

## EFFECTIVENESS OF A KINESIOTHERAPY PROTOCOL FOR LUMBOPELVIC PAIN IN PREGNANT WOMEN FROM THE FIRST TRIMESTER

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**Abstract: Introduction:** Globally, a complaint always reported by society is low back pain, which is present at some point in life; For women, this discomfort or pain associated with the pelvis can happen at the beginning of the gestational period, where the body will undergo sudden changes in a short space of time. **Objectives:** To analyze the effectiveness of a kinesiotherapy protocol for lumbopelvic pain in women from the first trimester of pregnancy. **Methods:** This research was an uncontrolled clinical trial with a quantitative approach. Participants were pregnant women over 18 years of age, with a gestational age greater than 10 weeks. The protocol included an initial assessment where the *Pelvic Girdle* questionnaire was administered through an interview, after which ten sessions began, being carried out twice a week with an average duration of five weeks. After this, a reassessment was carried out using the questionnaire, the sessions were held on the premises of the Physiotherapy Clinic of `` Universidade Filadélfia de Londrina``.

– UniFil. **Results:** Initially the sample included the participation of 49 pregnant women, however, due to exclusion and withdrawal reasons, the final sample consisted of 30 participants, of which the main complaints of pain were: pain at night (88.8%), doing things more slowly ( 81.7%), interrupted sleep (48.1%) and pain in the morning (44.4%). **Conclusion:** The protocol applied to the 27 pregnant women participants showed a satisfactory result in both aspects of symptoms and difficulties in carrying out actions. Given the numbers presented, it was found that the protocol presented a significant difference in several activities, especially in the symptoms of lumbopelvic pain, showing that the application of kinesiotherapy throughout the gestational period brings benefits. Thus, there was a need for a physiotherapist during the gestational period, helping during pregnancy

and the postpartum period.

**Keywords:** Kinesiotherapy. Gestation. Physiotherapy. Backache. Obstetrics.

## INTRODUCTION

The human being is in constant evolution and is therefore always moving, for this reason sometimes there is abuse or overload of the body with longer working hours, poor posture, day-to-day tensions, among others, causing discomfort or pain in the back. lumbar spine region. According to Nascimento and Costa<sup>1</sup>, a good part of the world's population will have low back pain, a portion of which are women, who normally continue their routines, whether in their professional life and/or in their domestic life; and during pregnancy, due to changes in the body, they may report pain in the lower back that progresses as the pregnancy progresses.

However, an assessment of pregnant women is necessary so that they can understand what their limitations are and how this affects their day-to-day life and thus, through exercise, promote a better quality of life. Madeira et al<sup>2</sup> describes that:

Gestational low back pain is a very common complaint faced by women during pregnancy, although it is considered by many health professionals as a discomfort inherent to the gestational period that does not require preventive or relief measures, as it would disappear spontaneously after birth.

As it is a common complaint presented by pregnant women, lumbopelvic pain is often not given due importance, as this condition is generated by several changes related to the gestational period. Silva<sup>3</sup> discusses some changes that occur in a woman's body during pregnancy and that can lead to pain in the lumbar spine region; as the growth of the fetus inside the uterus, providing an increase in weight, mainly in the abdominal region, changing the center of gravity in front of the

body, generating greater use of the posterior trunk muscles to support the increased weight.

This work seeks to analyze the effectiveness of a kinesiotherapy exercise protocol started from the first trimester of pregnancy, aiming to strengthen the muscles of the lumbar spine so that these women can continue with their daily activities without feeling so much discomfort, reducing pain in the region of the lumbar spine. Toledo<sup>4</sup> reports the importance of physical exercise during pregnancy; “in addition to exercises helping to reduce painful symptoms, they can also contribute positively to making pregnant women feel more energetic”, thus realizing the importance of monitoring professionals during this period.

The importance of carrying out studies and protocols from the first trimester of pregnancy to bring greater well-being to these women is noted because, according to Toledo<sup>4</sup>, pain and discomfort end up increasing throughout pregnancy and the lack of physical exercise performed by these pregnant women ends up worsening these conditions.

## METHODOLOGY

Study characterized as an uncontrolled clinical trial with a quantitative approach, which is part of the research project entitled “Efficacy of Kinesiotherapy in low back pain, pelvic floor strength and quality of life in women from the first trimester of pregnancy” carried out by the Group research project on Pelvic Floor Dysfunctions (GPEDAP). The interventions and data collection took place at the Physiotherapy Clinic of “Centro Universitário Filadélfia de Londrina – UniFil”.

Sampling was of the intentional non-probabilistic type, with data collection carried out on the institution’s premises on previously scheduled days. The sample consisted of women over 18 years of age, from the first trimester of pregnancy. The

following were excluded from the study: high-risk pregnancies, number of absences greater than three and being unable to carry out the assessment and/or intervention.

The data collection form consisted of questions on personal data, personal history, lifestyle habits, gynecological-obstetric history and the *Pelvic Girdle Questionnaire (PGQ)* to assess lumbopelvic pain.

The PGQ-Brazilian version is a questionnaire that assesses the functionality and limitations of pregnant women who have pain in the pelvic region. This questionnaire consists of 25 items related to pain in the pelvic girdle and difficulty in performing activities of daily living, with 20 questions referring to activities/participation and body functions and five questions referring to symptoms. The questions are scored according to a scale of 0 to 3 (0=no pain, 1=little pain, 2=some pain, 3=a lot of pain), with higher values indicating a greater degree of disability.

To obtain a total score of 0 to 75 points, the points of the 25 questions must be added and the total converted into a percentage that varies from 0% (no impairment) to 100% (wide range of impairment). The subscales are scored in the same way: the activity subscale is scored from 0 to 60 points and the symptom subscale from 0 to 15 points.

The value of the subscales is also converted into a percentage, as described above for the total score. The article proposed by Fagundes and Cabral<sup>5</sup> was taken as a basis for calculating the questionnaire. The PGQ - Brazil, through studies carried out, proved to be well adapted to the reality of the Brazilian population, including the Delphi study was used as a tool to further complement the reliability and validation of these processes<sup>6</sup>.

To recruit participants, this study included advertising on social media (Instagram, Facebook, WhatsApp) and distribution of posters at health centers. After this, these

participants were selected, being pregnant women over 18 years old, with 10 weeks or more of pregnancy, who could participate in the protocol twice a week, being carried out at the UniFil Physiotherapy Clinic.

During a period of 14 months of data collection, evaluations of pregnant women took place and after the evaluation, 10 exercise sessions were carried out based on strengthening, stretching of the upper limbs, lower limbs, trunk, strengthening of the pelvic floor and pelvic mobility. The research was submitted and approved by the UniFil Human Research Ethics Committee (CAAE: 29511420.00000.5217), with a consent form being given to the pregnant women, which was signed by them after reading.

## DATA ANALYSIS

The collected data were tabulated in the statistical program Epi Info version 7.2.0.1 for Windows and were analyzed in the statistical program *Statistical Package for Social Science for Windows* (SPSS) version 21. The data were presented in absolute and relative frequencies. To analyze the effectiveness of the protocol in low back pain, the Kolmogorov-Smirnov normality test and the paired t test were performed.

## RESULTS

Initially the protocol had 49 participants recruited, however due to exclusion and withdrawal criteria the final sample consisted of 30 pregnant women. The average age of these women was 29.30 years (SD± 4.822), ranging from 20 to 40 years of age. The majority of participants were married (70%), multipregnancy (60%) and in the second trimester of pregnancy (83.3%) (Table 1).

Regarding lifestyle habits, 93.3% did not consume alcoholic beverages, 100% did not use cigarettes and 30% performed physical activities. Regarding sexual activity during

pregnancy, 86.7% of pregnant women responded that they had sexual intercourse with their partners. Regarding comorbidities, urine infection was the most reported (34.5%), followed by arterial hypertension (11.1%) (Table 1).

Variables	N	%
<b>Gestational trimester</b>		
1st quarter	5	16,7
2nd quarter	25	83,3
<b>Marital status</b>		
Married	21	70,0
Single	9	30,0
<b>Consumption of alcoholic beverages</b>		
Yes	2	6,7
No	28	93,3
<b>Smoke</b>		
Yes	0	0,0
No	30	100,0
<b>Physical activity</b>		
Yes	9	30,0
No	21	70,0
<b>Number of pregnancies</b>		
First pregnancy	12	40,0
Multipregnancy	18	60,0
<b>Type of birth</b>		
Normal	6	20,0
Cesarean	11	36,7
<b>Abortion</b>		
Yes	4	13,3
No	26	86,7
<b>Active sexual intercourse</b>		
Yes	26	86,7
No	4	13,3
<b>Surgery</b>		
Yes	19	63,3
No	11	36,7
<b>Comorbidities</b>		
HAS*	1	4,0
Urine infection	10	34,5
Heart disease	3	10,0
Lung disease	1	3,4
Hypercholesterolemia	1	3,4
Diabetes	1	3,4

Table 1 – Characterization of the sample according to sociodemographic variables, health and obstetric conditions. London 2023.

\* SAH: systemic arterial hypertension

Regarding difficulties in carrying out activities due to pain, there was an improvement in the reporting of pain intensity in activities assessed by the PGQ, and in the “little” variable the ones that stood out the most were: doing housework, bending over, walking for more 60 minutes, get up/sit down, have a normal sex life, run, stand for less than 10 minutes and sit for less than 10 minutes.

However, in the “some” variable, there are no changes in the percentages of activities: doing housework, bending over, standing for more than 60 minutes, carrying out sporting activities and getting dressed. There was improvement in this same variable in the following activities: turning over in bed, walking for more than 60 minutes, sitting for more than 60 minutes, carrying heavy objects, lying down, running, standing for less than 10 minutes, pushing a stroller, push something with your foot and sit for less than 10 minutes.

In the variable “a lot” after completing the protocol, there was an improvement in the report of pain in activities: doing housework, bending over, climbing stairs, having sex, sitting for more than 60 minutes, carrying heavy objects, standing for more than 60 minutes, lying down, carrying out sports activities, running, carrying light objects and pushing something with the foot (Table 2).

Regarding pain symptoms (Table 3), there was an improvement in pain complaints in the variable “a lot” in the items of doing things more slowly, pain at night and interrupted sleep. In the “some” variable, there was an improvement in reports of pain in the morning, pain at night and legs failing. And in the “little” variable, doing things more slowly, pain in the morning and interrupted sleep were the symptoms found with pain improvement.

Regarding the PGQ Score, an improvement was observed in all score scores, with a decrease in the average of the Activities Score,

Symptoms Score and Total Score, which there was a significant difference, as seen in Table 4.

Variables	AV	REAV	p-value
	Average (SD)	Average (SD)	
<b>Total Score</b>	20,81 (±11,00)	16,04 (±9,64)	0,008*
<b>Activities Score</b>	15,44 (±8,93)	12,41 (±7,56)	0,049*
<b>Symptoms Score</b>	5,37 (±3,41)	3,63 (±2,67)	0,002*

Table 4 - Distribution of the PGQ score – Brazil according to activities, symptoms and total score. London, 2023.

\*p<0,05: significant

## DISCUSSÃO DISCUSSION

The gestational period is accompanied by several changes in the pregnant woman’s body and this can lead to lumbopelvic pain, which is why a protocol based on kinesiotherapy procedures was designed to improve this condition that ends up causing discomfort in the daily lives of pregnant women.

In the question addressed about the practice of physical activity, 70.0% of pregnant women responded that they do not perform it, thus constituting a sedentary lifestyle. According to a study carried out by Souza<sup>7</sup>, pregnant women who were sedentary were 30% more likely (P=0.001) to have intense pain, when compared to active women, thus physical exercise brings during the gestational period an improvement not only metabolically but also in quality of life. Of the participants who practiced physical activities in the present study, 18.5% reported walking; This finding agrees with Nascimento<sup>8</sup>, who found that walking was the most reported activity during the three trimesters, with greater frequency in the first trimester (82.2%), which can be justified by being a less complex and more accessible activity.

Regarding how much pain they felt while carrying out domestic activities, it was

Variables	Few				Some				Many			
	AV		RV		AV		RV		AV		RV	
	N	%	N	%	N	%	N	%	N	%	N	%
The person does housework	11	36,7	8	26,7	13	43,3	13	43,3	3	10,0	-	-
The person turns over in bed	11	36,7	13	43,3	9	30,0	2	13,3	2	6,7	2	6,7
The person bows down	11	36,7	9	30,0	6	20,0	6	20,0	3	10,0	1	3,3
The person climbs stairs	10	33,3	11	36,7	4	13,3	8	26,7	2	6,7	1	3,3
The person walks for more than 60 minutes	9	30,0	8	26,7	7	23,3	6	20,0	6	20,0	7	23,3
The person gets up/Sit down	9	30,0	5	16,7	5	16,7	8	26,7	1	3,3	1	3,3
The person has a normal sex life	8	26,7	4	13,3	2	6,7	7	23,3	1	3,3	-	-
The person sits for more than 60 minutes	7	23,3	12	40,0	9	30,0	8	26,7	7	23,3	2	6,7
The person carries heavy objects	6	20,0	14	46,7	8	26,7	7	23,3	5	16,7	3	10,0
The person stands for more than 60 minutes	5	16,7	8	26,7	8	26,7	8	26,7	10	33,3	8	26,7
The person lies down	5	16,7	9	30,0	6	20,0	3	10,0	1	3,3	-	-
The person carries out sporting activities	4	13,3	5	16,7	4	13,3	4	13,3	2	6,7	-	-
The person runs	3	10,0	2	6,7	3	10,0	1	3,3	3	10,0	2	6,7
The person dresses up	3	10,0	5	16,7	3	10,0	3	10,0	-	-	1	3,3
The person stands for less than 10 minutes	3	10,0	2	6,7	4	13,3	1	3,3	-	-	1	3,3
The person walks for less than 10 minutes	3	10,0	2	6,7	1	3,3	3	10,0	-	-	-	-
The person pushes cart	3	10,0	4	13,3	3	10,0	1	3,3	-	-	-	-
The person pushes something with your foot	3	10,0	6	20,0	1	3,3	-	-	1	3,3	-	-
The person sits for less than 10 minutes	2	6,7	-	-	1	3,3	-	-	-	-	-	-
The person carries light objects	1	3,3	1	3,3	-	-	-	-	2	6,7	-	-

Table 2 - Distribution of the sample according to difficulties in carrying out activities due to pain. London, 2023.

Variables	Few				Some				Many			
	AV		RV		AV		RV		AV		RV	
	N	%	N	%	N	%	N	%	N	%	N	%
The person does things more slowly	13	43,3	11	36,7	5	16,7	5	16,7	7	23,3	5	16,7
Pain in the morning	9	30,0	8	26,7	5	16,7	1	3,3	1	3,3	2	6,7
Pain at night	7	23,3	12	40,0	14	46,7	11	36,7	6	20,0	1	3,3
Interrupted sleep	5	16,7	4	13,3	4	13,3	6	20,0	6	20,0	1	3,3
Legs Fail	4	13,3	4	13,3	3	10,0	1	3,3	-	-	-	-

Table 3 - Distribution of samples according to pain symptoms. London, 2023.

observed that 55.1% of pregnant women reported pain of some intensity when carrying out this activity. This finding agrees with a study carried out by Paula et al<sup>9</sup>, which found that lumbopelvic pain was responsible for preventing activities of daily living in 50% of pregnant women. We thus perceive a correlation with the studies since domestic activities can be considered as activities of daily living, being performed frequently by pregnant women, the authors Jonas, Castro and Santos<sup>10</sup> describe that through changes in the center of gravity, changes in the spine and in the alignment of the feet, pain is likely to occur during this period.

In a study carried out by Barros et al<sup>11</sup>, the biggest limitations reported by pregnant women were: sitting, standing and walking for more than 60 minutes, data similar to that found in the present study, which the biggest limitations mentioned were walking for more than 60 minutes, sitting for more than 60 minutes and standing for more than 60 minutes. Analyzing the complaints most reported by pregnant women, this protocol showed a significant result in improving pain in activities reported by pregnant women.

In the present research, a 6.6% decrease was observed in the perception of “doing things more slowly” due to pain, thus showing a reduction in pain complaints during routine activities, including work activities as well. Lumbopelvic pain interferes with the quality of life of pregnant women, and thus, the performance of daily activities, including work activities. According to Stafne et al<sup>12</sup>, exercising during pregnancy can reduce pregnant women’s absence from work due to pain.

The effectiveness of the exercise protocol in the present study is linked to the improvement of functionality and quality of life, highlighting the importance of exercise for pregnant women during the gestational period. The

application of kinesiotherapy with the aim of improving lumbopelvic pain presented by pregnant women proved to be effective, as also found by Keskin et al<sup>13</sup>, which reduced the reports of pain in women who underwent pelvic mobilization exercises by 95%. and postural exercises, stretching the muscles of the lower limbs and isometric abdominal exercises for three weeks.

The period in which pregnant women had the greatest complaints of lumbopelvic pain was at night, where 83.6% reported some intensity of pain. Gomes et al<sup>14</sup> show that the prevalence of low back pain is more frequently present in the afternoon/evening, with 38.09% of pregnant women reporting pain. It is observed that the report of low back pain being more present in the late afternoon/evening is related to the overload of the stabilizing muscles of the lumbar spine generated by gestational weight and, thus, the change in the center of gravity.

The quality of sleep has a strong connection with quality of life. In relation to lumbopelvic pain, it was asked whether sleep was interrupted by pain, and 30.6% of pregnant women responded that it happened with some frequency. Sousa et al<sup>15</sup> state that when evaluating the quality of sleep of a group of pregnant women with low back pain and another who did not, the group with low back pain showed worse sleep quality compared to those without pain, presenting a statistically significant difference ( $P = 0.021$ ). The present study showed that after applying the exercises in the variable “a lot” there was an improvement of 16.7% in relation to the interruption of sleep due to pain, showing that through exercises and the improvement of lumbopelvic pain we can intervene to improve the quality of sleep.

Through the results presented, the role of the physiotherapist is highlighted, and according to Lima, Costa, Duarte<sup>16</sup> they

highlight that “The role of the physiotherapist in treating changes caused during pregnancy is undeniable”, a physical exercise program during pregnancy can bring benefits for women.

## CONCLUSION

Due to the facts presented and the PGQ questionnaire applied, we found the occurrence of pain and difficulties in carrying out certain activities during the gestational period, these factors may be related to postural and biomechanical changes combined with lifestyle habits. Through the study, it was found that many of the pregnant women participating in the protocol reported pain during the activities listed in the questionnaire, noting that these activities are often repeated during the daily lives of these women, and may be present in domestic, work, social and work activities. leisure.

Given the numbers presented, it was found that the protocol presented a significant difference in several activities, especially in the symptoms of lumbopelvic pain, showing that the application of kinesiotherapy throughout the gestational period brings benefits. Through kinesiotherapy exercises of strengthening,

stretching, mobility and breathing training started from the first trimester of pregnancy, a reduction in pain complaints was achieved and consequently an improvement in quality of life.

However, more studies on the subject need to be carried out, helping to choose the best approach to treatment and consequently reducing the complaints frequently reported by pregnant women. Another limitation would be the number of participants, in this protocol 32.5% of the sample were excluded from the study, with a greater number of pregnant women, intervention groups with different approaches could be carried out, also verifying the effectiveness between the groups.

Based on the above and the positive results, we emphasize the importance of physiotherapy during pregnancy with the aim of minimizing the changes resulting from this period, as well as preparing this woman for childbirth and the postpartum period. For this, it is necessary that more pregnant women have access to professional physiotherapists and, armed with information, have a more peaceful pregnancy and go to childbirth and postpartum without complications.

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