

Non-invasive technologies of nursing care based on Florence Nightingale's environmental theory*Tecnologías no invasivas de cuidados de enfermería basadas en la teoría ambiental de Florence Nightingale**Tecnologias não invasivas de cuidado de enfermagem fundamentadas na teoria ambientalista de Florence Nightingale***Renata Christine Quintella
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Submission: 11-07-2020**Approval:** 11-21-2020**Abstract**

The aim was to associate the conceptions of Florence Nightingale's Environmental Theory with the use of non-invasive technologies to the practices carried out by nursing during childbirth, labor and puerperium. It is an integrative review described by the Brazilian literature between the years 2010 and 2019. Ten studies analyzed, seven show the use of technologies related to Ambiente. A research dealt exclusively with technologies related to this aspect. Another study addressed the use of only the category of instrumental technologies and one simultaneously addressed the three categories: Ambiente and Non-invasive technologies of nursing care for pain relief / instruments and related to Physiological Needs. We must consider the environment, as a set of elements that include clean air, noise, cleanliness, lighting, among others. Such assumptions of the Environmentalist Theory can be associated with the non-invasive technologies of nursing care used in labor and delivery.

Descriptors: Nursing; Nursing Theory; Obstetric Nursing.

Resumén

El objetivo fue asociar las concepciones de la Teoría Ambiental de Florence Nightingale con el uso de tecnologías no invasivas a las prácticas que realiza la enfermería durante el parto, parto y puerperio. Es una revisión integradora descrita por la literatura brasileña entre los años 2010 y 2019. Diez estudios analizados, siete muestran el uso de tecnologías relacionadas con Ambiente. Una encuesta se ocupó exclusivamente de las tecnologías relacionadas con este aspecto. Otro estudio abordó el uso de solo la categoría de tecnologías instrumentales y uno abordó simultáneamente las tres categorías: Ambientes y Tecnologías no invasivas de cuidados de enfermería para el alivio del dolor / instrumentos y relacionados con Necesidades Fisiológicas. Debemos considerar el medio ambiente, como un conjunto de elementos que incluyen aire limpio, ruido, limpieza, iluminación, entre otros. Tales supuestos de la Teoría Ambientalista pueden asociarse con las tecnologías no invasivas del cuidado de enfermería utilizadas en el trabajo de parto y el parto.

Descriptores: Enfermería; Teoría de Enfermería; Enfermería Obstétrica.

Resumo

Objetivou-se associar as concepções da Teoria Ambientalista de Florence Nightingale com a utilização das tecnologias não invasivas às práticas efetivadas pela enfermagem durante o parto, trabalho de parto e puerpério. Trata-se de uma revisão integrativa descritas pela literatura brasileira entre os anos de 2010 e 2019. Dez estudos analisados, sete apresentam o uso de tecnologias relacionada a Ambiente. Uma pesquisa tratava exclusivamente sobre as tecnologias relacionada a esse aspecto. Outro estudo abordava o uso apenas da categoria das tecnologias instrumentais e uma tratava simultaneamente das três categorias: Ambiente e Tecnologias não invasivas de cuidado de enfermagem para alívio da dor/instrumentos e relacionadas a Necessidades Fisiológicas. Devemos considerar o ambiente, como um conjunto de elementos que incluem ar puro, ruídos, limpeza, iluminação, dentre outros. Tais pressupostos da Teoria Ambientalista podem ser associados às tecnologias não invasivas de cuidado de enfermagem utilizadas no trabalho de parto e parto.

Descritores: Enfermagem; Teoria de Enfermagem; Enfermagem Obstétrica.



Introduction

Historically, the parturition process is a time of expectation for the parturient and her family, mainly because of the anxiety and fear of the pain that this moment can cause. Fear appears frequently according to the survey Born in Brazil, as the main reason for Brazilian women to opt for cesarean section.¹ The pain of labor and delivery has different aspects, considering emotional, psychological, and social factors.² Birth is a physiological process of the female body, however with the scientific technical progress this natural process started to be institutionalized, medicalized and invasive practices started to become routine in the parturition process.

Humanization can be considered a strategy of interference in the health process, through investment in a new type of interaction between the subjects, qualifying the bond between professionals and users of the health system. In addition, humanization also supports the construction of a new institutional Ethos in this logic³, building a relationship in which women's rights are preserved. The trust of the pregnant woman, parturient and puerperal woman with the professional favors' childbirth and the puerperium, leading to better outcomes, both related to the newborn and to the woman herself. For there to be obstetric assistance based on the humanization of care, the bond is necessary, as well as the insertion of the parturient in her own labor, considering the principle of inseparability, promoting the autonomy and control of the woman over her own body.

In these contexts, several technologies can be used to facilitate the process. The technologies have three classifications, according to Merhy technologies Light (they imply the interrelationship between the professional and the client, which are realized from the reception, bond and communication), Light hard technologies (structured knowledge that work in health, exemplifying the clinic and epidemiology) and hard technologies (related to technological instruments that participate in the healing, prevention, rehabilitation and assistance process).⁴

Among the light technologies we find non-invasive care technologies of a relational and eminent character for the demedicalization process, favoring female protagonism. Such a proposal implies considering the woman's right to choose and not imposing a logic of care, which may even be alien to the parturients' interest.⁵ These technologies also respect the principle of ecological conception of childbirth, which includes non-invasion of nature, that is, allowing childbirth and labor to take place in a less interventionist way, allowing the body itself to act on this momento.⁶ The categories on which non-invasive obstetric technologies are based are related to the ambience (private and safe environment, reduction of disturbing noises and presence of the companion), related to the use of physical instruments for pain relief, (Swiss ball, obstetric stool, cryotherapy / hydrotherapy etc.) and those that address women's physiological needs (body hygiene and the supply of food and liquids).

This discussion is based on several theories of nursing care. For the purposes of this article, we will use Florence Nightingale's Environmental Theory, which

associates the qualification of the care environment with improvements in the treatment and care process; therefore, a strategy to improve the health and quality of life of patients was established.

Thus, it is expected to contribute to a more qualified nursing care, which respects the woman's wishes and is based on a theory of care.

Methodology

In order to give visibility to this issue and contribute to the intensification of this debate, an integrative review was carried out in order to answer the following question: What are the aspects contained in Florence Nightingale's Environmental Theory that underlie the increase in non-invasive technologies of nursing care in conducting labor and delivery? The guiding question was elaborated based on the PICO strategy, which represents an acronym for Patient, Intervention, Comparison and Outcomes (outcome). Within the evidence-based research, these components are fundamental for the construction of the guiding question. Thus, the following categories were listed for the present study: 1) Patient: Parturients, 2) Intervention: Environmental Theory, 3) Comparison: Other welfare theories and 4) Outcomes: Use of non-invasive technologies in conducting labor. Data were collected from July to August 2019.

Thus, this article aims at non-invasive technologies of nursing care and aims to present non-invasive technologies, described by the Brazilian literature between the years 2010 and 2019 (first semester) and correlate them to the concepts that underlie the Environmental Theory. Florence Nightingale's Environmental Theory (1859), a pioneer of modern nursing, emphasizes the environment and external factors as conditions that affect the life and development of human beings, being able to contribute to the disease and death process.⁷ Therefore, the book "Notes of Nursing - What is and what is not", published in 1859, was analyzed.

The integrative review had the following steps: 1- Delimitation of the guiding question; 2- Literature search based on the inclusion and exclusion criteria of the studies; 3- Categorization of the information contained in the sample; 4- Evaluation of the included studies; 5- Presentation of the research findings and 6- Presentation of the knowledge review / synthesis.⁸

The search for data online was through the Virtual Health Library, in May 2019, using the descriptor in Health Sciences (DeCS): NURSING associated with the Boolean operator AND with the term "NON-INVASIVE TECHNOLOGIES". It is noteworthy that the descriptor "NON-INVASIVE TECHNOLOGIES" was found in DeCS and no similar term, so it was decided to keep this term, given its presence in nursing studies. The search established a time interval based on the last decade to contemplate the most recent studies, in the Portuguese language.

The studies were selected according to the following inclusion criteria: Brazilian studies that dealt with the subject in question, between the years 2010 and 2019. Scientific articles and master's dissertations and doctoral theses published in Portuguese, with full text, carried out in



Brazil and available at the Virtual Health Library.

Regarding the exclusion criteria adopted, there was a departure from studies that did not have as main subject the use of Non-Invasive Technologies in Nursing Care in obstetric care, as well as studies outside the delimited period. Repeated studies were also excluded, considering each study only once.

Thus, the initial search included 15 publications. Of these 15 publications, 3 were duplicated and 2 did not address the topic, with the final sample of this review being 10 publications. Among the 10 publications 5 were found in the electronic database of Latin American Literature (LILACS), 4 in the Nursing Database (BDENF) and 1 in LILACS / BDENF. Of these 10 publications, 6 were master's theses, 1 doctoral thesis and 4 scientific articles, all published by nurses with varying degrees.

Data collection was performed based on the elaboration of an instrument made by the researchers themselves and incorporated the following variables: Title of publication / year / journal, database, types of research, formation of the authors, names, objectives of the study, methodology applied, participants, the non-invasive technologies of nursing care used, results and the conclusion of each document.

From the interpretation of the data, the main category was obtained, which is the non-invasive technologies of nursing care and the subcategories: "Ambience" (in which the non-invasive technologies related to the physical, social and relational aspects, included in the guidelines, were considered of the National Humanization Policy) "Methods for pain relief" (where the use or not of physical instruments as a technology aid was considered) and the "Physiological needs" (in which aspects such as food, water supply, hygiene were related) bodily).

Results

The publications found deal with various Non-Invasive Nursing Care Technologies for pain relief during clinical periods of labor.

It was found that the technologies are used and proposed according to the stage the mother is in labor. Thus, the literature incorporates practices aimed mainly at the first period of labor (dilation), but also practices aimed at the second period (expulsion) and for the immediate, mediate, and remote puerperium.⁹

Since Florence Nightingale's Environmental Theory defines the environment as the main factor for the health-disease process, light care technologies such as a warm bath^{11,16,17}, massage^{11,16-19}, pelvic exercises (Swiss ball, walking, piggyback, stool)^{11,13,16-19}, availability of professionals¹⁶⁻²⁰, freedom to choose the parturition position^{11,17} presence of a companion guaranteed by Law 11,108 / 05^{11,13,19}, pleasant environment (lighting, sound, security, privacy)^{12,13}, freedom of decision / protagonism of the parturient^{12,15}, the supply of water and food² and the use of cryotherapy¹⁹ can be correlated with Florence Nightingale's Theory.

After the documents analyzed, it was found that there are three categories capable of relating the

technologies used to the Environmental Theory. The categories were: 1- Technologies related to the environment and 2- Non-invasive technologies for care in pain relief and 3- Physiological needs.

The category "1-Technologies related to the ambience" refers, fundamentally, to the treatment performed in the physical space, understood as a social space, considering interpersonal relationships, capable of offering welcoming and resolving attention.

This category has three axes: a) The space that aims at comfort focused on the privacy and individuality of the subjects involved, valuing elements of the environment that interact with people (color, smell, sound, lighting, morphology, among others); b) The space that allows the production of subjectivities through action and reflection on work processes; c) The space used as a tool to facilitate the work process, favoring the optimization of resources, humanized, welcoming and decisive service. The effectuation of the ambience necessarily implies the existence of the three axes, so that it is possible to conclude that the technologies related to the ambience are relational.¹⁰

The category "2- Non-invasive care technologies for pain relief.", Covers, fundamentally, non-pharmacological methods for pain relief, so that they can be considered instrumental (Swiss ball, stool, warm bath, cryotherapy). The category "3- Physiological Needs", addresses the supply of food and water intake.

Discussion

Since there is a need to base professional know-how with the theory that supports it to qualify it, the non-invasive technologies of nursing care described here were correlated with Florence Nightingale's Environmental Theory. In the book "Notes of Nursing - What is and what is not", the author described the nursing care provided to patients in the Crimean War and listed the environment as the main determining factor for the process of restoring health. It is worth noting the fact that, for Nightingale (1859), the disease was not necessarily a counterbalance of health, but rather a process of restoration, requiring general and specific care, with the nurse having the fundamental role of balancing the environment in the in order to facilitate this reestablishment of health.²¹ Childbirth must also be uncharacterized from the pathological view, as it is a health and life process that is linked to the family context, being seen in a pathological way from the logic of the medicalization of childbirth, interventionist and technocratic.²⁵

According to the Environmentalist Theory, the patient should remain in the best condition, that is, external factors that, in a way, interact with individuals, are necessary to restore health. The integrality of being and the environment is idealized, where the interaction between the environment and the individual can strengthen it for its recovery. We must consider the environment as a complex set of elements that include clean air, noise, cleanliness, lighting, smells, food, among others. Such assumptions of the Environmentalist Theory can be associated with the non-



invasive technologies of nursing care used in labor and delivery, as we will see below.

Technologies related to ambience

As part of this category, aspects related to the Ambience, present in the analyzed literature, are considered, such as: therapeutic listening, availability of professionals, bond, support, respect for the parturients' decisions, lighting, noise, privacy, presence of the companion, freedom of position and ambulation.

The availability of the professional / bond / support / therapeutic listening are described in the environmental theory in the following fragments: "[...] you always feel where the patient can see you. If this act becomes tiring for the patient, it harms him and very [...]"^{21:57} and "[...] always tell the patient, before leaving him, the time he will leave and the time he will return [...]"^{21:46}

During labor and delivery, there are times when silence is necessary as a strategy to ensure emotional support and security for women. And being with the parturient in the labor process is a technology of care.

Lighting, privacy, and noise are important elements for reducing brain arousal in all patients. These recommendations are described in the following passages of the Environmentalist Theory: "[...] it is unnecessary to add that there are acute cases [...] for which penumbra is necessary [...]"^{21:98}, "[...] despite the little we know about how we are affected by shape, colors and light, we know one thing: these factors have a real effect on the physical [...]"^{21:68}

Regarding parturition, there is already a consensus in the literature that penumbra helps in the production of melatonin, a hormone that is associated with oxytocin to favor contractions, which are essential for the evolution of labor. It is understood that the environment works by helping women to produce oxytocin and endorphins necessary for childbirth. Moments of introspection are necessary in labor, so that the woman can connect with herself and allow her own body to act for the progress of labor.²²

The sounds for Florence Nightingale can be harmful to the patient, especially regarding the quality of his sleep. This concern had already been signaled by the author, in the following sentence: "A strange washerwoman at the service may pass the infirmary late at night in order to collect 'things' and mistakenly enter the patient's room just when she has just fallen asleep, causing a big shock, with irremediable effects [...]"^{21:44}

Regarding the period of childbirth, it is necessary to start from the assumption that the hospital is an environment with intense movement and the privacy of this parturient can be impaired, causing, as a consequence, the interruption of primitive attitudes, the reduction of the release of fundamental hormones for the progression childbirth and reducing the role of this woman.²² It is a very important process, which directly interferes in the restoration of the health of the woman in childbirth, that is, in the restoration of the pre-pregnancy period with the expulsion of the baby. Being eminent for labor, an

environment with the least possible noise, without commands from the "pulls" as this could interfere in the parturition process. "[...] He can support, for example, the placement of a scaffold nearby. The house, but does not support whispers outside the room, especially. If it's a familiar voice [...]"^{21:44}

Note that the Environmental Theory did not censor any noise but qualified it according to the promotion of the individual's introspection. So being organized sound practices, structuring is welcome in the parturition process. Only the noises that may hinder the parturients' introspection process should be eliminated or reduced.

Regarding the presence of the companion, freedom of position and walking, it appears that they are also factors that have a positive impact on the patient's health. The Environmentalist Theory approached the issue of confinement of patients in bed as a negative act to restore health. He also spoke about the importance of the visitor in the wards. Regarding these facts, the following quote stands out: "[...] the entrance of visitors whose presence would be very important can be prevented, while allowing the presence of someone whose absence would be of greater importance [...]"^{21:45}

Emphasis is given to encouraging the free movement of the parturient woman. The technology that supports free movement is based on the principle that it is essential to rescue an active participation of women and remove them from the position of receiving interventions by the health team. The freedom of position and walking for the labor positive progress, it appears that walking and the vertical position accelerate labor because it promotes the passage of the object through the delivery path by gravity, reducing the time of the second period of labor. childbirth, episiotomy, and pain reduction.²³

It is also necessary to highlight that one of the non-invasive care technologies is guaranteed by Law No. 11.108 / 05 (right to the companion chosen by the woman during labor, delivery and postpartum). When this right is guaranteed to pregnant women, it becomes one of the main light care technologies, favoring the progress of labor and providing better outcomes. It is necessary to raise the awareness of the companions so that they are prepared for this experience.²²

The woman's right to choose should always be the main guide for the health professional's assistance. Regarding the companion, it appears that at that moment many women wish to remain accompanied by people close and chosen in advance, because they feel welcomed and safer, and this must be offered to them, other women, however, may prefer to go through the intimate labor without a companion and this must also be respected. The companion's guarantee must be understood as a right and not an imposition.

Instrumental technologies

In this analysis, we will consider as Instrumental Technologies, the physical apparatus used during the delivery and postpartum period as: Swiss ball, obstetric stool, hydrotherapy, and cryotherapy. When it comes to the



Swiss ball, it allows freedom of position, promotes postural correction, relaxation and strengthens the muscles of the pelvic floor. Relaxation and enlargement of the pelvis contribute to the stages of the delivery mechanism, especially in the descent of the fetal presentation through the birth canal.²⁵

Hydrotherapy has the ability to reverse the effects of anxiety and pain during labor, promoting muscle relaxation and positively favoring the evolution of labor.²⁶ And cryotherapy as already observed in one of the documents that constitute the research in question is understood as the application of cold, using liquid, solid and / or gaseous media that provide a therapeutic effect by removing heat from part of the glass, causing hypothermia consequently the reduction of pain transmission by nerve fibers.²⁷

The Environmentalist Theory does not directly deal with parturients; however, it is worth mentioning that, from the use of instruments during labor, women are encouraged to stay in vertical positions, not to remain inert in bed, being fundamental for the maintenance of this woman's autonomy, leaving it free to move. In Brazil, the Ministry of Health, values the possibility of offering positions other than lithotomies and one of them is the vertical position.²³ Obstetric Nursing with a humanized view has the potential to develop ethical and political attitudes to overcome the challenges of birth care²⁸.

Physiological needs: water intake and food supply

In the category of physiological needs, water intake, food supply, massage and breathing exercises were considered, since they are technologies that facilitate basic human physiology.

The Environmental Theory pointed out that hunger and thirst caused discomfort to patients, and the nurse's role is indispensable for the balance of this issue, offering energy sources. In this sense, he highlighted the need for water intake and the provision of food to the sick. [...] thousands of sick people suffer hunger annually in the midst of the greatest abundance, just due to the lack of attention to the only ways that make feeding possible [...].^{21,73}

It is known that labor lasts for many hours, being extended mainly when it comes to primiparous women. These are moments of intense physical exhaustion and caloric expenditure, and the offer of nutrients to the parturient is indicated, according to her wishes and needs. These guidelines are not observed in several maternity hospitals that operate from the technocratic logic and perform the replacement of these electrolytes be intravenously, restricting the woman to the bed and making her passive to her needs, distancing her from the protagonism⁷ and contributing to a lack parturients' autonomy at this time.

Conclusion

Based on the results presented, it is possible to identify that, of the ten studies analyzed, seven present the use of technologies related to both Ambiente and non-invasive technologies for pain relief. A research dealt exclusively with technologies related to the aspects of the Ambiente. Another study addressed the use of only the category of instrumental technologies and a survey simultaneously addressed the three categories: ambiente and TNICE for pain relief / instruments and related to physiological needs.

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