

## ACUPUNCTURE AND AURICULOTHERAPY AS NON-PHARMACOLOGICAL PAIN RELIEF METHODS IN THE CHILDBIRTH PROCESS

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**ABSTRACT:** The childbirth process correlates the physiological changes with feelings and socio-cultural values. Pain is one of the important signals in this process. However, if uncontrolled, can cause many unwanted side effects. To minimize them, non-pharmacological methods can act to relieve pain. The aim of this study was to analyze the results of acupuncture and auriculotherapy as pain control, through a convergent care study, performed between June and September 2015. A total of 19 pregnant women in labor admitted to the obstetrics center of a public hospital of Santa Catarina agreed to participate in the study. Results showed 15 (79%) women felt pain relief in the first 30 minutes of the treatment. These results bring exciting prospects for labor care because the methods are inexpensive and safe, increasing the number of non-pharmacological alternatives for women in labor.

**DESCRIPTORS:** Acupuncture; Auriculotherapy; Analgesia; Labor; Pain.

### ACUPUNTURA E AURICULOTERAPIA COMO MÉTODOS NÃO FARMACOLÓGICOS DE ALÍVIO DA DOR NO PROCESSO DE PARTURIÇÃO

**RESUMO:** O processo de parturição correlaciona as alterações fisiológicas a sentimentos e a valores socioculturais. A dor é um dos importantes sinais nesse processo. Porém, se não controlada, pode causar inúmeros efeitos colaterais indesejados. Para minimizá-los, métodos não farmacológicos podem atuar no alívio da dor. Assim, o objetivo desta pesquisa foi analisar os resultados da acupuntura e auriculoterapia como controle da dor, por meio de pesquisa convergente assistencial, entre junho e setembro de 2015. Concordaram em participar do estudo 19 parturientes admitidas em trabalho de parto no centro obstétrico de uma maternidade pública de Santa Catarina. Os resultados demonstraram que n=15 (79%) das mulheres obtiveram alívio da dor nos primeiros 30 minutos de tratamento. Os resultados desta pesquisa trazem animadoras perspectivas para a assistência ao trabalho de parto por se tratarem de métodos de baixo custo e seguros, aumentando o número de alternativas não farmacológicas para as parturientes.

**DESCRIPTORIOS:** Acupuntura; Auriculoterapia; Analgesia; Trabalho de parto; Dor.

### ACUPUNTURA Y AURICULOTERAPIA COMO MÉTODOS NO FARMACOLÓGICOS DE ALIVIO DEL DOLOR EN EL PROCESO DE PARTO

**RESUMEN:** El proceso del parto asocia las alteraciones fisiológicas a sentimientos y a valores socioculturales. El dolor es un de los señales importantes en ese proceso. Sin embargo, si no es controlada, puede traer inúmeros efectos colaterales. Para minimizarlos, métodos no farmacológicos pueden actuar en el alivio del dolor. Así, fue objetivo de esta investigación analizar los resultados de la acupuntura y auriculoterapia como control del dolor, por medio de investigación convergente asistencial, entre junio y septiembre de 2015. Participaron del estudio 19 parturientes admitidas en trabajo de parto en el centro obstétrico de una maternidad pública de Santa Catarina. Los resultados muestran que n=15 (79%) de las mujeres obtuvieron alivio del dolor en los primeros 30 minutos de tratamiento. Los resultados de esta investigación revelan animadoras perspectivas para la asistencia al trabajo de parto por el pequeño costo y la seguridad de los métodos, aumentando el número de alternativas no farmacológicas para las parturientes.

**DESCRIPTORIOS:** Acupuntura; Auriculoterapia; Analgesia; Trabajo de parto; Dolor.

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## ● INTRODUCTION

Labor is a set of physiological changes (intense and increasingly frequent uterine contractions that result in progressive dilation of the cervix and descent of the fetus) that occur within a period of time and are directed toward the birth of the baby<sup>(1)</sup>. However, the labor and birth process goes far beyond the physiological aspects. It has a unique and different meaning for the life of the woman and her family, involving feelings of fear, anguish and socio-cultural values<sup>(2)</sup>. Among the fears associated with childbirth is that of the pain.

Pain is an important sign in labor<sup>(3-4)</sup> and has been regarded as the fifth vital sign<sup>(5)</sup>. The most important component of pain is the dilation of the cervix coupled with other factors such as contraction and distention of the uterine fibers, relaxation of the birth canal, traction of the attachments and peritoneum, pressure on the urethra, bladder and other pelvic structures and also pressure on the roots of the lumbosacral plexus<sup>(4,6)</sup>.

The lack of control of obstetric pain produces a series of changes in the maternal physiology, which, added to those that the pregnancy itself causes, may result in undesirable side effects for the fetus and the mother. Among these hyperventilation, increased oxygen consumption, increased plasma concentrations of beta-endorphins and catecholamines that decrease placental blood flow and increased renin (stimulating production of angiotensin I and II) and the concentrations of free fatty acids, can be highlighted, as well as other alterations<sup>(5)</sup>. Given this situation, the reduction of the discomfort of the pregnant woman is of the utmost importance. The perception of painful stimuli can be reduced through measures classified as pharmacological and non-pharmacological. The latter promote a feeling of well-being in the women and diminish the stress of the birth, reducing the use of allopathic measures<sup>(7)</sup>.

Among the non-pharmacological methods acupuncture, auriculotherapy, phytotherapy, aromatherapy, moxibustion, massage, therapeutic bath, the presence of a doula and companion and the Swiss ball can be mentioned. This study focused on the first two methods, included in Traditional Chinese Medicine (TCM).

Traditional Chinese Medicine has been practiced for about 5,000 years in the East and is currently used in many Western countries as a way to expand the therapeutic approach possibilities. It provides an extremely significant contribution to improving the living conditions of the population<sup>(8)</sup>. In Brazil, the practice of Chinese techniques began tentatively in the nineteenth century, however, it was only incorporated into the institutions in the twentieth century, from the 1980s. Subsequently, the Ministry of Health created the National Policy on Integrative and Complementary Practices in Health aimed at healthcare integrality<sup>(9)</sup>.

Among the various TCM techniques, acupuncture is derived from the Latin term: needle (*acus*) and puncture (*punctura*). The therapy considers that in a body there are about 360 acupoints of meridians, with the majority of them being associated with the peripheral nervous system structures, peripheral bundles and blood vessels. The insertion of the needle activates the receptors of the dendrites of sensory neurons in the skin, muscles and soft tissues. This stimulation generates electrical signals, known as the action potential, which run through the dendrites, reach the cell body, pass through the axon and finally to the brain through the synapses<sup>(10)</sup>. After the pain impulses reach the cerebral cortex, endorphins, serotonin, adrenocorticotrophic hormone (ACTH) and gamma-aminobutyric acid (GABA) are released at different locations to modulate the pain signals<sup>(10)</sup>.

Another ancient technique is auricular acupuncture or auriculotherapy, in Latin: ear (*auris*), small ear (*auricula*) and from the Greek: Therapy (*terapien*). It is defined as a therapy that causes stimulation at specific points of the outer ear, which represents an upside down fetus and reflect all the organs of the human body. This part of the human body is highly innervated and enables, through stimulation by needles, seeds or other materials, the conduction of electrical signals, the sensitization of regions of the brain, such as the brain stem and cortex, among other regions. Each auricular point is directly linked to a point in the brain that connects to the organ or region of the body<sup>(11)</sup>.

The interest in acupuncture and auriculotherapy as analgesia during labor and delivery is justified by the numerous advantages they represent for the mother and child: they do not alter the levels of

maternal awareness, allowing their use throughout the birth process and after delivery, they do not preclude the use of other forms of analgesia, they represent an economically viable option and they are techniques that are safe, since there is no record of side effects in their application. Therefore, the aims of this study were to analyze the results of the non-pharmacological methods studied in the control of pain during the delivery process; to list auricular and acupuncture points for use in the treatment; to assess the degree of pain, using the visual analog scale, during labor and delivery while employing the proposed therapies, and to know the perception of the mother in relation to the non-pharmacological methods used.

## ● METHOD

A convergent care study was conducted between June and September 2015, involving the consensual participation of 19 pregnant women in labor, admitted to the obstetrics center of a public hospital in the state of Santa Catarina. The convergent care methodology consists of a type of qualitative study, characterized by the correlation between research, care and participation of the subjects involved in the practice together with the knowledge construction process<sup>(12)</sup>.

For the acupuncture, 0.25x30mm disposable needles were used and for the auriculotherapy, 1.5mm polished crystal balls, adhered to the skin with hypoallergenic tape. When the mother asked for the care the treatment was started. First the mother was placed in the lateral decubitus or sitting position and antisepsis was carried out using 70% alcohol on the places where the punctures and auriculotherapy would be performed. The *Yintang* points (involved in decreased anxiety and fear) were used; IG4 (analgesic); VC2 (involved in the relief of pain in the pubic symphysis); BP6 (involved in relieving contraction pain); B60 (involved in the relaxation of the tendons and muscles and relieving contraction pain); F3 (involved in the relaxation of muscles and tendons) and in the dorsal region B31 and B32 (involved in the strengthening of the lumbosacral region)<sup>(13-15)</sup>. In the auriculotherapy the shenmen (analgesia), central nervous system (analgesic) and kidney (the triad is used at the beginning of processing of auriculotherapy) points were used, followed by the uterus (difficulty in labor); endocrine (regulates endocrine function disorders); abdomen (contractions) and subcortex (analgesic) points<sup>(16-17)</sup>, as defined by classical Chinese acupuncture.

To define the perception of the pain during labor, the visual analogue scale (VAS) was used, ranging from 0 to 10, where 0 is no pain and 10 is severe pain<sup>(18)</sup>. Pain relief was initially reported by comparing the initial VAS score with the VAS value at 30 min intervals.

For the statistical analysis of the data, the assessment of pain intensity at 30-minute intervals, the reasons for termination of the technique and the assessment made by the mother of the pain relief provided were selected as the dependent variables. Age, marital status, education level, number of previous pregnancies, number of prenatal consultations, prior knowledge about complementary therapies and pain intensity assessment prior to the start of treatment were analyzed as the control variables.

In the first 24 hours after the birth of the baby a semi-structured interview was performed to evaluate the effectiveness of the pain relief treatments used during the labor. The names of the mothers have been replaced by pseudonyms of names of flowers to preserve anonymity. The dependent and control variables were evaluated in Microsoft Excel and submitted to simple statistical analysis, with the open questions being analyzed in three stages: reading, grouping of information by similarity and the relationship with the complementary treatment method.

The women were informed about the aims and methods of the study and could choose whether or not to participate, without any prejudice to their care. The women participants were: full-term, primiparous and multiparous; usual risk; over than 18 years of age; residents of the municipality of the study; and no previous use of analgesia. The research project was approved by the Research Ethics Committee, under authorization number 970.689.

## ● RESULTS

The mean age of the volunteers was 24.8 years, ranging from 18 to 35 years, all reported being married or in a consensual union. Regarding the level of education, seven (37%) had completed high school, five (26%) had not completed elementary school, three (16%) had not completed high school, two (11%) had completed elementary school, one (5%) was attending higher education and one (5%) had graduated. All the pregnant women had performed prenatal care within the National Health System, and 17 (89%) had performed six or more visits, as recommended by the Ministry of Health. Analyzing the obstetrical data, 12 (63%) had previous pregnancies, of these, five (42%) had a history of normal birth, four (33%) cesarean section, two (17%) had previous abortions and one (8%) with normal birth and caesarean section. Regarding complementary therapies: acupuncture, auriculotherapy, moxibustion, herbal medicine, *Do in, tuiná* and cupping therapy, 11 (58%) were aware of some of the techniques cited, among these, ten (91%) knew about acupuncture and one (9%) auriculotherapy. It was observed that one (9%) of the mothers had undergone acupuncture treatment, but none had used these methods during pregnancy.

For the treatment, the minimal time of puncture established was 30 minutes. The majority of the women, 12 (63%), continued for 1h. Only seven (36%) persisted for 1h30min, two (10.5%) completed the acupuncture treatment with 2 hours and one (5.2%) of mothers stopped after 5h30min. It was observed that 19 (100%) of the pregnant women continued with the auriculotherapy after the removal of needles. The interruption of the technique occurred for several reasons, the main one being (11 (55%) of the cases) the request of the client herself (justifying the preference for a therapeutic bath, for walking or due to the discomfort of the needles). In five (25%) of the cases, the interruption of the techniques took place due to the request for analgesia, in three (15%) the treatment was terminated due to the birth and in one (5%) this was due to the end of the shift of the resident nurse (in this specific case, the mother continued with the auriculotherapy during the shift changeover and at the beginning of the shift the acupuncture was resumed).

With respect to the pain reduction analysis (Figure 1), it was observed that 15 (79%) of the women treated obtained some relief in the initial 30 minutes. In the evaluation after 1h, six (46%) remained with the same degree of pain and four (31%) had more relief. After 1h30min four (57%) of the women reported worsening symptoms. With 2 hours of time elapsed, half of the patients worsened and the other half maintained the same pain classification.

In the postpartum period, when asked about the effectiveness of the treatment during the labor, 17 (89.6%) respondents answered that they felt pain relief, one (5.2%) reported worsening and one (5.2%) could not answer. When asked whether they would recommend the method to other women, the response was 100% positive. In answering the last question: "Why would recommend this type of service to others" diverse opinions were reported:

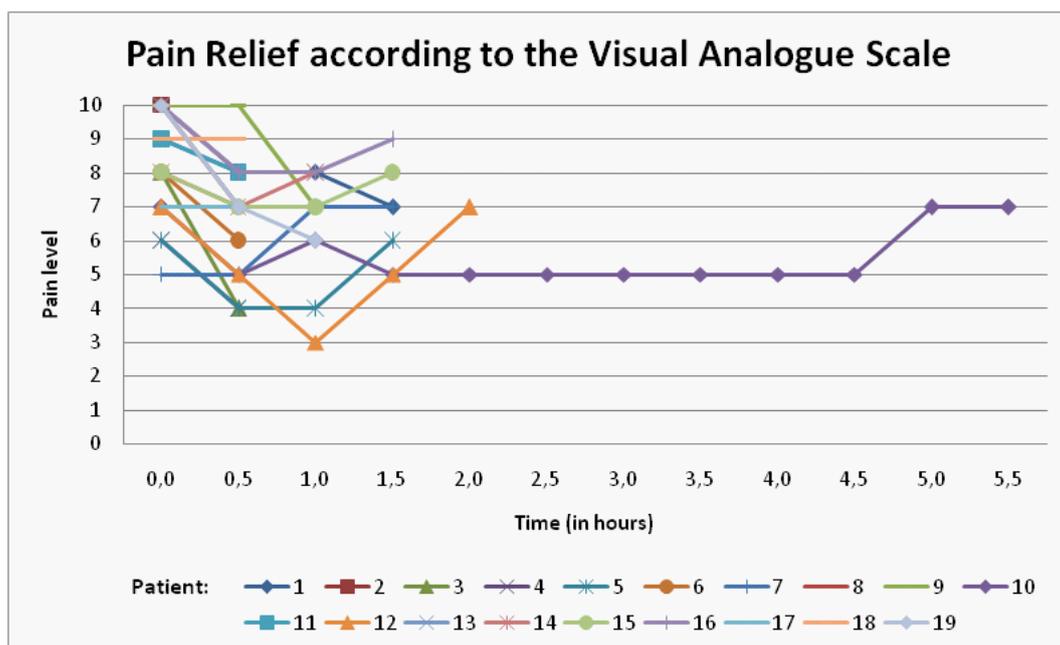


Figure 1 - Pain classification at 30 min intervals according to each woman in labor. Joinville, Brazil, 2015

*[...] It was worth it, if it was not for the needles I would have given up before [...]. (Violet)*

*[...] I liked it, better than the analgesia. It alleviated almost to the end, but the analgesia does not take away all the pain either [...]. (Begonia)*

*[...] as well as helping with the pain, it calms, soothes and reduces the fatigue [...]. (Hortensia)*

*[...] I liked it, I felt an improvement in the post-cesarean pain [...]. (Azalea)*

Regarding this last statement, the puerperal woman underwent a cesarean due to complications with the fetus.

## ● DISCUSSION

The percentage of primiparae that used non-pharmacological methods was similar to that found in another study: 32.9%. There was also no difference comparing the level of education: with the study showing that 31.7% of the mothers that used non-pharmacological methods were aged between 10 and 19 years, and 31.7% had studied for between 11 and 14 years<sup>(19)</sup>.

The number of previous pregnancies may have been an important factor in the decision to participate in the acupuncture and auriculotherapy treatment, as in previous labors the women had already experienced non-pharmacological methods such as the Swiss ball, therapeutic bath, walking, right to have a companion, freedom of positions during labor and unrestricted liquid diet.

When questioning the mothers about knowledge concerning the complementary therapies, A prevalence of women who knew some of the techniques was observed. In contrast, a study including 120 mothers showed that only a small portion (23.3%) had a vague notion about the subject and almost the same proportion (26.5%) had knowledge about the techniques<sup>(20)</sup>. In the present study no differentiation was made between women who had only heard about the therapies and those who had an understanding of the methods. The highlight of this topic was the fact that among the known methods, the most frequently mentioned was acupuncture. This prior knowledge on the subject may have facilitated adherence to the treatment during the birth. However, a study conducted in Fortaleza<sup>(21:35)</sup> pointed out that “[...]the description of the entire birth process based on the painful sensation is evident, whether present or absent, which reaffirms pain as something very strong in our culture [...]”.

Regarding the length of the treatment, a clinical trial<sup>(17)</sup> showed that the women were more persistent regarding the time spent undergoing acupuncture: with 84% of them remaining for 1h, 53% for 1h30min and 43% for 2 hours. However, the mothers spent less time with the auriculotherapy, with 93% in the first hour and 34% in the second hour. A Danish study<sup>(22)</sup> found that after 2h30min half of the mothers still used acupuncture. These data show that the participants of the present study had little tolerance when compared to those of previous studies. It can be assumed that this was due to cultural influence, low tolerance to pain, lack of preparation during the prenatal period and some factor related to the level of education. The reduced time observed in this study may be justified by the argument for the preference of the therapeutic bath, walking or due to the uncomfortable presence of the needles. One study found that 75.2% of the women in labor opted for a warm bath and 85.1% for walking<sup>(23)</sup>.

A clinical trial conducted with 120 pregnant women showed that pain relief achieved in the first 30 minutes was 3-4 times higher in the group receiving treatment compared to the control group. This difference was also observed at 60 minutes and 90 minutes<sup>(17)</sup>. A randomized controlled study<sup>(22)</sup> involving 600 pregnant women showed that 59% felt pain relief. It is worth adding that the majority of these women (53%) demonstrated a desire to use the method in the next pregnancy.

In the present study the majority of the women felt pain relief at the beginning of the treatment, remaining the same or getting worse over time. This worsening can also be related to increased dilation and progressive contractions due to the evolution of the delivery. This is only a hypothesis, because these data were not studied. Another assumption could be related to low efficacy of the non-pharmacological treatment used, which is in contrast to the studies cited above. During the feedback with the puerperae, efficacy of the treatment was observed, with all responding positively. Corroborating

these data, a cross-sectional qualitative study showed that the use of non-pharmacological methods was a positive factor due to pain relief or absence of other discomforts<sup>(24)</sup>.

Several insights came to light when the interviewees talked about the methods used in the labor. Some compared them with pharmacological methods, noting that not even these can cancel out the pain. Others mentioned that acupuncture provided an encouraging effect in the process. Among the TCM points used was the *Yintang*, which assists in reducing the fear and anxiety and its effectiveness was reported by one of the puerperae.

Not all methods are effective in relieving pain, however, they help in reducing the level of stress, fear and anxiety and promote satisfaction<sup>(24)</sup>. The pain of childbirth is physiologically real, although perceived differently by every woman. Regardless of the method used to alleviate the suffering, the goal should be to cope with the pain, making the passage of the labor less aggressive and painful.

## ● CONCLUSION

The intensity of the pain is individual, however, it is not only this that will make the perception of the childbirth experience positive or negative. This process cannot be viewed in a fragmented way, considering only the physical suffering. Labor is a time that brings together worries, fears and anxiety, which can potentiate the pain.

Considering the results of this study, the outlook is positive for the use of these methods in childbirth care, as they are inexpensive and safe, increasing the number of non-pharmacological alternatives for women in labor. Such methods can function as an initial action or be combined with other techniques, able to preserve the naturalness of the parturition process and make it more tranquil.

Future research projects are necessary for the improvement of these methods, with greater population coverage, aiming to demonstrate the effectiveness of the techniques of Traditional Chinese Medicine, as well as other methods that may still arise. Therefore, increasingly, ways can be offered to mothers that will contribute to the achievement of serenity during labor.

Limitations of this study are related to the limited knowledge on the part of pregnant women regarding the efficacy of the techniques used, hindering the amplitude of the study.

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