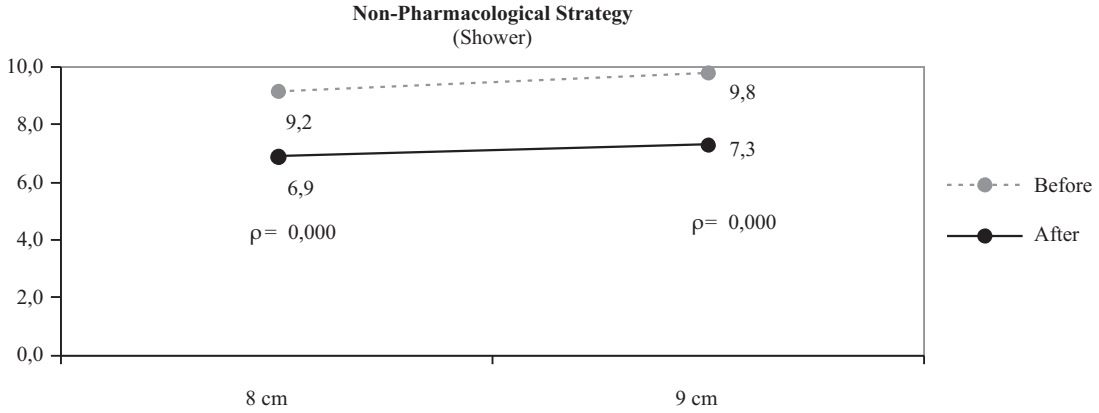

Figure 3 - Pain intensity average before and after the application of an isolated non-pharmacological strategy at 8 cm and 9 cm of cervix dilation on parturient women in the study - Natal, RN - 2008

DISCUSSION

The study showed a predominance of young adult women, having a low level of education and family income, of the Catholic faith and residing in the state capital. Other studies also demonstrated that women in labor average between 22 to 35 years old, reinforcing this study with young adult women. As the education level was evaluated, the authors concluded that these women have a low level of schooling presenting only incomplete primary education[7,15]. Most women (76%) had up to 2 children, and 24% had more than 3 children; 100% attended prenatal appointments, had completed between 37 to 42 gestational weeks, and had partners, family members and friends as companions during labor.

In 2007, in Turkey, in a study to determine the effects of a companion during labor and childbirth with a sample of 50 low-gestational-risk parturient women, it was demonstrated that the presence of a companion, especially the partner, during labor and childbirth is one of more help to women than all other aspects during birth[16].

Regarding the use of medication in the parturient women of this study, oxytocin was predominant as an isolated treatment and/or associated to other medication, such as N-butyl scopolamine and antibiotics; only 15% of the parturient women surveyed did not use any medication.

While in labor, women are objects of medical intervention, as observed in a study of parturient women to determine at what stage of labor the infusion of oxytocin should be applied and the relation to the evolution of labor and contraction intensity. The authors concluded that there was no significant relationship between the infusion of oxytocin and the intensity of contractions[17], supporting the results with those of this investigation.

However, in obstetric practice the routine use of oxytocin in pregnant women is many times unnecessary, often leading to dystocia during labor. Oxytocin becomes necessary in dysfunctional, prolonged labors, associated with amniotic sac rupture for a prolonged length of time. Indeed, the unnecessary infusion of oxytocin induces greater pain perception, stress and fear in parturient women. It is

noteworthy that in this study, parturient women given oxytocin were no different from women without it.

When comparing before and after pain intensity averages, the application of combined NPS at 6, 8 and 9 cm of cervical dilation, showed significant difference (ρ=0.000) in the active labor phase, indicating the effectiveness of combined NPS to relieve pain.

In a study conducted in the city of Goiânia, in the state of Goiás (GO), Brazil, using individualized assistance with guidance and encouragement of breathing exercises and muscle relaxation techniques during labor, it was found that in the active phase of labor there was a predominance of pain; with the increase in pain tolerance during labor, encouragement, force, and physical and psycho-emotional well-being occurred in that period[18]. Another study using methods of progressive muscle relaxation showed significant reduction in the level of pain in parturient women subjected to this technique[8].

Research using lumbosacral massage technique in the three stages of cervical dilation - acceleration, maximum slope and deceleration - demonstrated that this technique does not change the characteristics of parturient women's pain; however, it is effective during the acceleration and maximum slope stages, helping to alleviate the intensity of pain[9], corroborating the results of this study.

However, in this research conducted in a public maternity hospital located in the city of Goiânia - GO, with primigravida parturient women in normal and low-risk labor, in the period from March 2000 to March 2001 between two groups, the control group (CG) receiving routine nursing care and the experimental group (EG) receiving individualized assistance with guidance and stimuli on using breathing and relaxation techniques during the delivery process, when compared to the findings in literature with the results obtained in the study, it can be concluded that in the latent and active phase of labor, the average score for pain intensity was reduced, while in the transition phase the average was higher[19].

As for the shower intervention, effective relief on parturient women's pain with the impact of a warm bath reduced the women's pain and promoted relaxation and comfort[8]. In addition, the warm bath and hot compress on the lower back region is effective in controlling parturient women pain.

In a randomized and controlled clinical trial, composed of parturient women who used the immersion bath as a method of pain relief, held at the Centro de Parto Normal do Amparo Maternal (Natural Labor Center of Maternal Support) with women who gave birth through natural delivery and were assisted by obstetrical nurses in the year 2001, the researchers concluded that non-pharmacological methods such as immersion bath for pain relief during labor has the advantage of both reducing pain and can also postpone the use of drugs to control this pain. This technique may also provide conditions for parturient women to actively cooperate, and allows even greater participation of companions[20].

Based on the results supporting this investigation, respiratory exercises, muscle relaxation, lumbosacral massage and shower demonstrate that, when both combined and isolated, they are effective techniques in parturient women's pain relief and comfort during the active phase of labor, as shown in this study.

CONCLUSIONS

The results of this study allowed us to conclude that:

When comparing before and after pain intensity averages to the application of combined NPS at 6, 8 and 9 cm of cervical dilation, and of isolated NPS at 8 and 9 cm, a significant difference (ρ=0.000) was observed in pain relief after the application of combined and isolated NPS, indicating a reduction in pain as the cervix dilation increased.

It is therefore concluded that combined application of NPS (respiratory exercises, muscle relaxation and lumbosacral massage) at 6, 8 and 9 cm of cervical dilation and isolated NPS (shower) at 8 and 9 cm showed significant differences (ρ= 0.000) for pain relief of parturient women in this study, showing they are effective in relieving labor pain.

The results of this research also have to refer to other studies that focus on the use of these and other effective NPS for labor pain relief aimed at humanized care during childbirth to parturient women. It is also essential to pursue new experiences, seeking changes in the paradigms that advocate the practice, with a view to improving quality care effectiveness to women in labor.

In addition, the professionals who assist women during labor pain reduction procedures should be aware of their verbal and non-verbal behavior, affecting the parturient women in this context. Thus, since the feelings and behavior in the presence of pain of others will interfere with the professional/client relationship, it is understood that respecting the parturient women and their family is one way to achieve a higher standard of care. It is the humanization of delivery and childbirth assistance that emerges as a challenge to those professionals[21].

It is expected that the data found in this research can contribute to the improvement of obstetric practice dedicated to labor, especially in its active phase, in order to relieve parturient women's pain, and also to guide theoretical development, providing knowledge expansion about this practice, and contributing to the awareness of health professionals involved in the team, as well as guiding new suitable technologies for childbirth, and properly systematizing it to the real conditions of women in labor.

Studies of this type present many difficulties in analysis when involving physical care (any care versus no care).

Any aspects of care, such as being at the side, showing interest, performing massage, talking, holding the hand, and wiping the forehead may have similar effects on reducing pain perception. These interventions present a placebo effect and there is little research to back this type of conclusion.

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