



USE OF NON-PHARMACOLOGICAL PAIN RELIEF METHODS IN LABOR

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ABSTRACT

Objective: to analyze the practice of using non-pharmacological pain relief methods during labor. **Method:** a quantitative and descriptive cross-sectional study developed from December 2019 to September 2020 in a Maternal and Child Nursing Service from southern Brazil. A total of 560 medical charts were analyzed and data collection took place in the institutional database. The Kolmogorov-Smirnov test was used for normality of the variables and, for associations, the t test for independent samples, chi-square or Fischer's exact test. **Results:** It was found that 164 (29.3%) of the parturients resorted to at least one type of method, the most used being hydrotherapy with 137 (24.5%), change of position with 124 (22.1%) and breathing exercises with 121 (21.6%). There was a significant association ($p < 0.05$) between methods, type of delivery, pregnancy and parity. **Conclusion:** This study highlights the profile of parturients who benefit from these practices and exposes the low frequency of their use, showing a promising area for studies and continuing education activities.

DESCRIPTORS: Obstetrics; Humanized Delivery; Labor Pain; Nursing; Women's Health.

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INTRODUCTION

Good delivery and birth care practices enable a care model that considers the implementation of diverse scientific evidence, according to criteria of usefulness, efficacy and risk, as well as elimination of unnecessary interventions¹. Midwives are part of this obstetric model and are fundamental components, as a number of studies show an improvement in the quality of delivery care with the presence of these professionals, in addition to a reduced risk of interventions and a feeling of control of the childbirth experience by the women².

Non-pharmacological methods (NPhMs) for pain relief in labor are found in this study, and are strategies used during labor to better manage this sign. Among these methods we can mention relaxation techniques, hydrotherapy, massage, transcutaneous electrical stimulation and walking³.

Their use reduces pain and the stress and anxiety levels, in addition to having positive effects in reducing labor time. Some of the benefits for the neonates are as follows: respiratory distress reduction and increase in the Apgar scores, both at the first and fifth minutes⁴⁻⁵. Although non-pharmacological methods present benefits for women and newborns, in the professional practice there are many barriers to their implementation, such as lack of knowledge in parturients and professionals, in addition to lack of interest of managers and professionals⁶⁻⁷.

In view of this problem, it is necessary to know the application of these methods, aiming at promoting and increasing their use and, thus, proposing improvements in health practices. In this context, the objective of the study is to analyze the practice of using non-pharmacological pain relief methods during labor.

METHOD

This is a quantitative and descriptive cross-sectional study developed at the Maternal and Child Nursing Service of a university hospital from southern Brazil. The Obstetric Center, located on the twelfth floor, is a reference in the care of low- and high-risk pregnant women; the non-pharmacological methods are offered to the parturients according to the institutional protocol, and the type of method is determined according to the obstetric conditions and to evolution of labor. Such methods are applied by the Nursing and Medical teams of the Obstetric Center Unit.

The population consisted of women included in an institutional database, which contains diverse information on the use of non-pharmacological pain relief methods during labor. All the hospitalized patients were included in the institutional document of good practices in labor and birth care, regardless of the type of delivery performed. The WinPepi[®] program, version 11.65, was used for sample size calculation. Considering 95% confidence, 5% margin of error and 50% prevalence (as no information was found in the literature on this specific population), the sample size reached was 385 subjects.

The women included in the study were those who gave birth at the Obstetric Center of the aforementioned institution, assisted by the Unified Health System (Sistema Único de Saúde, SUS) and who had newborns with a gestational age equal to or greater than 37 weeks, according to the Capurro Method, excluding cases of fetal death, fetal malformation and twins. The study had the non-pharmacological pain relief methods as dependent variable, namely: humanized alternatives for pain management during labor, introduced in order to replace invasive, analgesic and anesthetic techniques⁶. Hydrotherapy, ball, stool,

walking, massage, change of position, aromatherapy, labor chair, breathing exercises and foot bath were considered for this study. The independent variables were the following: age, schooling, marital status, number of pregnancies, parity and type of delivery.

Data collection took place in two stages, namely: (1) from December 2019 to February 2020, data related to NPhMs were collected in an institutional database aimed at recording good obstetric practice actions; (2) in the AGHuse® electronic medical record, collection of the independent variables was carried out from June to September 2020. Such data were recorded in an instrument specifically elaborated for this study.

The results of the continuous variables were expressed through position (mean) and dispersion (standard deviation) measures and the results of the categorical variables, through frequency analyses. Normality of the quantitative variables was verified by means of the Kolmogorov-Smirnov statistical test. To verify the association of using non-pharmacological methods with age, schooling and marital status, the Chi-Square test was employed and, to verify the association between the use of non-pharmacological methods and the current type of delivery, number of pregnancies and parity, Fisher's exact test was resorted to. Age was compared with the use of non-pharmacological methods through the t test for independent samples. The tests' assumptions were respected in all the analyses, with $p < 0.05$ being considered significant.

The current study was submitted to the institution's Research Ethics Committee (Comitê de Ética em Pesquisa, CEP) under opinion No. 2,901,500, approved on June 6th, 2020. The Commitment for Use of Medical Record Data Form was filled in in submission to the CEP.

RESULTS

A total of 560 medical records of parturients who used the Maternal and Child Nursing service of the institution where this study was conducted during labor were analyzed. Of these, 164 (29.3%) resorted to non-pharmacological pain relief methods during labor, 17 (10.4%) used only one method and 147 (89%) employed two or more non-pharmacological methods.

Table 1 presents the profile of the parturients that used these methods. It is verified that the mean age was 25.86 years old ($SD \pm 6.20$), with predominance of the age group from 15 to 35, with 148 (90.2%) women. The most frequent schooling level was Complete High School with 62 (37.8%) and most of the parturients were single: 140 (85.4%). Regarding the obstetric data, 91 (55.5%) women had two or more pregnancies, 84 (51.2%) had not had previous deliveries and 144 (87.8%) had vaginal deliveries.

Table 1 – Profile of the parturients who used non-pharmacological pain relief methods during labor. Porto Alegre, RS, Brazil, 2020

Variables	n (%)
Age group	
15 years old	1 (0.6)
15-35 years old	148 (90.2)
Over 35 years old	15 (9.2)
Schooling	

No Schooling	1 (0.6)
Incomplete Elementary School	8 (4.8)
Complete Elementary School	9 (5.5)
Incomplete High School	57 (34.9)
Complete High School	62 (37.8)
Incomplete Higher Education	15 (9.1)
Complete Higher Education	12 (7.3)
Marital status	
Single	140 (85.4)
Married	19 (11.6)
Other	5 (3)
Type of delivery	
Vaginal	144 (87.8)
Caesarean section	20 (12.2)
Number of pregnancies	
1	73 (44.5)
2 or more	91 (55.5)
Parity (admission)	
0 (no previous deliveries)	84 (51.2)
≥1 previous deliveries	80 (48.8)

Source: The authors (2020).

Table 2 describes the non-pharmacological pain relief methods used during labor. The most frequent were hydrotherapy (137 [24.5%], change of position (124 [22.1%]) and breathing exercises (121 [21.6%]). Use of the stool, labor chair, aromatherapy and foot bath had a low frequency, with a percentage lower than 1%. The sum of the percentages in relation to the type of method totals more than 100% due to the performance of more than one type of NPhM during labor.

Table 2 – Use frequency of non-pharmacological pain relief methods during labor in a university hospital from southern Brazil.

Non-pharmacological methods**	n (%)
Hydrotherapy	137 (24.5)
Changed position	124 (22.1)
Breathing exercise	121 (21.6)

Walked	106 (18.9)
Massage	42 (7.5)
Ball	33 (5.9)
Stool	5 (0.9)
Labor chair	3 (0.5)
Aromatherapy	3 (0.5)
Foot bath	1 (0.2)

Source: The authors (2020).

**More than one answer option

Table 3 describes the association between using non-pharmacological pain relief methods and the parturients' profiles. No statistically significant difference was identified between their use and the parturients' age group ($p=0.26$). We obtained 148 (90.2%) women who used some method aged between 15 and 35 years old, whereas the percentage of those who did not use them in this age group was 338 (85.4%). The schooling level also did not influence the use of NPhMs ($p=0.55$); Complete and Incomplete High School presented values of 62 (37.8%) and 57 (34.9%), respectively, within the group of those who used non-pharmacological methods. Similar values were found among the parturients who did not resort to any of the methods. The percentages of single and married women who used or did not use NPhMs for pain relief were very similar ($p=0.43$) when compared to each other. There was 85.4% (140) of use in single women, whereas non-use of the methods was observed in 320 (80.7%) of the cases from the same group (Table 3).

Considering the significant findings presented in Table 3, a lower mean age was verified in users of non-pharmacological methods (25.86 years old), when compared to those who did not use non-pharmacological methods (27.46 years old), obtaining $p=0.01$. The highest percentage of parturients who resorted to non-pharmacological methods corresponded to cases of vaginal delivery, with 144 (87.8%) ($p=0.02$). In addition, it was also observed that, in primigravidas, the use of non-pharmacological methods for pain relief is lower, with 73 (44.5%) ($p=0.02$).

In Table 3, we can also see that there was a statistically significant difference in relation to the use of non-pharmacological methods with the number of pregnancies ($p=0.02$), with 91 (55.5%) use occurrences in not primigravidas, while the number of not primigravidas who did not undergo any method was 270 (68.2%). The use percentage of non-pharmacological methods was higher in nulliparous women, with 84 (51.2%), when compared to those who did not use non-pharmacological methods, with 150 (37.9%), in the same group ($p=0.03$).

Table 3 – Association between use of non-pharmacological pain relief methods and the patients' profiles in a university hospital from southern Brazil.

Use of non-pharmacological methods			
Variables	No n (%)	Yes n (%)	p-value
	396	164	

Age group (a)			0.26
15 years old	2 (0.5)	1 (0.6)	
15-35 years old	338 (85.4)	148 (90.2)	
Over 35 years old	56 (14.1)	15 (9.2)	
Age	27.46 ± 6.56	25.86 ± 6.20	0.01*
Schooling (a)			0.55
No Schooling	1 (0.3)	1 (0.6)	
Incomplete Elementary School	19 (4.8)	8 (4.8)	
Complete Elementary School	37 (9.3)	9 (5.5)	
Incomplete High School	141 (35.6)	57 (34.9)	
Complete High School	153 (38.6)	62 (37.8)	
Incomplete Higher Education	25 (6.3)	15 (9.1)	
Complete Higher Education	20 (5.1)	12 (7.3)	
Marital status (a)			0.43
Single	320 (80.7)	140 (85.4)	
Married	53 (13.4)	19 (11.6)	
Other	23 (5.9)	5 (3)	
Type of the current delivery: (b)			0.02*
Vaginal	263 (66.4)	144 (87.8)	
Caesarean section	133 (33.6)	20 (12.2)	
Number of pregnancies: (b)			0.02*
Primigravida	126 (31.8)	73 (44.5)	
Not primigravida	270 (68.2)	91 (55.5)	
Parity: (b)			0.03
Nulliparous	150 (37.9)	84 (51.2)	
Primiparous	246 (62.1)	80 (48.8)	

* Significant at the 0.05 level – (a) Chi-Square Test (b) Fisher's Exact Test

Source: The authors (2020).

Table 4 describes the non-pharmacological methods used in association by the parturients. Among the combinations we can mention hydrotherapy, walking, change of position and breathing exercises, resorted to by 47 (32%) of the women. Ten (6.8%) used massage, along with these four methods, and seven (4.8%) resorted to hydrotherapy, ball, change of position and breathing exercises.

Table 4 - Combinations of non-pharmacological methods used by the parturients in the Obstetric Center of the aforementioned institution, treated through the Unified Health System (SUS)

Methods	n (%) = 147
Hydrotherapy, Walking, Change of position, Breathing exercises	47 (32)
Hydrotherapy, Walking, Massage, Change of position, Breathing exercises	10 (6.8)
Hydrotherapy, Ball, Change of position, Breathing exercises	7 (4.8)
Hydrotherapy, Walking	6 (4.1)
Hydrotherapy, Breathing exercises	5 (3.4)
Hydrotherapy, Massage, Change of position, Breathing exercises	5 (3.4)
Hydrotherapy, Ball, Walking, Change of position, Breathing exercises	5 (3.4)
Hydrotherapy, Ball, Massage, Change of position, Breathing exercises	5 (3.4)
Walking, Change of position, Breathing exercises	4 (2.7)
Hydrotherapy, Walking, Breathing exercises	4 (2.7)
Hydrotherapy, Change of position, Breathing exercises	4 (2.7)
Walking, Massage, Change of position, Breathing exercises	4 (2.7)
Hydrotherapy, Ball, Walking, Massage, Change of position, Breathing exercises	4 (2.7)
Stool	2 (1.4)
Massage	2 (1.4)
Change of position, Breathing exercises	2 (1.4)
Massage, Change of position, Breathing exercises	2 (1.4)
Walking, Change of position, Breathing exercises	2 (1.4)
Walking, Change of position, Breathing exercises	2 (1.4)
Hydrotherapy, Labor chair, Walking, Change of position, Breathing exercises	2 (1.4)
*Other combinations	23 (15.6)

*Combinations appearing only once

DISCUSSION

The results of this study allowed perceiving the use frequency of non-pharmacological pain relief methods during labor. It was verified that 29.3% of the parturients used non-pharmacological methods; this finding is lower when compared to other studies that show use of non-pharmacological methods by 74.0% and 100.0% of the participating parturients⁸⁻⁹. A factor that can be related to this result is the women's lack of knowledge. A research study carried out in Goiás concluded that parturients have little knowledge about non-pharmacological methods and that the focus of this deficit is related to prenatal care⁶. In this scenario, primary health care stands out, the place where prenatal care takes place and which, therefore, plays an essential role in the monitoring of pregnant women, as it creates a bond between the pregnant women and the delivery loci, defines delivery plans, and shares diverse information¹, which can contribute to knowledge about pain relief.

Regarding the sociodemographic profile of the parturients who used non-pharmacological methods, young, single women with Complete High School were

evidenced. In relation to the number of pregnancies and to parity, most of the parturients are primigravidas and nulliparous, and their deliveries were vaginal. These results are similar to other studies, in which the participants had a mean age of 25 years old, 41.8% had Complete High School, 8.9% were nulliparous and 8.9% of the deliveries were cesarean sections^{8,10}.

Regarding use of the non-pharmacological methods, various benefits for women during labor can be highlighted. They assist in the care for the parturients' needs, promoting comfort, safety and reduction of anxiety¹¹. Therefore, for a better management of labor and better perinatal results, it is important that non-pharmacological pain relief methods are used in parturients from the moment of their admission¹². In this study, it was observed that one of the most used methods was hydrotherapy, followed by change of position, thus corroborating another research in which hydrotherapy appears as the most used method, by 81.6% of women¹¹.

The benefits of NPhMs are noted, which, together with practicality, can be contributing factors for greater use frequency. In relation to hydrotherapy, in addition to easy access to the shower by the parturients, this is an economical method that allows for the companion's active participation in labor. Its use is responsible for reducing the perception of pain, increasing the feeling of well-being and generating greater satisfaction due to freedom of movement; in addition, it was found that, with its use, fewer episiotomies were performed and there was lesser use of analgesics¹¹⁻¹³.

In turn, change of position is related to the woman's freedom of movement and autonomy in relation to her delivery¹⁴. The method in question assists in labor progression, helps them to face their pain and reduces the risk of episiotomy. Frequent changes of position also trigger movement of the pelvic bones, which helps the fetus find a better fit¹⁵⁻¹⁶.

As for the associations, it is known that the more schooled a woman is, the more favorable are the socioeconomic conditions, and schooling has a direct connection with this¹⁷. On the other hand, in the current study there was no relationship between use of non-pharmacological methods and age group, marital status or schooling. This data is corroborated by a study carried out in São Paulo, which evaluated the knowledge of puerperal women about non-pharmacological methods and showed that, regardless of age, schooling or marital status, the parturients did not have greater or lesser knowledge about the methods¹⁸.

When analyzing the mean age and the use of non-pharmacological methods, it was analyzed that women who used non-pharmacological methods had a lower mean age. This result is in agreement with another two studies, in which the mean age of the women who used NPhMs was 25 years old, similar to the study data^{8,19}.

Based on the humanization perspective, it becomes important to encourage that deliveries are conducted as a physiological process²⁰. It was noticed that most of the women who resorted to non-pharmacological methods had vaginal deliveries. The World Health Organization aims at delivery care with the minimum of interventions²¹, that is, in the most physiological way possible; and the Ministry of Health considers that, in normal deliveries, only evidence-based interventions should be conducted²². Non-pharmacological methods are among the interventions with scientific evidence and that should be encouraged among parturients in view of their contribution to the evolution of labor, pain reduction, relaxation and anxiety reduction²³.

In this research, it was found that the parturients who had not given birth before resorted to non-pharmacological methods to relieve pain during labor more often, which is in line with another 2016 study carried out in Salvador, which identified the use of more non-pharmacological methods by primiparous than by multiparous women⁹. In addition, the authors emphasize that the women who had already given birth have more elongated muscles, delaying pain reception and conversion, unlike nulliparous women who use more

non-pharmacological methods precisely because they have more pain²⁴⁻²⁵.

A number of studies have verified that, when performing change of position, nulliparous women present a reduced risk of obstetric anal sphincter injury and incidence of episiotomy. This happens because vena cava decompression occurs, improving fetal oxygenation and reducing pain; in addition, it increases capacity of the pelvis, improving the fetal-pelvic compatibility limit^{14,26}.

Currently, the technocratic model is still prevalent in obstetric centers, which focuses on delivery care by medical professionals²⁷. This data is worrying because, since academic training, the model encourages the adoption of interventionist procedures and instrumentalized deliveries that are disproportionate to the children's needs²⁸.

A literature review that sought diverse evidence of interventions capable of maintaining integrity of the region identified that the parturient's change of position is associated with a reduction in the instrumentalization of delivery, episiotomy and perineal trauma, and should therefore be a practice encouraged and implemented by professionals to reduce the number of obstetric complications²⁹. As both episiotomy and perineal lacerations are associated with nulliparity and both injuries are related to a medicalized structure of the institution³⁰, the search for a humanized care model for parturients and adherence to good obstetric practices becomes essential in order to prevent harms.

Obstetric nurses play an important role in the care provided to parturients, as they develop care aimed at the women's needs during labor and birth, using non-invasive technologies, in order to provide a minimum of unnecessary interventions²¹. A research study found that most of the guidelines about non-pharmacological methods were provided by nurses¹⁸. This shows that, with their contribution, adherence to clearly beneficial practices in the care of women and newborns occurs in a humanized and qualified way⁹.

Regarding the use of non-pharmacological methods and the number of pregnancies, a study showed that 50.4% of the women who used NPhMs were primigravidas³⁰. This association is in line with our research, as the parturients who most used non-pharmacological methods were those who had more than one pregnancy.

Among the non-pharmacological methods most frequently used in association are hydrotherapy, walking, change of position and breathing exercises, used by 32% and 6.8% of women, the latter also including massage. These values show the potential of using the methods in a combined way, as a study concluded that performing them sequentially (Swiss ball exercises, lumbosacral massage and hot bath) by parturients resulted in a significant reduction in pain intensity, as well as in reduction and delay in the use of analgesics, acceleration of the expulsion period, improvement in neonatal well-being and greater maternal satisfaction⁵.

In addition to that, another study observed that using the ball combined with a warm bath minimizes the parturient's pain and stress and also assists in evolution of labor, favoring the mechanism of the pelvic floor muscles. It is also considered that the association of two to three combined strategies, mainly hydrotherapy, associated with the ball, walking and stools, offers comfort and assists in the evolution of normal delivery in a physiological and humanized way²⁰.

The following stands out among the study limitations: the scarcity of research studies relating the use of non-pharmacological methods to the sociodemographic profile. It is necessary that more in-depth analyses be performed, given their importance in future studies.

CONCLUSION

Although non-pharmacological methods for pain relief during labor have numerous benefits for parturients, the current study found low use in the studied institution, according to the medical records. The profile of the parturients who used non-pharmacological methods corresponded to young women with a mean age of 25 years old, single, and with Complete High School. Hydrotherapy and change of position were among the most frequently used methods. In addition, mean age, current pregnancy and parity were directly related to the frequency of non-pharmacological methods, that is, parturients who are not primigravidas, nulliparous women and those with a lower mean age use non-pharmacological pain relief methods more often during labor.

Thus, it is important that managers and health professionals understand which factors are related to the adoption of non-pharmacological methods for pain relief in childbirth. In addition, it is necessary that nurses seek autonomy in their workplaces. They are of major importance in delivery and birth care, as they encourage the use of evidence-based practices, performing fewer unnecessary interventions. Therefore, this study directly contributes to Nursing care, as it highlights the profile of parturients who benefit from these practices and exposes the low frequency of their use, showing a promising area for new studies and continuing education activities. From this, it is possible to devise personalized strategies that make it possible to implement these activities as part of comprehensive and humanized care for parturients.

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Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work - Klein BE, Gouveia HG; Drafting the work or revising it critically for important intellectual content - Klein BE, Gouveia HG; Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved - Klein BE, Gouveia HG. All authors approved the final version of the text.

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