

Flower therapy in the evolution of childbirth and in the pain-anxiety-stress triad: quasi-experimental study

Terapia floral na evolução do parto e na tríade dor-ansiedade-estresse: estudo quase-experimental
Terapia floral en la evolución del parto y en la tríada dolor-ansiedad-estrés: estudio cuasi experimental

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Abstract

Objective: To evaluate the effect of flower therapy on the evolution of labor and on the pain-anxiety-stress triad of women during birth.

Methods: Quasi-experimental study conducted from May to July 2018 in the obstetric center of a reference hospital for low-risk birth care in southern Brazil with 60 participants (30 in the control group and 30 in the floral group). The intervention consisted of administering Bach Flower Remedies during labor combined with compounds capable of restoring emotional balance in situations of pain, anxiety and stress with the addition of 99.75% organic French brandy at 30% to 0.25% of the mother tincture. The placebo group received a combined water mix with added 99.75% organic French brandy at 30% to 0.25% of the mother tincture. Both were put in 30 ml dropper bottles of the same size, shape and characteristic. In the analysis, the t test was used to compare the variables studied before and after the intervention, and between groups.

Results: Variables analyzed such as cervical dilation, uterine contractions, oxytocin, cortisol and duration of labor showed significant differences for the floral group compared to placebo.

Conclusion: Flower therapy can be an alternative for women during labor, as it helps in the progression of labor without harming the newborn.

Resumo

Objetivo: Avaliar o efeito da Terapia floral na evolução do trabalho de parto e na tríade dor-ansiedade-estresse das mulheres durante o nascimento.

Métodos: Estudo quase-experimental realizado no período de maio a julho de 2018 no centro-obstétrico de um hospital referência para a assistência ao nascimento de baixo risco na Região Sul do Brasil, com 60 participantes (30 no Grupo Controle e 30 no Grupo Floral). A intervenção consistiu na administração dos Florais de Bach durante o trabalho de parto combinados por compostos capazes de regatar o equilíbrio emocional em situações de dor, ansiedade e estresse com a adição de 99,75% de conhaque orgânico Francês à 30% para 0,25% da tintura mãe. O grupo placebo recebeu uma mistura combinada de água com adição de 99,75% de conhaque orgânico Francês à 30% para 0,25% da tintura mãe. Ambos foram acondicionados em frascos conta gotas de 30 ml de igual tamanho, formato e característica. Para análise foi utilizado o teste t a fim de comparar as variáveis estudadas antes e após a intervenção e entre os grupos.

Resultados: As variáveis analisadas como dilatação cervical, contrações uterinas, ocitocina, cortisol e tempo do trabalho de parto apresentaram diferenças significativas para o Grupo Floral quando comparado com o placebo.

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Conflicts of interest: none to declare.

Conclusão: A Terapia floral pode ser uma alternativa para a mulher durante o trabalho de parto por auxiliar na progressão do parto sem trazer prejuízos ao recém-nascido.

Resumen

Objetivo: Analizar el efecto de la terapia floral en la evolución del trabajo de parto y en la tríada dolor-ansiedad-estrés de mujeres durante el nacimiento.

Métodos: Estudio cuasi experimental realizado en el período de mayo a julio de 2018 en el centro obstétrico de un hospital de referencia en la atención al nacimiento de bajo riesgo en la región sur de Brasil, con 60 participantes (30 en el grupo de control y 30 en el grupo floral). La intervención consistió en la administración de Flores de Bach durante el trabajo de parto combinadas con compuestos capaces de rescatar el equilibrio emocional en situaciones de dolor, ansiedad y estrés con la adición de 99,75 % de coñac orgánico francés al 30 % en 0,25 % de tintura madre. El grupo placebo recibió una mezcla combinada de agua con la adición de 99,75 % de coñac orgánico francés al 30 % en 0,25 % de tintura madre. Ambas fueron colocadas en frascos con cuentagotas de 30 ml de igual tamaño, formato y características. Para el análisis se utilizó el test-T a fin de comparar las variables estudiadas antes y después de la intervención y entre los grupos.

Resultados: Las variables analizadas, como dilatación cervical, contracciones uterinas, oxitocina, cortisol y tiempo de trabajo de parto presentaron diferencias significativas en el Grupo Floral en comparación con el de placebo.

Conclusión: La terapia floral puede ser una alternativa para la mujer durante el trabajo de parto porque ayuda a la evolución del parto sin perjuicios para el recién nacido.

Introduction

The events that occur during birth go far beyond the simple act of giving birth. The evolution of labor, for example, is experienced in a unique way by each woman and may be influenced by maternal characteristics, and the psychological, emotional state, level of stress, anxiety and fear that permeate the experience of childbirth.⁽¹⁾

Multiple feelings tend to increase with the proximity of the term of pregnancy. Concerns such as not recognizing the signs of the beginning of labor, fear of pain, that childbirth is difficult, prolonged, of suffering obstetric violence, having physical consequences, among other uncertainties, disturb women's emotional tranquility.⁽²⁾

Some time ago, childbirth stopped being something natural and started to be conducted in an interventionist way, favoring the parturient woman's loss of autonomy. Unnecessary procedures and routines interfere with the decision-making ability on the type of delivery and negatively impact the process of giving birth.⁽³⁾ This excess of interventions failed to consider the emotional, sensory, human and cultural aspects involved in the physiology of birth, thereby making pain and fear the main reasons for Brazilian women's choice for a cesarean delivery.⁽⁴⁾

While some pharmacological methods used to reduce pain and the time of birth can result in negative side effects for the mother and fetus, non-phar-

macological approaches should be used to obtain the same outcome in a natural, non-invasive way.⁽⁵⁾

Flower therapy has been used in this perspective to act not only in the physical component, but also in psychological and emotional factors, aiming to reduce the negative perception of events through the healing energy of the nanoparticles of flowers.⁽⁶⁾

The Bach Flower Remedies were created by the English Dr. Edward Bach (1886-1936), the precursor system of this practice. The purpose of this therapy is to restore the positive state of the human being's personality by using flower essences to take care of mental, emotional and behavioral aspects through the body-mind-soul connection and in search for self-knowledge to balance this triad.^(7,8)

The flower remedies act by means of the vital energy or vibration transmitted from the flowers to the individual in order to rebalance the conscious and the unconscious to dissolve old patterns of behavior, relieving negative feelings and leading to activated physical healing.⁽⁸⁾

A popular and institutional interest has been growing in order to strengthen this therapy in the National Health Service (Brazilian SUS) in Brazil, gaining space in the context of complementary integrative practices, since ten out of the 38 emotional states of the flower system in the world are found in the country.⁽⁹⁾

The academic scientific literature has shown that Bach Flower Remedies are effective for use in care for human beings and have a positive effect on the

psychological perspective of controlling emotions, mood and feelings such as anxiety and stress, promoting relaxation and positive thoughts, playing an important role in the psychological perspective of pain.^(7,10-13) Among other benefits, this therapy raises the levels of consciousness where the person expands self-perception, about the events around him/her, about how to interact with the environment, being able to learn from everyday experiences, as well as from those that occur externally.⁽⁶⁾

The current policy of childbirth care has prioritized investment and reorganization of good obstetric practices aimed at women as they are useful in favor of childbirth.⁽¹⁴⁾ Research on female behavior during labor has been guided by the cognitive behavior theory, postulating that the success of giving birth is the result of motivation influenced by attitudes, beliefs, subjective norms and perceptions.⁽¹⁵⁾ The disconnection between female behavior and the evolution of labor can negatively influence the progression of this process, sometimes resulting in a traumatic delivery.⁽¹⁶⁾

Therefore, maintaining emotional balance during labor is essential, because when the adrenaline concentration increases, the concentration of adrenocorticotrophic hormone and cortisol also increase, proving that stress is an adaptive biological defense mechanism of the woman while giving birth.⁽⁵⁾

In this perspective, using alternative strategies and resources that minimize the pain-anxiety-stress triad during the evolution of childbirth can contribute to a successful and less traumatic practice, since such individual characteristics permeate birth guided by women's experience and their personality.⁽⁵⁾

Given the above, the objective was to evaluate the effect of flower therapy on the evolution of labor and on the pain-anxiety-stress triad of women during childbirth.

By taking into account the approach of these elements in the context of birth, there was a small number of studies published on the subject in the scientific production so far that showed if the flower therapy favors the evolution of labor, even if indirectly evaluating the success of this practice. Moreover, few studies have analyzed the direct rela-

tionship between the effects of this therapy on neuroendocrine responses, as well as on the newborn's clinical conditions.

Thinking about the elements and the triad that guides labor, we expected to present another non-pharmacological, effective, alternative strategy during the birth process in this study, based on the assumption that its use will help in the evolution of the birth process by contributing for the relief of pain, anxiety and stress in parturient women. Knowing the benefits of this practice can provide subsidies to make childbirth as natural as possible, allow women to be the protagonists of childbirth and enable that all parturient women discover another non-pharmacological strategy in childbirth centers.

Methods

Study design and location

Quasi-experimental study conducted from May to July 2018 at the obstetric center of a reference hospital for low-risk childbirth care in the south region of Brazil. The western territory of the state of Santa Catarina, chosen for the development of the study, is a pole of economic and industrial development and a reference in health actions in the state, comprising the region of the Grande Fronteira do Mercosul (Meso Mercosul). The Obstetric Center (OC) has a pre-delivery, delivery and puerperal system, in addition to delivery rooms and postpartum recovery rooms. The team is made up of obstetrician doctors, obstetric nurses, nursing technicians and neonatologists.

Population

Pregnant women with a minimum age of 18 years referred and admitted for normal risk and/or low risk labor at the referred institution participated in the study. Those who met the following inclusion criteria were included: primiparous, gestation with a single fetus, live in flexed cephalic presentation, with minimum cervical dilation of 4 cm and a maximum of 8 cm assessed at the time of hospital admission, with at least two efficient uterine con-

tractions (with an average duration of 40 seconds) and gestational age at term (between 37 and 42 complete weeks) calculated by the date of the ultrasound performed until the 13th week or by the date of the last menstruation.

Smoking participants (who had smoked less than two hours earlier) were excluded from the study, since nicotine influences the secretion of catecholamines, which interferes with absorption of the flower therapy, as well as patients with mental disorders documented in the medical records and psychoactive drugs users.

Selection, randomization and intervention

Pregnant women who met the inclusion criteria were recruited and randomly allocated to the intervention and control (placebo) groups. The intervention consisted of administering the Bach Flower Remedies combined with compounds capable of rescuing emotional balance in situations of crisis and stress, namely: *Impatiens* (*Impatiens glandulifera*): used in the presence of very strong pain, impatience, irritability, anxiety to return to normal, in getting well quickly, intolerance to those around; *Star of Bethlehem* (*Ornitholagum umbrellatum*) assists in the healing of physical or emotional shocks and traumas; *Cherry Plum* (*Prunus cerasifera*) is applied to gain clarity in difficult times, in addition to increasing confidence, inner strength and courage.⁽⁸⁾

The flower essences used in this study were selected based on participants' mood identified through the psychosomatic characteristics of women during labor⁽¹⁷⁾ and on the authors' expertise on the theme. For clinical practice, the classic selection of the essence was based on the theoretical framework of the conceptual basis of the Bach Flower Therapy.⁽¹⁸⁾

The compounding of the flower bouquet consisted of the addition of 99.75% French organic brandy at 30% to 0.25% of the mother tincture in 30 ml dropper bottles. The placebo group received a combined mixture of water with the addition of 99.75% of French organic brandy, also in 30 ml dropper bottles of same size, shape and characteristic. Both bottles were prepared by the same compounding pharmacy. Initially, 16 drops were

administered as a loading dose and 4 drops every 15 minutes as a maintenance dose at a 60-minute interval, totaling 32 drops.

Considering that the evolution of labor is complex from a physiological point of view, this study proposes the measurement of variables potentially associated with childbirth. To assess the effect of the intervention, clinical signs of labor progression were used considering the independent variables: total duration of labor (hours), cervical dilation (cm), frequency of contractions, use of oxytocin (ml/h), position of the cervix (posterior and/or centralized), consistency of the cervix (thick, medium or thin cervix), integrity of the amniotic membrane, height of presentation, route of birth and perineal trauma. These variables were assessed before and 30 minutes after the last dose of the intervention.

The evolution of labor was considered as the primary outcome of the study, assessed through the progression of cervical dilation, uterine contractions and the duration of labor in hours. Secondary outcomes were pain, anxiety and stress.

Calculation of the sample size

For the sample calculation, the following were considered: the estimated number of primiparous pregnant women who had vaginal delivery in the year prior to collection; type 1 error (α) of 0.05%; study power of 80%; and difference of at least 1 hour and 30 minutes in the time elapsed between the first assessment and after the intervention (two-tailed hypothesis test) between groups. A 20% was added for possible losses and the final sample resulted in 93 pregnant women.

Participants were allocated and blindfolded as to the dosage received. A third person (also blindfolded) was responsible for administering the intervention. Randomization was performed using the online calculator (<http://randomization.com/>). In order to balance the groups among pregnant women, the permuted-block randomization technique was used between the floral and placebo groups. Treatment assignments within blocks were determined in order and randomly, with the desired allocation ratio achieved within each block. The same code generated was allocated in envelopes contain-

ing the information, respecting the sequence generated by randomization. A pilot study was conducted with a sample of ten patients to assess the relationship of the variables that were later included in the analysis.

Data collection

To assess the progression of labor, the increase in uterine contractions, cervical dilation and the duration of the event in hours were considered. The frequency of uterine contractions was assessed using Uterine Dynamics (UD), which consists of assessing the number of contractions and the duration of each at a 10-minute interval.

Cervical dilation was achieved through vaginal touch, which consists of introducing the index and middle fingers trying to feel the position (posterior, centralized), consistency (thick, thin) and opening of the cervical canal (dilation in cm). All parameters evaluated were checked by the same person in order to guarantee the authenticity of the measurement. In addition, cervical dilation of 3-5 cm was classified as latent phase of labor and of 6-8 cm as active phase.

The duration of labor was calculated using the moment of the intervention as the beginning, until birth. When using oxytocin, it was prescribed by the obstetrician on duty in 5UI in 500ml of 5% glucose serum administered in an infusion pump starting at 30ml/h, as prescribed in the patient's medical record.

The classification of perineal integrity was obtained by consulting the patient's electronic chart, recorded according to the evaluation of the professional who attended the birth. All criteria established for the study were considered in accordance with international guidelines proposed by the WHO on Intrapartum Care for a Positive Childbirth Experience.⁽¹⁴⁾

For secondary outcomes, pain, anxiety and stress were assessed before and 30 minutes after the administration of the last dose of the intervention (1 hour 30 minutes after the first assessment). Pain was assessed using the Visual Analogue Scale (VAS), which comprises a horizontal line with extremities indicating absence of pain (point 0) and the worst

possible pain (point 10), classified into three levels: mild (between 0 and 2.5), moderate (between 2.5 and 7.5) and severe pain (between 7.5 and 10).⁽¹⁸⁾ The aim of this evaluation method is a careful analysis of the subjective perception of pain, its severity, location and potential methods of treatment.

Anxiety was calculated using the State-Trait Anxiety Inventory (STAI), which consists of a self-report that assesses anxiety as a state, where each situation has 20 items with scores from 1 to 4 in each one of them. The score ranges from 20 to 80. For each question, the score corresponding to the answer is assigned, but the score is inverted (ex: if the patient answered 4, is scored 1) for questions with a positive character. The population average is 40, although results greater than or equal to 42 tend to anxiety and less than or equal to 38 tend to depression.⁽¹⁹⁾

Stress was assessed based on the neuroendocrine assessment of cortisol release (nmol/L) through the sampling of biological material from saliva in Salivette® tubes. Saliva samples are easily obtained and can be collected several times a day, allowing assessment of the secretion of free cortisol. After collections, samples were conditioned in a polystyrene box and duly sent to the support laboratory for processing and analysis.

Vital clinical parameters such as systolic blood pressure (SBP) in mmHg, diastolic blood pressure (DBP, mmHg), heart rate (HR, bpm), respiratory rate (RR, bpm) and basal body temperature (T°C) were evaluated according to measurement standards described in the literature.⁽²⁰⁾

The neonatal variables analyzed were newborn weight (grams), gestational age (GA) in weeks, Apgar score at 1 and 5 minutes of life.

Statistical analysis

Data were tabulated and evaluated by pairs to correct any typing errors and then analyzed using the Statistical Package for the Social Sciences, version 20.0. First, descriptive statistics was performed for numerical variables by measures of central tendency and for categorical variables, were used proportions. To assess the differences between groups, the t test (parametric) of inde-

pendent and repeated samples for quantitative variables was used. The Pearson's chi-square test was used to study the association between independent variables and outcomes. For all inferential statistical tests, a significance level of $p < 0.05$ was used. The quality of the fit was assessed by the Hosmer-Lemeshow test. To assess the normality of data, the Kolmogorov-Smirnov test was used, better adopted for samples smaller than 100.

Ethical aspects

The study was approved by the Research Ethics Committee at the Universidade Federal da Fronteira Sul (Number 2.548.970, CAAE 82382618.30000.5564) and by the Ethics Committee of the institution.

Table 1. Comparison of the studied variables between groups before the intervention

Variable	Floral group (n=30)	Placebo Group (n=30)	p-value
	Mean (SD)	Mean (SD)	
Age (years)	25.2 (6.2)	25.1 (5.3)	0.947 ^a
Gestational age (weeks)	39.3 (1.2)	39.6 (1.0)	0.439 ^a
Initial cervical dilation (cm)	3.9 (1.4)	3.9 (1.9)	1.000 ^a
Initial SBP (mmHg)	121.6 (13.6)	120.3 (10.6)	0.675 ^a
Initial DBP (mmHg)	74.6 (11.6)	74.0 (9.6)	0.811 ^a
HR (bpm)	82.9 (15.7)	81.1 (12.7)	0.634 ^a
RR (bpm)	18.3 (3.6)	18.4 (3.3)	0.912 ^a
Temperature (°C)	36.2 (0.5)	35.9 (0.5)	0.108 ^a
	n (%)	n (%)	
Initial UD (frequency)			0.389 ^b
2 contractions/ 10'	22 (53.4)	20 (47.6)	
3 or more contractions	8 (44.4)	10 (55.6)	
Initial cervix			0.302 ^b
Thick	8 (50)	8 (50)	
Medium	11 (40.7)	16 (59.3)	
Thin	11 (65.7)	6 (35.3)	
Membrane integrity			0.386 ^b
Intact membrane	23 (52.3)	21 (47.7)	
Ruptured membrane	7 (43.8)	9 (56.2)	

^aT test independent samples; ^bChi-square

Results

During the data collection period, 93 pregnant women were eligible for the study. Of these, 28 were excluded for not meeting the inclusion criteria, three refused to participate in the study and two for fetal death, totaling 33 excluded participants. Thus, 60 pregnant women were recruited, 30 composing the floral group and 30 the placebo group (Annex 1).

Demographic and clinical characteristics at the time of admission of pregnant women for labor are described in table 1. This analysis shows there were no differences between groups before the start of the evaluation.

The effect of flower therapy on the evolution of labor and on the pain-anxiety-stress triad is described in table 2. In the intragroup analysis, was observed a significant difference for the floral group, with an increase in cervical dilation, uterine contractions, quantity of oxytocin and a reduction in cortisol. In the placebo group, there was an increase in oxytocin and cortisol.

When comparing the effect between groups after the intervention, there was a significant difference in the mean cervical dilation and in the frequency of uterine contractions; these values were higher in the group that received the flower therapy. On the other hand, the mean of cortisol was higher in the placebo group (Table 2). Table 3 displays the factors associated with the evolution of labor in primary and secondary outcomes after the intervention between the groups. In this analysis, the relative risk for cesarean section in the placebo group was 2.34 times higher compared to the floral group. In the latent phase and for weak uterine dynamics, relative

Table 2. Differences in the evolution of labor, pain, anxiety and stress before and after the intervention

Variable	N	Floral		p-value	Placebo		p-value	p-value*
		Before Mean (SD)	After Mean (SD)		Before Mean (SD)	After Mean (SD)		
Dilation (cm)	30	4.6(1.3)	5.8(1.5)	0.000	5.0(1.4)	5.2(1.3)	0.405	0.000
Contractions (frequency)	30	2.6(0.6)	3.7(1.0)	0.000	2.6(0.7)	2.7(0.5)	0.501	0.008
Oxytocin (ml/h)	13	48.6(10.5)	63.4(22.2)	0.001	64.5(28.3)	76.5(27.7)	0.037	0.538
Cortisol, nmol/L	30	1.7(1.9)	1.4(1.6)	0.009	1.3(1.7)	2.3(1.7)	0.000	0.029
Anxiety	30	33.6(10.6)	33.7(10.4)	0.952	35.2(8.8)	36.0(8.0)	0.725	0.344
Pain	30	6.5(2.5)	6.7(2.2)	0.634	6.7(2.2)	6.9(2.2)	0.405	0.777

^aT test of repeated samples; * T test of independent samples after intervention

Table 3. Effect of flower therapy after the intervention on primary and secondary outcomes between groups

Effect of flower therapy	Floral (n=30)	Placebo (n=30)	Total (n=60)	RR	p-value#
Primary outcomes, n (%)					
Cesarean delivery	7 (11.7)	18 (30)	25 (41.7)	2.34	0.004
Latent phase	11 (18.3)	19 (31.7)	30 (50)	1.72	0.035
UD ≤ 2 contractions (weak)	9 (15)	18 (30)	27 (45)	1.83	0.018
Oxytocin use	16 (26.7)	20 (33.3)	36 (60)	1.31	0.215
Traditional birth position (gynecological)	14 (40)	5 (14.3)	19 (54.3)	1.66	0.234
Perineal rupture	16 (45.7)	7 (20)	23 (65.7)	1.19	0.382
Secondary outcomes, mean (SD)					
Duration of labor (hours)	6.7 (2.1)	9.4 (4.6)	9.5 (4.6)		0.000
Pain (EVA)	6.7 (2.2)	6.9 (2.2)	6.8 (2.2)		0.777
Anxiety (STAI State)	33.7 (10.4)	36.0 (8.0)	30.4 (12.6)		0.344
Stress (cortisol, nmol/L)	1.39 (1.6)	2.38 (1.7)	1.89 (1.7)		0.029
NB weight (g)	3.283 (0.48)	3.262 (0.47)	3.273 (0.45)		0.861
GA birth (weeks)	39.3 (1.2)	39.6 (1.0)	39.4 (1.1)		0.439
Apgar at 1 minute	8.0 (1.2)	8.3 (1.2)	8.1 (1.2)		0.245
Apgar at 5 minutes	8.9 (0.6)	9.1 (0.6)	9.1 (0.6)		0.146

*Independent t test

risks in the placebo group were 1.72 and 1.83, respectively. The duration of labor in hours was shorter in the floral group, as well as the level of cortisol represented by stress. There were no differences in the effect of therapy for neonatal variables.

Discussion

The use of flower therapy in women admitted to labor helped the evolution of birth by acting in synergy with increased cervical dilation, uterine dynamics and reduced cortisol, reinforcing the initial hypothesis of our study. Delivery was faster in the floral group favored by the progression of clinical aspects and the absence of adverse maternal and neonatal parameters, suggesting that this therapy should be a component of humanization during childbirth.

Such positive findings may be related to the action of flower essences in promoting women's emotional wellbeing, emphasizing the feeling of courage, capacity and confidence in their own bodies. The restoring of psychic balance can be used to treat any clinical condition involving the pain-anxiety-stress triad.⁽⁸⁾ The similarity between groups in the parameters evaluated before the intervention made them comparable, suggesting that the positive effect found may be associated with the use of flower therapy.

The favorable progression of labor evidenced in this study may be related to a physiological improvement of parturient women in the reduction of stress assessed by means of the neuroendocrine cortisol hormone in the group that received flower therapy. More relaxed women tend to feel more self-confident and are more able to look for strategies such as breathing control and concentration when mastering pain during contractions.⁽²¹⁾

The effectiveness of flower therapy on emotional balance in some contexts is evidenced in some clinical studies.^(7,13) Nevertheless, anxious women, permeated by feelings of fear, tension and loss of control tend to experience more pain and a slow evolution of the progression of childbirth. In addition, stress and anxiety, usually present during labor, result in overload of the respiratory, circulatory, and metabolic systems, which may impact the fetus or newborn.⁽²²⁾

Other studies conducted with flower therapy have shown its effectiveness in reducing anxiety and stress in the group that underwent the intervention compared to the placebo, playing an important role in the psychological perspective of pain.^(23,24) A retrospective analysis with 384 clients who suffered from painful conditions revealed that the flower remedies promoted relaxation, relief from stress, anxiety and negative thoughts compared to the control group.⁽²⁵⁾

On the other hand, in this study, there were no differences in intra-group and inter-group analyzes

in reducing women's anxiety and pain during labor. Even so, the use of non-pharmacological methods for pain relief is relevant to obstetric care and should be encouraged along with the promotion of comfort and appropriate practices in birth.⁽¹⁴⁾

Cortisol, which is measured to assess the progression or suspension of the stress response, reduced significantly in the floral group, even with the evolution of labor. Stress is a biological mechanism characterized by immediate activation of the sympathetic nervous system and increased adrenaline secretion, followed by activation of the hypothalamic-pituitary-adrenal axis and consequent elevation of cortisol levels.⁽²⁶⁾

The measurement of cortisol levels in saliva is gaining more and more wide acceptance as a diagnostic method because these correspond only to the bioactive fraction of the hormone and can be evaluated under various cognitive conditions and in the presence of stress and anxiety.⁽²⁷⁾

Thus, flower therapy, as a process that facilitates the self-development of human beings, often generates the feeling of relaxation or release of excess dysfunctional energy with consequent reduction of stress.⁽⁶⁾ Inner peace and the ability to solve one's own problems make people the protagonists of their stories when using flower essences.⁽⁸⁾

The harmony of the individual personality will be better achieved using more familiar methods in the art of healing. To eliminate any flaw in nature, nothing better than products of nature itself that will act by causing the opposite virtue, which will eliminate the flaw.⁽¹⁴⁾

When evaluating the effect of flower therapy on the clinical aspects of the evolution of labor, the difference in cervical dilation and in the intensity and frequency of uterine contractions in the floral group was evident. In addition, the relative risk was greater for the latent phase of labor and weak uterine dynamics in the placebo group. These findings corroborate the results observed in another study on women's progressive tendency of feeling more confident during the evolution of labor, showing more courage in the face of contractions and confident in their ability to give birth after using flower therapy.⁽²⁸⁾

The first stage of labor, known as the period of cervical dilation, is usually the longest (latent phase) compared to the most effective phase (active phase), when in fact, uterine contractions are capable and sufficient to modify the cervix of uterus.⁽²²⁾

There is a debate among the obstetric community as to what would be the normal progression of the evolution of labor and the time of birth. The World Health Organization (WHO) defines a prolonged active phase when contractions are regularly painful for more than 12 hours after 6 cm of cervical dilation.⁽¹⁴⁾ Several studies have suggested that prolonged labor is associated with increased maternal and fetal morbidity and interventions such as instrumental delivery, analgesia, episiotomy and cesarean section.^(13,29)

It is supposed that the floral remedies used in this study acted directly on women's state of mind, leading them to an ideal state of relaxation to the point of facilitating the entire parturition process, encouraging them, motivating them and making childbirth faster. In the floral group, there was a reduction of 2.7 hours in the total evolution of labor. A slower dilation does not necessarily mean that labor must be speeded up. On the other hand, a faster evolution also favors the total duration of labor.

Other factors may be related to the time of birth in addition to the speed of dilation, such as the distention of smooth muscles, the pressure exerted by fetal presentation and the use of oxytocin. However, parturient women's emotional state and psychological balance significantly influence this process.⁽²²⁾

Neonatal data did not show significant differences after the intervention. There was no difference in mean Apgar scores at 1 and 5 minutes, which demonstrates that such conditions were not affected by the presence of the flower therapy used.

In this context, flower therapy in the obstetric setting can be another non-pharmacological, low-cost, non-invasive strategy for women during labor, as it favors a faster evolution by interfering with the progression of cervical dilation and uterine contractility, in addition to reducing stress in a natural and non-invasive way. Among other benefits, florals raise women's awareness levels, expanding their perception of themselves, of the events around them, of

how to integrate with their body and environment, configuring essential elements for the outcome of childbirth.⁽³⁰⁾

The effectiveness of childbirth depends on the relationships established throughout the birth process, where each stage needs to be experienced by the woman in a positive, encouraging way and stimulated by conduct based on humanization principles.⁽³¹⁾ The relative risk for cesarean delivery in this study was higher in the placebo group compared to the floral group, reinforcing the positive effect of the intervention on successful delivery by providing greater comfort and less need for interventions for women in labor. Note that the use of synthetic oxytocin was present in both groups.

The use of complementary and alternative measures should be encouraged, since they can rescue the physiological character of parturition.⁽²²⁾ In this context, nursing can play a fundamental role aimed at the development of practical-scientific care that considers the subjectivity and sensitivity of assistance in the obstetric scenario.⁽³²⁾

The results obtained by means of the objectives of this study may contribute to a better understanding of emotional, sensory, cognitive and behavioral aspects of childbirth, stimulating adherence and actions aimed at care and decision making centered on women's wellbeing, restoring their mood and emotional balance.

Conclusion

Flower therapy helped the progression of labor by positively influencing cervical dilation and uterine dynamics, in addition to reducing the total time of birth in hours. The search for emotional balance provided by this therapy can be another effective strategy used in obstetrics to rescue the physiology of normal childbirth. We emphasize that all women participating in the study had the companions of their choice throughout the evolution of labor, which may be a result bias, since the benefits of the companion's participation has been widely cited in the literature, configuring a study limitation. In addition, as the emphasis on self-healing and

self-awareness assessed after the use of therapy cannot be quantified, its assessment is subjective. The small number of studies on flower therapy found in the literature made it difficult to discuss the results obtained. However, neonatal effects have been minimally explored and further studies of appropriate methodological quality are needed to provide reliable evidence. We reinforce the need to implement alternative non-invasive, effective, low-cost practices with no adverse effects, such as flower therapy, given their wide availability and easy access to the population during the monitoring of labor. Even in a short period of use of flower therapy, 90 minutes after the intervention, there was a statistical difference in some parameters evaluated in the progression of labor and reduction of cortisol, suggesting its continued use may bring other long-term benefits. New studies should be conducted to guarantee better evidence and efficacy of therapy in the obstetric context.

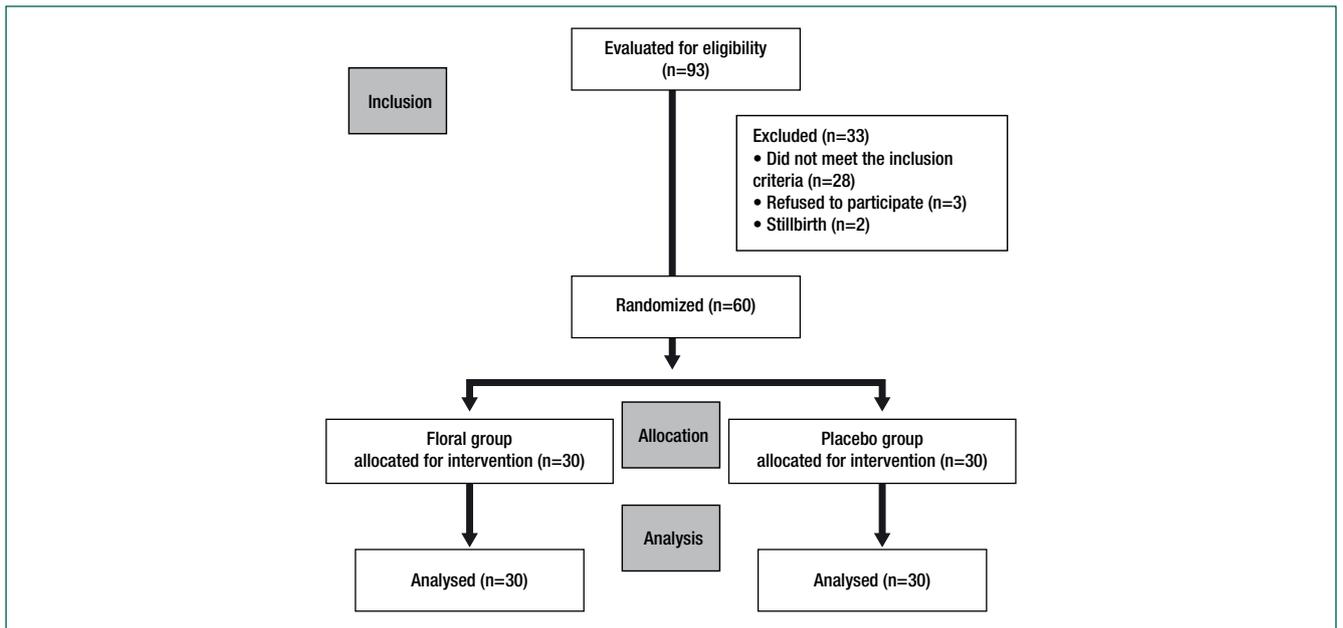
Collaborations

Soares RB participated in the conception and design, collection, analysis, interpretation of data and participated actively in the discussion of results; Cordeiro TR, Sbardelotto T participated in the interpretation of the data and in the approval of the final version of the manuscript. Tavares DR, Hagg FB participated in the relevant critical review of intellectual content; review and final approval of the version to be published and agreed upon all aspects of the manuscript in terms of veracity or integrity of information. Pitilin EB and Schirmer J guided and conducted the study, participating in the review and final approval of the version to be published, and agreed upon all aspects of the manuscript in terms of veracity or integrity of information.

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Anexo 1. Flowchart for selecting participants