

Pregnancy-related low back pain – the benefits and results of rehabilitation medicine techniques

Iulia Filipescu¹,
Dragoș
Tudorache^{2,3},
Radu
Vlădăreanu^{2,3}

1. Department of Physical
Medicine and Rehabilitation,
"Elias" Emergency
University Hospital,
Bucharest, Romania

2. Department of Obstetrics
and Gynecology,
"Elias" University
Emergency Hospital,
Bucharest, Romania

3. Department of Obstetrics
and Gynecology,
"Carol Davila" University
of Medicine and Pharmacy,
Bucharest, Romania

Corresponding author:
Iulia Filipescu
E-mail: iul120a@yahoo.com

Abstract

Pregnancy-related low back pain is one of the most common musculoskeletal complaints among pregnant women, rising to 90% of their total, with significant effects on the quality of life and the ability to perform daily tasks. We performed an 18-month study on 353 pregnant women with low back pain at the "Elias" University Emergency Hospital, Bucharest, Romania. During our study, we identified the most frequent risks factors for developing low back pain during pregnancy, as well as the benefits of performing rehabilitation techniques and physiotherapy during the latter stages of pregnancy. Rehabilitation techniques and physiotherapy are still not enough explored in obstetrics, as they can prove to be an important asset in boosting pregnant women's quality of life, as well as in preparing them for delivery.

Keywords: low back pain, rehabilitation, pregnancy

Submission date:
14.05.2024
Acceptance date:
21.05.2024

Rezumat

Dorsalgia în sarcină este una din cele mai frecvente afecțiuni musculoscheletale în rândul gravidelor, putând afecta până la 90% din totalul acestora, cu efecte majore asupra calității vieții și a posibilității de a efectua activitățile zilnice. Într-un studiu retrospectiv, desfășurat în cadrul Spitalului Universitar de Urgență „Elias”, București, România, pe o perioadă de 18 luni, am evaluat 353 de gravide ce acuzau lombalgie documentată clinic. În cadrul studiului, au fost identificați o serie de factori de risc pentru apariția dorsalgiei, alături de efectele benefice ale tehnicilor de recuperare și reabilitare medicală. Tehnicile de recuperare sunt încă insuficient explorate în domeniul obstetrical, fiind o componentă importantă pentru creșterea calității vieții gravidelor, inclusiv în pregătirea acestora pentru momentul nașterii.

Cuvinte-cheie: dorsalgie la gravide, recuperare, sarcină

Dorsalgia la gravide – beneficii și rezultate ale tehnicilor de recuperare medicală

Suggested citation for this article: Filipescu I, Tudorache D, Vlădăreanu R. Pregnancy-related low back pain – the benefits and results of rehabilitation medicine techniques. *Ginecologia.ro*. 2024;44(2):16-19.

Introduction

Pregnancy-related low back pain is one of the most common musculoskeletal complaints by pregnant women, resulting in an increased inability to perform daily tasks and a decreased quality of life. Low back pain is considered to appear in 50% of pregnancies, but some studies suggest that as much as 90% of pregnant women suffer from low back pain at one point during pregnancy. The most important factor that aggravates the pain is the evolution of the pregnancy^(1,2).

The etiology of low back pain during pregnancy is not unanimously agreed. The mechanism suggested implies a series of mechanical factors that increase the stress on the lower back (accentuation of lordosis with changed body gravitational center to anterior, additional weight gained – especially during the third trimester, and decreased compression of the spine), along with pelvic instability and abdominal wall muscle fatigue from overstretching to accommodate the enlarged uterus^(1,3).

The most accepted risk factors are history of low back pain during previous pregnancies, chronic low back pain,

and pelvic trauma. Other frequent risk factors are high Body Mass Index (BMI), sedentarism, hypermobility, multiparity, and hypotension⁽⁴⁾.

Even though many women consider low back pain to be the norm for a pregnancy and being very difficult to prevent low back pain, pregnant women should be informed about the rehabilitation methods that are available which can help them alleviate the pain. The most frequent rehabilitation methods used are physiotherapy exercises, posture training, massage, yoga, progressive muscular relaxation, acupuncture, and stabilization belts⁽⁵⁾.

Materials and method

We performed a retrospective, observational study realized in the Obstetrics and Gynecology Department and Physical Medicine and Rehabilitation Department of the "Elias" University Emergency Hospital, Bucharest, Romania, from February 2022 to November 2023. The study population consisted of 353 pregnant women, who were referred to the Physical Medicine and

Rehabilitation Department after raised clinical suspicion of pregnancy-related low back pain.

The 353 pregnant women were further split into two groups, the first group consisting of 196 women who agreed to follow a 12-week rehabilitation protocol (physiotherapy exercises and posture training) and were assessed with low back pain and quality of life questionnaires, as well as gait analysis at the start and at the end of the protocol, while the second group, of 157 women, did not follow the rehabilitation protocol, and they were only assessed using questionnaires.

The following parameters were analyzed: patient's age, height, weight, BMI, weight gain, parity, gestational age at which the pain appeared, method of conception, pain score, quality of life score, number of techniques used, the most efficient technique, low back pain history, and mode of delivery.

The collected data were analyzed using the Minitab Statistical Software version 20.3.

Results

The present study included 353 women with pregnancy-related low back pain, of which 196 (55.53%) agreed to follow the 12-week protocol, while the other 147 (44.47%) were followed using Roland-Morris questionnaires (RMQ).

The patients included in the study were between 18 and 46 years old, with an average of 33 years old. Of these, 38.2% (75) were primiparous, while 61.8% (121) were multiparous. The maximum parity of the study was four (five patients). The majority of the pregnancies (85.2%; 167) were spontaneous conceptions, while 14.8% (29) were obtained using *in vitro* fertilization.

At the beginning of the study, 33.67% (66) of the patients had a normal BMI, 40.3% (79) were overweight, 23.46% (46) had class I obesity, and 2.55% (five) had class II obesity. Thirty-seven patients (18.8%) reported low back pain in their medical history, while 159 patients (81.2%) did not have a medical history of low back pain.

Table 1 Risk factors identified associated with high scores at RMQ in our study

RMQ high score (over 10)	High BMI	Advanced age	History of low back pain	Modified center of gravity	Step asynchronism
59 patients	89.83%	57.63%	62.71%	81.36%	59.32%

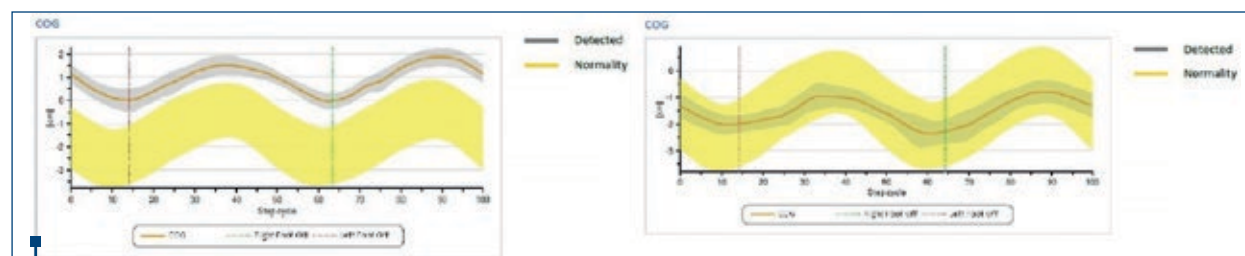


Figure 1. Center of gravity during walking before and after the 12-week rehabilitation protocol

Table 2 Clinical improvement in the two groups (the first group followed a 12-week rehabilitation program)

	Pain score improvement for the 12-week rehabilitation protocol group		Pain score improvement for the group assessed only with questionnaire	
Worsened score	2	1.02%	54	36.73%
No improvement	6	3.06%	62	42.17%
Mild improvement	31	15.81%	27	18.36%
Moderate improvement	71	36.22%	4	2.72%
Great improvement	86	43.87%	0	0%
Total	196	100%	147	100%

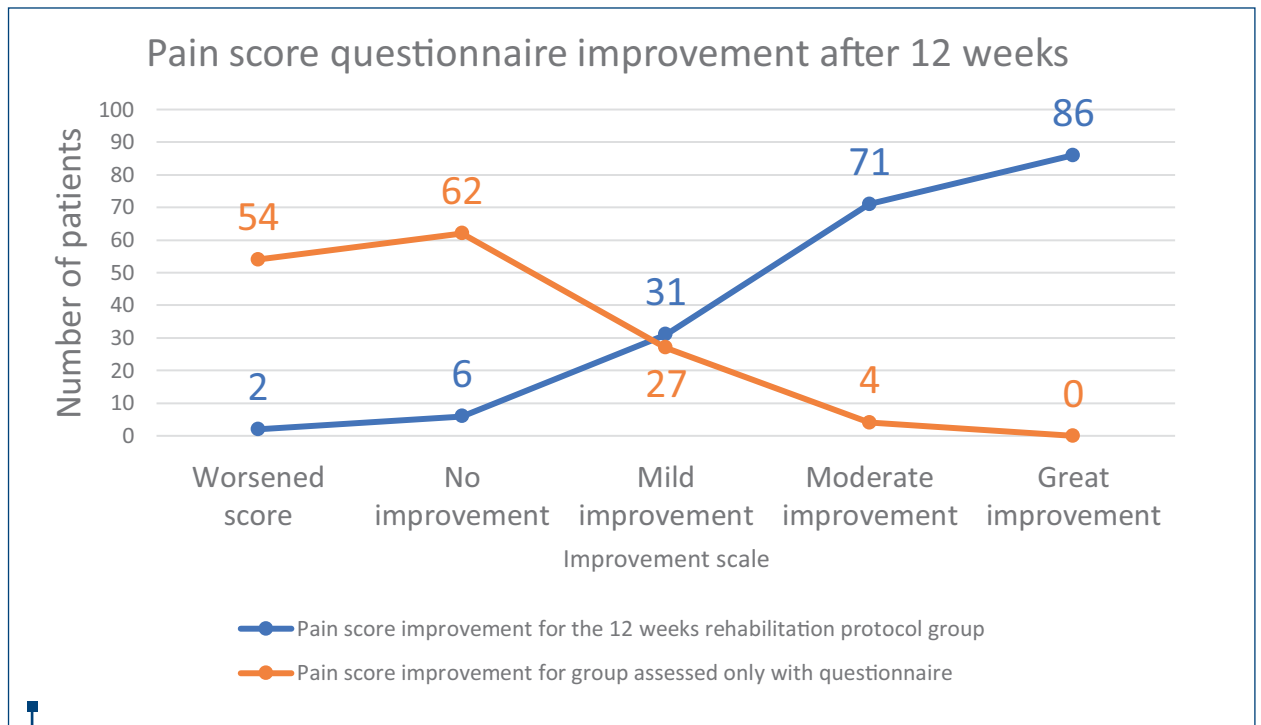


Figure 2. Clinical improvement after 12 weeks, for the two groups, according to the Roland-Morris questionnaire

In Table 1, we show that the most frequent risk factors associated with high pain scores were: advanced age, high BMI, personal history of low back pain not related to pregnancy, displaced center of gravity, and step asynchronism.

Of the aforementioned risks, high Body Mass Index and modified center of gravity were most frequently met, with 89.83% and 81.36% in pregnant women, with a high score at the Rolland-Morris questionnaire. Advanced age (57.63%), history of low back pain (62.71%), and step asynchronism (59.32%) were also present in more than half of the pregnant women, with a high score for low back pain.

The normal range for the center of gravity for the human body while standing is between -0,25 and -2,9 cm below the navel. The center of gravity range for the pregnant women in our study at T0 (gestational week 24-25) was between 0.7 and 1.5 cm above the navel, with a mean of 1.12 cm. After performing the 12-week rehabilitation program, at T1 (gestational week 36-37), the center of gravity range was between -0.9 and -1.8 cm below the navel, with a mean of -1.36 cm, inside the normal range. The center of gravity has maintained in the normal range during walking (Figure 1).

In Figure 2, it can be observed that, for the group who followed the rehabilitation protocol, the clinical improvement of pregnancy-related low back pain was 95.92% (188 patients out of 196), obtaining a lower pain score, of which 80.11% (157) registered a significant improvement in their score and the quality of life. On the other hand, in the group that did not follow any official

rehabilitation protocol, 116 patients (78.90%) registered no improvement in their score, with 54 pregnant women (36.73%) describing a worsening of their condition.

Discussion

Pregnancy-related low back pain is still a very sparsely touched subject during pregnancy, with many patients considering low back pain to be a normal element during the latter stages of pregnancy, with a number of patients even declaring a drastically reduction in their quality of life⁽¹⁾.

In our study, we identified a total of 353 patients with pregnancy-related low back pain during the 18 months of following pregnant women in our department, which represented 18.8% of the total deliveries. Considering that not all patients responded to our questionnaires, other were referred to our department only for delivery, and a number of patients did not have any follow-up pregnancy plan, we can be certain that the prevalence of pregnancy-related low back pain is much higher as it is cited in literature^(1,2,7).

The most frequent risk factor identified among our study patients was the high Body Mass Index (66.33% of the total number of patients, as well as a prevalence of 89.93% in the high pain score subgroup). The other risk factors (advanced age, modified center of gravity, step asynchronism, and history of back pain) cannot be easily altered, unlike BMI.

Reducing weight gain during pregnancy has proven to be a difficult task, as the majority of the patients in our study recorded weight gains above recommended

numbers provided in the ACOG guidelines (with the overweight and obese subgroups having a mean weight gain during pregnancy over the maximum recommended weight gain). A normal Body Mass Index as well as a normal weight during pregnancy are associated with a lower risk of pregnancy-related low back pain. As a result, it is essential, from the initial prenatal visit and during the whole pregnancy, to counsel the pregnant women regarding the benefits of appropriate weight gain, and to limit the excessive weight gain⁽⁶⁾.

The patients from the first group were following a 12-week protocol which included two sessions per week of stretching exercises (for neck extensors and scalene muscles, spine extensors, hip adductors and posterior thigh muscles, anterior abdominal wall muscles) for 45 minutes, and postural training exercises for 15 minutes. There are no standardized data in literature about the types of exercises that the pregnant women should perform or which muscle group should be aimed. We performed low-to-medium intensity exercises for the main muscle groups mentioned before, with a significant reduction in low back pain after 12 weeks. There is a wide range of physiotherapy and rehabilitation exercises available, and the possibility of personalized training regimes, based on the clinical evidence and individual characteristics of each pregnant women, may lead to greater improvements in managing pregnancy-related low back pain^(1,8).

Conclusions

Pregnancy-related low back pain is one the most common complaints during pregnancy, but it is often ignored, being assumed as normal. High Body Mass Index was the most frequent risk factor identified in the

study. The patients following a 12-week rehabilitation protocol of exercises in our study experienced a significant clinical improvement in low back pain, as well as an improvement of their quality of life. Currently, there is no standardized guideline regarding the management of pregnancy-related low back pain, but with a wide range of possibilities available, there is a real possibility to reduce low back pain and to improve the quality of life for the pregnant women. ■

References

1. Katonis P, Kampouroglou A, Aggelopoulos A, Kakavelakis K, Lykoudis S, Makrigiannakis A, Alpantaki K. Pregnancy-related low back pain. *Hippokratia*. 2011;15(3):205-10.
2. Perkins J, Hammer RL, Loubert PV. Identification and management of pregnancy-related low back pain. *J Nurse Midwifery*. 1998;43(5):331-40.
3. Bewyer KJ, Bewyer DC, Messenger D, Kennedy CM. Pilot data: association between gluteus medius weakness and low back pain during pregnancy. *Iowa Orthop J*. 2009;29:97-9.
4. Sabino J, Grauer JN. Pregnancy and low back pain. *Curr Rev Musculoskelet Med*. 2008;1(2):137-41.
5. Liddle SD, Pennick V. Interventions for preventing and treating low-back and pelvic pain during pregnancy. *Cochrane Database Syst Rev*. 2015;2015(9):CD001139.
6. ACOG Committee on Obstetric Practice. Weight Gain During Pregnancy. ACOG 2013:548 (Reaffirmed 2023). <https://www.acog.org/clinical/clinical-guidance/committee-opinion/articles/2013/01/weight-gain-during-pregnancy#>
7. Wang SM, Dezinno P, Maranets I, Berman MR, Caldwell-Andrews AA, Kain ZN. Low back pain during pregnancy: prevalence, risk factors, and outcomes. *Obstet Gynecol*. 2004;104(1):65-70.
8. Fontana Carvalho AP, Dufresne SS, Rogerio de Oliveira M, Couto Furlanetto K, Dubois M, Dallaire M, Ngomo S, da Silva RA. Effects of lumbar stabilization and muscular stretching on pain, disabilities, postural control and muscle activation in pregnant woman with low back pain. *Eur J Phys Rehabil Med*. 2020;56(3):297-306.

CONFLICT OF INTERESTS: none declared.

FINANCIAL SUPPORT: none declared.



This work is permanently accessible online free of charge and published under the CC-BY.