

NON-INVASIVE TECHNOLOGIES FOR PAIN RELIEF IN PARTURITION

Tecnologias não invasivas para o alívio da dor na parturição

Tecnologías no invasivas para el alivio del dolor durante en el parto

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ABSTRACT

Objective: To analyze the non-invasive technologies of pain relief in labor and birth. **Method:** Integrative literature review, with 13 articles from the Web of Science database, Cumulative Index to Nursing and Allied Health Literature databases, Latin American and Caribbean Literature in Health Sciences, SciVerse Scopus TopCited, Medical Literature Analysis and Retrieval System Online, and the library Scientific Electronic Library Online between 2010 and 2016. **Results:** Observed the use of more than two non-pharmacological technologies in the delivery and birth process, such as aromatherapy alone or added to another technology; isolated application of cold and / or heat; use of the Swiss ball / birth ball. **Conclusion:** The use of new technologies in the parturition process rescues the autonomy of women in front of their bodies.

DESCRIPTORS: Labor obstetric; Labor pain; Massage; Aromatherapy.

RESUMO

Objetivo: Analisar as tecnologias não invasivas de alívio da dor no parto e nascimento. **Método:** Revisão integrativa de literatura, com 13 artigos obtidos nas bases de dados *Web of Science*, *Cumulative Index to Nursing and Allied Health Literature*, *Literatura Latino-Americana e do Caribe em Ciências da Saúde*, *SciVerse Scopus TopCited*, *Medical Literature Analysis and Retrieval System Online* e a biblioteca virtual *Scientific Electronic Library Online* entre o período de 2010 a 2016. **Resultados:** Observou o uso de mais de duas tecnologias não farmacológicas no processo de parto e nascimento, como aromaterapia isolada ou somada a mais uma tecnologia; aplicação isolada de frio e/ou calor; uso da bola suíça/bola de parto. **Conclusão:** A utilização de novas tecnologias no processo parturitivo resgata a autonomia da mulher frente ao seu corpo.

DESCRIPTORES: Trabalho de parto; Dor do parto; Massagem; Aromaterapia.

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RESUMEN

Objetivo: Analizar tecnologías no invasivas de alivio del dolor en el parto y el nacimiento. **Método:** Revisión integrativa de literatura, con 13 artículos de las bases de datos de Web of Science, de Contenido etiquetado de la literatura y la literatura en América Latina y el Caribe, en Ciencias de la Salud, SciVse Scopus TopCited, Medical Literature Analysis and Retrieval System Online y la biblioteca Scientific Electronic Library virtual en línea entre el periodo de 2010 a 2016. **Resultados:** Observó el uso de más de dos tecnologías no farmacológicas en el parto y el proceso de parto, como la aromaterapia sola o agregada a otra tecnología; aplicación aislada de frío y / o calor; uso de la bola suiza / bola de nacimiento. **Conclusión:** El uso de nuevas tecnologías en el proceso de parto rescata la autonomía de las mujeres frente a sus cuerpos.

DESCRIPTORES: Trabajo de parto; Dolor de parto; Masaje; Aromaterapia.

INTRODUCTION

The Brazilian obstetric scenario is in transition from a biomedical, technocratic model to a humanized model. This transformation does not occur by chance, but by the movement of professionals, patients, society and public policies with a focus on humanization. Thus, in support to the World Health Organization (WHO) in 1985, it published the document *Appropriate Technology for Births and Births*, promoting knowledge of the countless technologies employed at the time of delivery, which are inadequate, expressing fear of pain, and questioning the scientificity of technologies and interventions used in childbirth¹⁻³ that contribute for many women to undergo cesarean sections as the best way to give birth.⁴

The formation and performance of the obstetric nurse involve skills and competencies that make it possible to provide integral care to the pregnant woman, rescuing childbirth as a physiological process and avoiding interventions, which have a positive impact on maternal-infant health.⁵ Pain in labor and delivery is a cultural aspect, and it is up to the nurse to use technologies to alleviate stressors and favor a hormonal cascade for a safe delivery, acting in front of the woman's need for care, relieving her pain and bringing greater conformity and safety to this process of parturition.^{6,7}

There are many technologies for pain relief with the use of these methods, such as: freedom of more vertical positions; stimulation of walking; breathing exercises; aspersion and immersion baths with warm water; touches and massages with the use of oils; use of the Swiss ball for relaxation, in addition to a companion, considered essential measures for the care of women.^{3-7,8}

Thus, the study aimed to analyze non-invasive technologies for pain relief in labor and birth.

METHOD

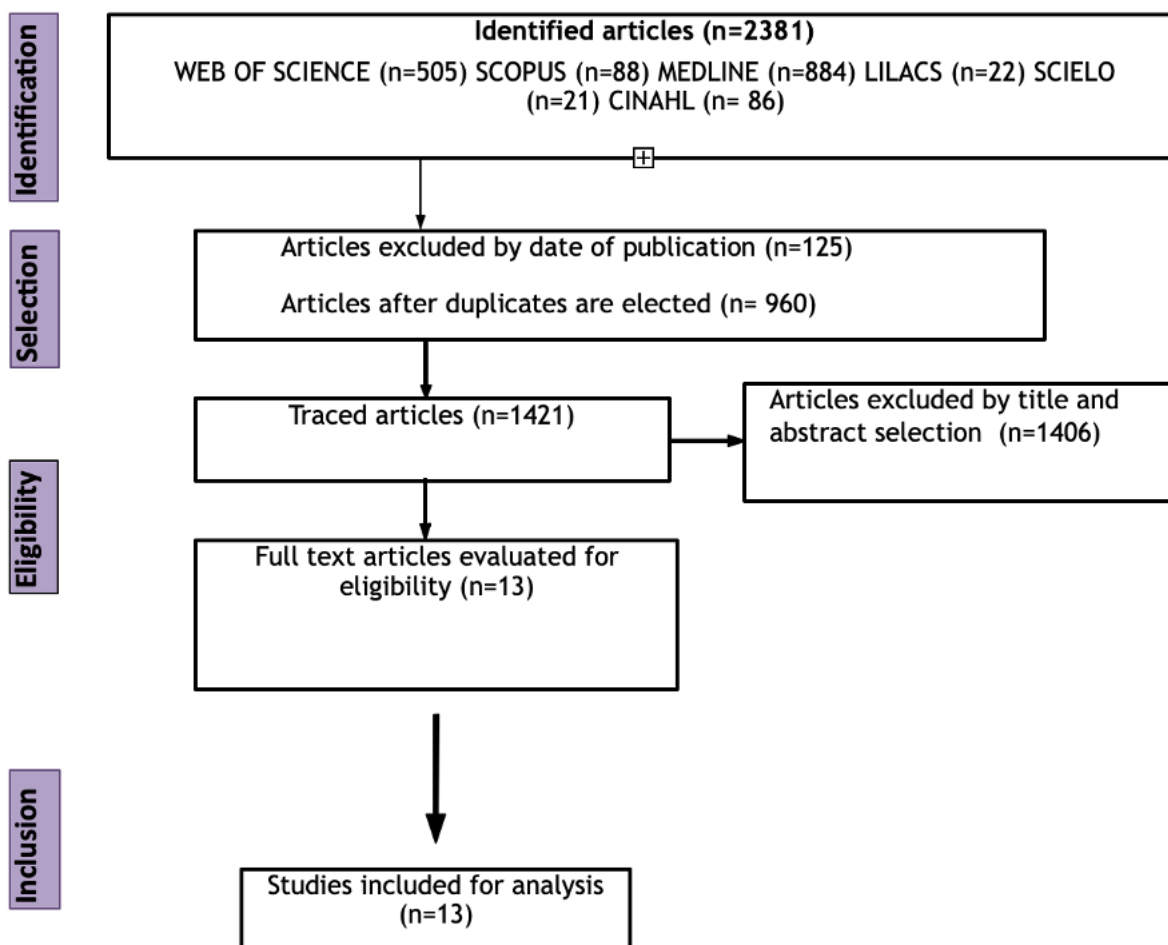
It is an integrative review of the literature, which has the following steps: establishment of the research question; inclusion and exclusion criteria; categorization of studies; evaluation of studies; interpretation of data and synthesis of knowledge.⁹ The research question to be answered was: What are the non-pharmacological technologies for pain relief that are used in the process of delivery and birth?

For the data collection of the articles, a tool was used in which there was a complete reference of the titles, authors, periodical, design, level of evidence. The inclusion criteria considered were: articles in Portuguese, English or Spanish; between 2010 and 2016. Theses, dissertations, editorials, incomplete articles were excluded. The political framework of the established cut-off (2010-2016) was the conceptual reason for the inclusion of the stork network as a framework for childbirth care, with the inclusion of good practices in childbirth and birth.

The search strategy in literature was composed using the following terms, listed from the controlled vocabulary, health science descriptors (hsd): "labor", "labor pain", "massage", "aromatherapy". The English, Spanish and Portuguese languages and the Boolean and or operators were considered. Research was conducted at the Virtual Scientific Electronic Library Online (SciELO), and the Web of Science, Cumulative Index to Nursing and Allied Health Literature (CINAHL); Latin American and Caribbean Health Sciences Literature (LILACS); Web of Science, SciVerse Scopus TopCited (SCOPUS) and Medical Literature Analysis and Retrieval System Online (MEDLINE) databases. The quantitative data base search is described in Figure 1 below:

There were 2,381 articles identified, 505 on the Web of Science; 88 on SCOPUS; 884 on MEDLINE; 22 on LILACS; 21 on SciELO; 861 CINAHL. After the application of the temporal cut-off criteria, the primary studies were selected according to the eligibility criteria. Initially, 960 duplicates were excluded through the EndNote Web reference manager. From the reading and analysis by title and abstract, by two independent reviewers and analysis 1,421 articles were excluded, resulting in the complete reading of 13 articles.

Figure 1 - Flowchart of article selection according to the recommendations of Preferred Reporting Items for Systematic Reviews and Meta Analyses - PRISMA.



In the critical analysis of the selected studies, the data were extracted from the articles observing the methodological aspects and the familiarity between the results found, making it possible to start the analysis process in the integrative review. Regarding the treatment of the data, the thematic analysis method was applied, which made it possible to group the content studied into thematic categories.¹⁰ Through the process carried out in the analysis, the following thematic categories emerged: 1) The use of more than two non-pharmacological technologies in the process of childbirth and birth, 2) Aromatherapy alone or added to one more technology, 3) The isolated application of cold and/or heat alone or added to one more technology, 4) The use of the Swiss ball / childbirth ball alone or added to one more technology.

The selected studies were classified into Levels of Evidence (LE): Level I: evidence is derived from a systematic review or meta-analysis of all relevant randomized controlled clinical trials or from clinical guidelines based on systematic reviews of controlled randomized controlled clinical trials; Level II: evidence derived from at least one well-designed randomized

controlled clinical trial; Level III: Level IV: evidence from well-designed non-randomized controlled trials; Level V: evidence from systematic review of descriptive and qualitative studies; Level VI: evidence from a single descriptive or qualitative trial; and Level VII: evidence from authority opinion and/or expert committee report.¹¹

It is important to emphasize that the ethical aspects were respected, through the reliable citation of ideas, concepts and definitions used by the authors of the productions used as results in this study.

RESULTS AND DISCUSSION

According to the 2,381 articles identified in the databases, 13 of which were selected for study analysis.

The selected articles were published between 2011 and 2015. There were, in number of publications per year, two publications in 2011; one publication in 2012; three publications in 2013; four publications in 2014; and three publications in 2015. It is observed that in the years 2010 and 2016 there were no publications, as described in Figure 2.

Figure 2 - Distribution of articles about non-invasive technologies for pain relief in labor and birth from 2010 to 2016.

Title	Authors	Periodicals	Delineation	Level of Evidence
The effect of aromatherapy by essential oil of orange on anxiety during labor: A randomized clinical trial	Rashidi-Fakari, F. Tabatabaeichehr, M. Mortazavi, H.	Iranian Journal of Nursing and Midwifery Research	Randomized clinical trial	II
Application of Nonpharmacologic Methods to Relieve Pain during Labor: The Point of View of Primiparous Women	Gayeski ME; Brüggemann OM. Monticelli M; dos Santos EKA.	Pain Management Nursing	Cross-sectional study	IV
Complementary and alternative therapies to relieve labor pain: A comparative study between music therapy and Hoku point ice massage	Dehcheshmeh FS; Rafiei H.	Complementary Therapies in Clinical Practice	Prospective, randomized and controlled study	IV
Aromatherapy With Citrus Aurantium Oil and Anxiety During the First Stage of Labor	Namazi M; Akbari SAA; Mojab F; Talebi A; Majid HA; Jannesari S.	Iranian Red Crescent Medical Journal	Randomized clinical trial	II
Comparing the Effects of Aromatherapy With Rose Oils and Warm Foot Bath on Anxiety in the First Stage of Labor in Nulliparous Women	Kheirkhah M; Pour NSV; Nisani L; Haghani H.	Iranian Red Crescent Medical Journal	Randomized clinical trial	II
Comparison of the effect of aromatherapy with Jasminum officinale and Salvia officinale on pain severity and labor outcome in nulliparous women	Kaviani M; Maghbool S; Azima S; Tabaei MH.	Iranian Journal of Nursing and Midwifery Research	Randomized clinical trial	II
Swiss ball to relieve pain of primiparous in active labor	Gallo RBS; Santana LS; Marcolin AC; Quintana SM.	Revista Dor	Randomized clinical trial and controlled	II
The effect of intermittent local heat and cold on labor pain and child birthoutcome	Ganji Z; Shirvani M.A; Rezaei-Abhari F; Danesh, M..	Iranian Journal of Nursing and Midwifery Research	Randomized and controlled clinical trial	II
Evaluation of the Bonapace Method: a specific educational intervention to reduce pain duringchildbirth	Bonapace J; Chaillet N; Gaumont I; Paul-Savoie É; Marchand S.	Journalof Pain Research	Control case	IV
Hot sprinkler bath, perineal exercises with Swiss ball and labor pain	Barbieri M; Henrique AJ; Chors FM; Maia NL; Gabrieloni MC.	Acta Paulista de Enfermagem	Randomized and blind experimental or intervention clinical trial	II
Comparing the effects of ice massage and acupressure on labor pain reduction	Hajiamini Z; Masoud SN; Ebadi A; Mahboubh A; Matin AA.	Complementary Therapies in Clinical Practice	Near experimental study	IV
Use of the Swiss ball in labor	Silva LM; Oliveira SMJV; Silva FMB; Alvarenga MB.	Acta Paulista de Enfermagem	Descriptive study, with quantitative approach	V
Effect of heat therapy on pain severity in primigravida women	Fahami F; Behmanesh F; Valiani M; Ashouri E.	Iran J Nurs Midwifery Res	Randomized clinical trial	II

Regarding the findings of the articles, the thematic categories for the discussion of the themes, and presentation of the results, were carried out.

The use of more than two non-pharmacological technologies in the birth and delivery process

Studies have shown that the perception of pain throughout the birth and delivery process can present itself in different ways, being directly related to the involvement of the woman, the team assisting her, her companion, and the emotional and physical support associated with the use of pain relief technologies that will bring benefits in the development of this process and in the postpartum period.¹² Thus, the use of these technologies for the care of women in the parturition process becomes primordial.

The authors¹³ point out that pain can be in two dimensions: sensory and affective, but in hospital practice, as in Brazil, the focus is on physical pain and, as a result, we witnessed the use of drugs for its containment, such as epidural analgesia which, although bringing beneficial results in terms of pain relief, can also provide serious side effects, including weaknesses in the central nervous system, reduced maternal heart rate, prolonged muscle distension and increased second stage labor.

In the care practices, more and more the use of complementary technologies such as the use of the hot bath of aspersion or immersion, of the Swiss ball/delivery ball with a playful and effective proposal in this process with several applications, local heat and/or cold, acupuncture, transcutaneous electric stimulation, injection of sterile water in places of the lumbar region, massages, aromatherapy, audioanalgesia, breathing exercises and music therapy, has been used.¹⁴ These technologies try to ensure better confrontation and safety at the level of hormonal release, and the reduction of hormones that favor more painful stimuli.

Thus, the study¹⁵ points out that a method that has been used differently from traditional care programs in the parturition process is yoga, which has shown that body and mind composition can promote positive effects in reducing pain and promoting fetal health, as well as the combination of non-pharmacological care technologies.

Aromatherapy alone or added to another technology

The authors of a study¹⁶ point to aromatherapy, which is a complementary treatment not medicalized, applied using the senses of touch and smell, being increasingly used essential oils with a delicate aroma, slightly sweet, sometimes velvety, citric or woody. Lavender, eucalyptus, jasmine, rose and orange are bringing significant effects on the perception of pain, anxiety of parturients and, therefore, on the duration of the phases of the parturition process, when the choice well applied inspires a touch of sensitivity and flavors. When inhaled, the aroma drives the sensitive receptors through the brain, involving specific neurological parts and substances that harmonize in an intoxicating way, resulting in physical and psychological changes that effectively result in the reduction of pain and anxiety.

The scientific evidence shows that these essences can be applied; in massage therapy, in the use of incense, in the

bathtub or in simple inhalation. Lavender, for example, produces relaxing and tranquilizing effects, with studies indicating its use to reduce pain, creating calm throughout childbirth.¹⁷ And, like the Rose essential oil, which acts directly on the central nervous system, decreasing intrapartum anxiety levels by up to 71%; the Orange essential oil, known as sweet orange, favors a decline in women's anxiety, and it is also found that this effect also occurs in the fetus, overcoming the placental barrier through the respiratory tract, and also in breastfeeding.¹⁸

Thus, the oils absorbed by inhalation interact with enzymes and receptor channels where the brain is eventually stimulated, with the body, with vascularization and central nervous system receptors, also prominently reducing anxiety in the first stage of labor. Its beneficial effects are broad, proven, but can be antagonized by marjoram.¹⁹

The isolated application of cold and/or heat or added to another technology

The study²⁰ points out that the application of local cold and/or heat is a light technology that has been used for its low cost and ease of handling through running water, water bags or ice cubes supported by a gauze, ice sticks or frozen gel, which facilitate the rolling for massage, towels soaked in water, compresses and baths. It is considered a non-pharmacological sensory analgesic, with beneficial effects similar to a local anesthesia, but without the side effects of this pharmacological method. Several mechanisms are involved in the analgesic effects of cold therapy, such as changing the speed of nerve conduction, blocking pain, mind deviation to it. Some articles point out the use of local ice repeatedly, at thirty-minute intervals, which can be more effective than acupuncture.

Thus, the effects of cold on the decrease of anxiety occur due to the decline of catecholamines and increased levels of endorphin. Cold can block neural transmission in sensory fibers, and therefore result in reduced pain. Local heat can stimulate heat sensors in the dermis and deeper tissues, where distinct impulses neutralize at the spinal cord level, preventing pain impulses from reaching the brain.²¹ Considering that, in general, women experience more intense pain in the second phase of labor, they ask for increased heat that favors local blood circulation during contractions, brings a sense of comfort, and leads to increased endorphin and oxytocin, causing the woman to surrender to labor, and in the immediate postpartum period stimulates the detachment of the placenta.²² These technologies favor more respectful care, and follow the line of public policies in labor and birth care, which rescues the physiology of labor for safe care.

The use of the Swiss ball/delivery ball alone or in combination with another technology

A study²³ pointed to a technology that is used in normal birth centers, appears as a ludic instrument, rich in possibilities. The Stability Ball was developed in Italy in 1963 as a children's toy, and is now used in the neurological

rehabilitation of children. Later it was called “Swiss Ball”, and in 1970 it began to be used for postural problems. The use in obstetrics started in the 80’s during the obstetricians’ work in a maternity hospital in Germany, aiming to help in the progression of labor because they believed that its use helped in the descent and rotation of the fetus.

Another aspect of care for women is the autonomy of movement and vertical posture, which can reduce pain in the parturient, facilitating maternal-fetal blood circulation and the descent of the fetus through the pelvis, improving the effects of uterine contractions and reducing perineal trauma. Thus, the Swiss Ball is one of the strategies that promote free movement, adoption of distinct positions, postural correction, relaxation and stretching throughout childbirth.²² Thus, the use of this Ball develops the muscles of the pelvic floor, strengthens the lifting muscles of the anus and pubicoccygeal and the fascia of the pelvis, contributing to better active participation of women in the parturition process. When combined with warm sprinkling bath and massage, it intensifies care, reduces stress, anxiety, and prioritizes focused attention in the pregnant woman.²⁴⁻²⁵

CONCLUSION

Public health policies are in the process of understanding the physiological process of pregnancy and childbirth, about women’s rights and their real desires. As hospital demand has been growing, public and private health networks are slowly innovating in space, care and professional training courses in search of a more humane attention that values the parturition process in the hospital environment.

It is, therefore, a gradual change of great importance for women, for their right to an informed choice, to a respectful care, regardless of being primiparous or multiparous, since the parturition process will always be unique, with individual characteristics, requiring specialized professional attention that preserves the physical, mental, socioeconomic conditions of the pregnant woman, thus ensuring family welfare.

Thus, the use of new technologies in the parturitive process rescues the woman’s autonomy before her body, promotes a care focused on her needs, whether physiological, social, emotional, cultural and spiritual, and in addition to breaking with the dominant obstetric model and perpetuating the humanization of care. Thus, these technologies guarantee better care and a safer and more respectful birth. The need for new national research in this area is relevant to base non-pharmacological technologies on the empowerment of women in the process of childbirth and birth.

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