ATATÜRK ÜNİVERSİTESİ YAYINLARI
ATATURK UNIVERSITY PUBLICATIONS

Research Article *Araştırma Makalesi* DOI: 10.5152/JANHS.2023.23314

Pregnancy-Related Lumbopelvic Pain and Disability: An Invisible and Neglected Problem

Gebelikle İlişkili Lumbopelvik Ağrı ve Engellilik: Görünmeyen ve İhmal Edilen Bir Sorun

Hacer ERTEN[1]
Mahmure AYGÜN[2]
Tuba YILMAZ ESENCAN[3]
Yeliz DOĞAN MERİH[4]

[1]Department of Nursing, İstanbul Gedik University, Faculty of Health Sciences, İstanbul, Turkey
[2]Department of Nursing, Biruni University Faculty of Health Sciences, İstanbul, Turkey
[3]Department of Midwifery, Üsküdar University, Faculty of Health Sciences, İstanbul, Turkey
[4]Department of Gynecology and Obstetrics Nursing,University of Health Sciences, Hamidiye Faculty of Health Sciences, İstanbul Turkey

ABSTRACT

Objective: This study was carried out to examine the frequency of lumbopelvic pain in pregnant women, the level of disability associated with it, and the factors that may affect the level of disability.

Methods: The descriptive, cross-sectional and analytical study was carried out with 381 pregnant women who received service from the routine pregnancy follow-up outpatient clinic of a state hospital. A form including demographic, obstetric, and other descriptive characteristics of the cases, a visual pain zone diagram to determine the pain area, and the Roland–Morris Disability Questionnaire (RMDQ) to determine the disability level were used as data collection tools. Descriptive statistical methods and non-parametric tests were used in the analysis of the data.

Results: It was determined that 86.35% (n = 329) of the participants had lumbopelvic pain and were mildly disabled according to the RMDQ total score (12.0 ± 7.3). In the analysis performed according to subgroups, the mean RMDQ scores of pregnant women with pelvic girdle pain were found to be statistically significantly higher than those with low back pain ($P < .05$). Other variables associated with high disability scores were education level, parity, occupation, gestational week (trimester), presence of lumbopelvic pain in the previous pregnancy, work stress, and negative sexual life history ($P < .05$).

Conclusion: Lumbopelvic pain is a condition that is common in pregnancy, can cause different levels of disability depending on some factors, and should not be ignored by antenatal care providers.

Keywords: Pregnancy, lumbopelvic pain, disability

ÖZ

Amaç: Bu çalışma, gebelerde lumbopelvik ağrı sıklığını belirlemek, bununla ilişkili engellilik düzeyini ve engellilik düzeyini etkileyebilecek faktörleri incelemek amacıyla yapılmıştır.

Yöntemler: Tanımlayıcı, kesitsel ve analitik tipteki çalışma bir devlet hastanesinin rutin gebelik izlem polikliniğinden hizmet alan 381 gebe ile gerçekleştirilmiştir. Veri toplama aracı olarak olguların demografik, obstetrik ve diğer tanımlayıcı özelliklerini içeren bir form, ağrı bölgesini belirlemek için görsel ağrı bölgesi diyagramı ve engellilik düzeyini belirlemek için Roland–Morris Engellilik Anketi (RMEA) kullanılmıştır. Verilerin analizinde tanımlayıcı istatistiksel yöntemler ve parametrik olmayan testler kullanılmıştır.

Bulgular: Katılımcıların %86,35'inde (n = 329) lumbopelvik ağrı olduğu ve RMEA toplam puanına göre (12,0 ± 7,3) hafif derecede engelli oldukları saptanmıştır. Alt gruplara göre yapılan incelemede pelvik kuşak ağrısı olan gebelerin RMEA puan ortalamaları bel ağrısı olan gebelere göre istatistiksel olarak anlamlı derecede yüksek bulunmuştur ($P < ,05$). Yüksek engellilik puanları ile ilişkili diğer değişkenlerin, eğitim düzeyi, parite, meslek, gebelik haftası (trimaster), önceki gebelikte lumbopelvik ağrı varlığı, iş stresi ve olumsuz cinsel yaşam öyküsü olduğu saptanmıştır ($P < ,05$).

Sonuç: Lumbopelvik ağrı, gebelikte sık görülen, bazı faktörlere bağlı olarak farklı düzeylerde engelliliğe neden olabilen ve antenatal bakım verenler tarafından göz ardı edilmemesi gereken bir durumdur.

Anahtar Kelimeler: Gebelik, lumbopelvik ağrı, engellilik

Received/Geliş Tarihi: 09.02.2023
Accepted/Kabul Tarihi: 08.05.2023
Publication Date/Yayın Tarihi: 18.06.2023

Corresponding Author/Sorumlu Yazar: Hacer ERTEN
E-mail: hacer.erten@gedik.edu.tr

Cite this article as: Erten H, Aygün M, Yılmaz Esencan T, Doğan Merih Y. Pregnancy-related lumbopelvic pain and disability: An invisible and neglected problem. *J Nursology* 2023;26(2):99-106.

INTRODUCTION

Lumbopelvic pain (LPP), which is a common musculoskeletal problem in pregnancy, is an important public health problem that can negatively affect daily living activities and quality of life by causing varying degrees of disability, cause negative birth outcomes, turn into a permanent chronic problem, and increase the economic burden.[1-3] It has been suggested that biomechanical, hormonal, and vascular changes during pregnancy play a role in the pathophysiology of LPP, but its etiology is not well-defined.[4,5] LPP is a broad term used to describe low back pain (LBP), pelvic girdle pain (PGP), and combined pain (LBP+PGP) without distinction.[6,7]

According to the Cochrane review, the global prevalence of lumbopelvic pain in pregnancy ranges from 24% to 90%.[4] Its prevalence widely ranges from 4% to 90% in studies conducted in different countries, with a prevalence of >50% in most studies.[1,5,7]

Lumbopelvic pain symptoms can range from minor discomfort or unpleasant feeling to severe and debilitating pain.[8,9] Symptoms associated with LPP interfere with most activities of daily living and limit the ability to work, and are associated with poor health-related quality of life. In quality-of-life studies conducted with pregnant women with LPP, scores similar to serious diseases were obtained.[10,11] One of the important effects of LPP is its *inhibitory* effect on daily activity and ability.

It is stated that the rate of disability due to lumbopelvic pain during pregnancy varies between 21% and 81%.[9] One-third of pregnant women report LPP as a serious problem that hinders their daily living activities and affects their ability to work, while 8% of them experience serious disability.[7,10,12] Pregnant women with LPP face difficulties in daily activities such as walking, sitting, lifting objects, social life, personal duties, professional work, sleeping, traveling, and even sexual life. Compared to other women, sick leave is twice as high.[10,11,13]

Pregnant women and even healthcare professionals believe that LPP is an expected and temporary pregnancy condition. It is reported that 70% of pregnant women agree that "LPP is expected due to pregnancy" and do not seek medical help until changes in their body cause pain or affect their daily activities.[14] Studies support that healthcare professionals have the same perception. Pregnant women with LPP state that there is a lack of attention, knowledge, and understanding of healthcare professionals about their complaints, that they encounter conflicting diagnoses and recommendations given by different healthcare professionals, and that treatment is not widely offered.[1,14,15] However, many studies in the literature show that prophylactic and conservative interventions are effective in increasing the functional status and quality of life by reducing the pain and disability related to LPP.[8,16,17]

Nurses, midwives, and other practitioners providing obstetric care are basically the primary health care team and their goals include promoting health with a holistic approach. These professionals should not only be content with pregnancy-related routine follow-ups but should also be sensitive to the general condition of the woman and the health problems that she did not mention. The presented research is one of the few studies that examine LPP-related disability and related factors, and it is hoped that it will contribute to raising awareness on the subject.

Research Questions

1. What is the frequency of lumbopelvic pain in pregnant women?
2. What is the disability level in pregnant women with lumbopelvic pain?
3. What variables affect the disability level?

The main outcome measures were the frequency of lumbopelvic pain, level of disability, and variables that affect the disability level. The study reporting aligns with the STROBE checklist for reporting observational studies.

METHODS

Design and Setting

The research was a descriptive, cross-sectional, and analytical type of study. The study was conducted with pregnant women who received service from the routine pregnant follow-up outpatient clinic between December 2016 and May 2017 in a public hospital in Istanbul. Using power analysis, the sample of the study was determined as 380 pregnant women with a 0.05 error level, 0.95 CI, and the ability to represent 0.95 universe. In addition, 417 pregnant women were consecutively included in the study sample. The study was completed with 381 cases because 36 cases were excluded due to the inclusion criteria or because the forms were filled incompletely (Figure 1).

Inclusion criteria are as follows: (1) having a primiparous or multiparous uncomplicated pregnancy, (2) being followed in the maternity hospital where the study was conducted, (3) not having language, communication, and writing barriers, and (4) signing the informed consent.

Instruments

A form including demographic, obstetric, and other descriptive characteristics of the cases, a visual pain zone diagram to determine the pain area, and the RMDQ to determine the disability level were used as data collection tools. Descriptive statistics and nonparametric tests were performed.

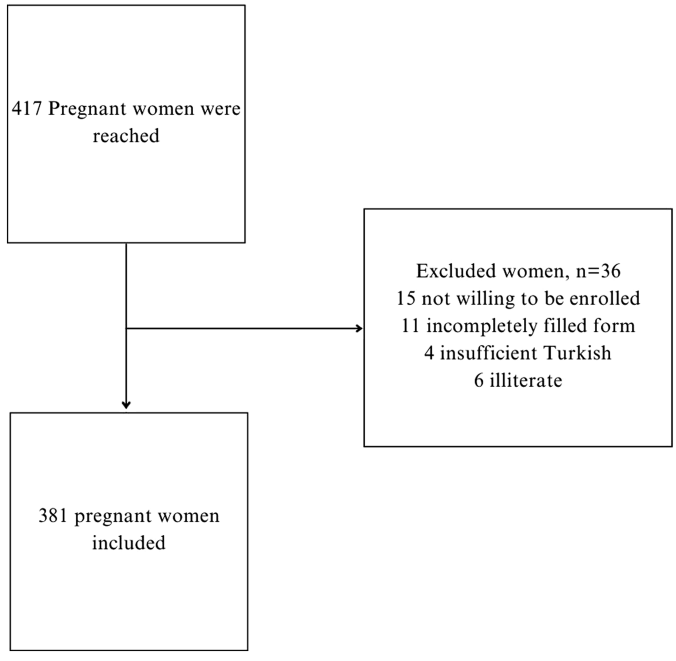

Figure 1. Flowchart of participants.

Form 1: Descriptive features (age, education, and employment status), obstetric data (week of gestation, number of pregnancies, and last delivery type), and history of LPP (pregnancy-related/unrelated) were questioned.

Form 2: To determine the subgroups of LPP (LBP, PGP, and combined pain), a visual pain zone diagram prepared by the researchers in line with the literature was used (Figure 2).[13,14,18]

Form 3: RMDQ was used to determine the disability due to LPP. RMDQ is a short, simple, and 24-item scale with good psychometric specifications designed for patients to rate physical disability caused by LBP.[19] The RMDQ score is calculated by adding the number of items checked. Items are not weighted. Therefore, scores range from 0 (no disability) to 24 (maximum disability). A reliability and validity study was conducted by translating the RMDQ into Turkish (Cronbach's alpha (α) > 0.85).[20] In the presented study, the RMDQ Cronbach's alpha (α) coefficient was found to be 0.94.

Data Collection

The pilot study of the form (1 and 2) was tested in 20 cases, and necessary minor corrections were made. Women who admitted to the maternity outpatient clinic were asked if they felt well enough to fill out a detailed questionnaire that would take about 20 minutes, and those who accepted were taken to a private room. Form 1 was filled by the researcher for the pregnant women who met the eligibility criteria. Then, the visual pain zone diagram and RDMQ were completed independently by the pregnant women.

Statistical Analysis

Statistical Package for the Social Sciences v.24.0 (IBM SPSS Corp., Armonk, NY, USA) software was used for statistical analyzes of the research. Percentage distribution, mean, frequency, minimum-maximum values were examined for descriptive analyses. The normal distribution status was examined by Kolmogorov–Smirnov and Shapiro–Wilk tests, and it was found that the data did not fit the normal distribution. The Mann–Whitney *U*-test was used for pairwise group comparisons for data that did not show normal distribution, and the Kruskal–Wallis *H*-test was used for comparisons of more than 2 groups. In the evaluation of significance between more than 2 groups, the between-group significance was evaluated by the Bonferroni correction–Dunn's post hoc test for further analysis. The results were evaluated at the 95% CI, at the $P < .05$ statistical significance level.

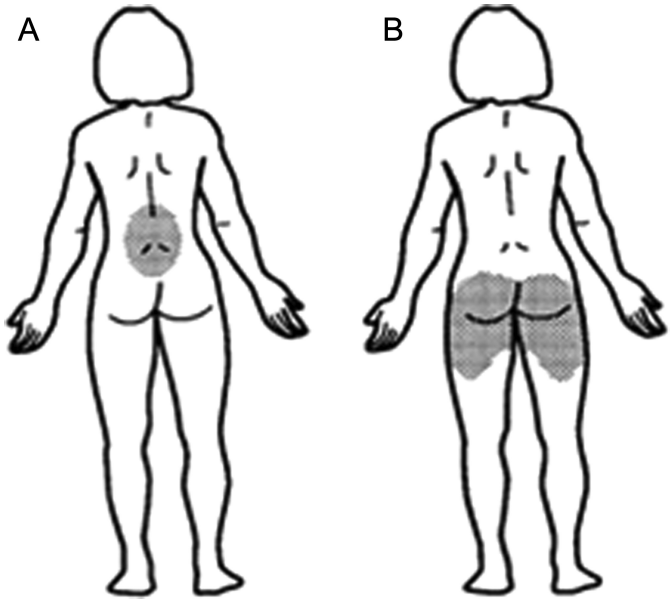

Figure 2. Visual pain zone diagram for self-report of LPP.
LPP, lumbopelvic pain.

Ethical Approval

The study was approved by the ethics committee of the institution where it was conducted (Zeynep Kamil Gynecology and Pediatrics Training and Research Hospital, approval no. 89, date: March 25, 2016). All participants were informed about the purpose of the study, that it was on a voluntary basis, that they would not be harmed by not participating in the study, and that confidentiality would be given importance. The study complies with the provisions of the Declaration of Helsinki of the World Medical Association.

RESULTS

It was determined that 52.9% of the participants were between the ages of 20 and 29, and 44.9% were primary school graduates. The majority of the participants were in their third trimester (79.6%). It was determined that 33.4% of the cases had a history of LPP independent of pregnancy, and 30.2% of the multiparous cases (n = 182) experienced LPP in their previous pregnancy.

Lumbopelvic pain was found in 86.35% (n = 329) of the 381 pregnant women achieved. When the LPP subgroups were examined according to the pain zone diagram, it was determined that 69.9% experienced only LBP, 24.9% experienced only PGP, and 5.2% experienced combined pain (LBP+PGP). The main characteristics of the participants are reported in Table 1.

It was determined that as the gestational week increased, there was an increase in all subgroups of LPP, and LBP was more intense in all 3 trimesters than PGP and combined pain (Table 2).

The median value of the RMDQ total score was considered as the cut-off point and was used to divide the cohort into *low- and high-activity limitation* subgroups. Accordingly, 1-12 points were classified as *low-activity limitation*, and 13-24 points were classified as *high-activity limitation*. It was determined that the pregnant women had a mild disability with a mean RMDQ total score of 12.0 ± 7.3. It was determined that of the pregnant women who reported LPP had 50.45 % low-activity limitation and 49.54 % high-activity limitation. When disability scores were analyzed according to LPP subgroups, it was found that the LBP and combined pain group had low-activity limitation (11.5 ± 7.2 and 11.5 ± 9.7), and the PGP group had high-activity limitation (13.5 ± 6.9).

The relationship between sociodemographic/obstetric and other descriptive characteristics of the cases and RMDQ mean scores are given in Table 3. Dependent variables associated with a high Roland score (independent variable) are; education level, parity, occupation, pregnancy week (trimester), PGP, presence of LPP in the previous pregnancy, work stress, and negative sexual life history.

It was determined that there was a significant relationship between education level and disability score average ($P < .05$). In the Post-hoc comparison it was determined that the RMDQ score average of the primary school graduates was significantly higher than the high school ($P = .031$, $P < .05$) and university graduates ($P = .001$, $P < .005$). The disability score of the non-working

Table 1. Main Characteristics of Pregnant Women with Lumbopelvic Pain (n = 329)

Variables	n (%)	Variables	n (%)
Age		**Trimester**[a]	
Below 20 years	12 (3.7)	First trimester	18 (5.5)
20-29 years old	174 (52.9)	Second trimester	49 (14.9)
30-39 years old	135 (41.0)	Third trimester	262 (79.6)
40 years and above	8 (2.4)	**Weight at the beginning of this pregnancy**	
Education		Underweight (<18.50)	21 (6.4)
Primary school	148 (44.9)	Normal range (18.50-25)	168 (51.1)
High school	85 (25.9)	Overweight (25.00-29.9)	93 (28.2)
Undergraduate and graduate	96 (29.2)	Obesity (> 30.00)	47 (14.3)
Occupation		**Weight gain according to gestational week**[b]	
Housewife	231 (70.2)	Below the expected weight	123 (37.4)
Working	98 (29.8)	Expected weight	105 (31.9)
Stressful work/occupation		Above the expected weight	101 (30.7)
Yes	27 (8.2)	**LPP subgroups (current pregnancy)**	
No	302 (91.8)	LBP	230 (69.9)
LPP in the past (unrelated to pregnancy)		PGP	82 (24.9)
Yes	110 (33.4)	Combined pain	17 (5.2)
No	219 (66.6)	**Exercise in pregnancy**	
Parity		Yes	120 (36.5)
0 (first pregnancy)	147 (44.7)	No	209 (63.5)
≥ 1	182 (55.3)	**Pain negatively affected my sex life**	
Previous birth type (multiparous/n = 182)		Yes	111 (33.7)
Vaginal	94 (51.6)	No	218 (66.3)
C-section	88 (48.4)		
Presence of LPP in previous pregnancy (multiparous/n = 182)			
Yes	55 (30.2)		
No	127 (69.8)		

[a]First trimester (up to 12 gestational weeks); second trimester (13-24 gestational weeks); third trimester (25th gestational week and after).
[b](Current pregnancy) Calculated according to the American College of Obstetricians and Gynecologists (ACOG) guidelines (2013-Reaffirmed 2020).
combined pain = LBP + PGP; LBP, low back pain; PGP, pelvic girdle pain.

(housewife) pregnant women was found to be significantly higher than the working pregnant women ($P = .047$, $P < .05$).

It was determined that the mean RMDQ score of the women who gave birth at least once was statistically significantly higher compared to the women who never gave birth ($P = .27$, $P < .05$). A statistically significant difference was found between the mean disability score and the gestational week (p<.05). In the post hoc comparison, it was determined that the disability score of the pregnant women in the 3rd trimester (25th gestational week and after) was found to be significantly higher than the pregnants in the second timaster (13-24 gestational weeks) ($P = .042$, $P < .05$).

Table 2. Distribution of Lumbopelvic Pain Subgroups According to Gestational Weeks (n = 329)

Variables	Total Values	First Trimester (n = 18)	Second Trimester (n = 49)	Third Trimester (n = 261)
	n (%)	n (%)	n (%)	n (%)
LPP	329 (100.0)	18 (100.0)	49 (100.0)	262 (100)
LBP	230 (69.9)	15 (83.3)	34 (69.4)	181 (69.1)
PGP	82 (24.9)	2 (11.1)	14 (28.6)	66 (25.2)
Combined	17 (5.2)	1 (5.6)	1 (2.0)	15 (5.7)

First trimester (up to 12 gestational weeks); second trimester (13-24 gestational weeks); third trimester (25th gestational week and after).
combined pain = LBP + PGP; LBP, low back pain; LPP, lumbopelvic pain (LBP, PGP, or combined pain); PGP, pelvic girdle pain.

A statistically significant difference was found between the LPP subgroups in terms of disability score averages. In the post hoc analysis, the mean disability score of women with PGP was found to be statistically significantly higher than the mean disability score of the low back pain group ($P = 0.036$, $P < .05$). It was found that the mean RMDQ scores of women who stated that they had previously experienced pregnancy-related LPP were significantly higher ($P = .002$, $P < .005$). The RMDQ mean scores of the cases who experienced work stress were found to be significantly higher ($P = .012$, $P < .05$). Finally the mean RMDQ score of women who stated that LPP negatively affected their sexual life was found to be significantly higher ($P < .001$).The other variables were not significantly related to the Roland score ($P > .05$). The other variables were not significantly related to the Roland score ($P > .05$).

Table 3. Distribution of Disability Levels According to Main Variables

Variables	Low-activity limitation, n (%)[a]	High-activity limitation, n (%)[b]	RMDQ Total, Mean ± SD	Test *P*
Age				
Below 20 years	1 (8.3)	11 (91.7)	16.2 ± 3.2	5.023[†] .170
20-29 years old	85 (48.9)	89 (51.1)	11.6 ± 7.6	
31-39 years old	77 (57.0)	58 (43.0)	12.0 ± 7.2	
40 years and above	3 (37.5)	5 (62.5)	14.3 ± 4.1	
Education				16.142[†] **1-2: .031** **1-3: .001** 2-3:0.133
Primary school	62 (41.9)	86 (58.1)	13.6 ± 7.4	
High school	43 (50.6)	42 (49.4)	11.5 ± 7.0	
Undergraduate and graduate	61 (63.5)	35 (36.5)	9.9 ± 6.9	
Occupation				
Housewife	107 (46.3)	124 (53.7)	12.5 ± 7.3	**9.751[‡]** **.047**
Working	59 (60.2)	39 (39.8)	10.8 ± 7.2	
Stressful work				
Yes	10 (37.0)	17 (63.0)	15.4 ± 7.3	2.894[‡] **.012**
No	156 (51.7)	146 (48.3)	11.7 ± 7.2	
Parity (number of births)				
0	79 (53.7)	68 (46.3)	11.0 ± 7.0	11.489[‡] **.027**
≥1	87 (47.8)	95 (52.2)	12.8 ± 7.5	
Previous birth type (*multipar/n = 182)				
Vaginal	44 (46.8)	50 (53.2)	12.9 ± 7.6	3.979[‡] .569
C-section	43 (48.9)	45 (51.1)	12.5 ± 7.4	
Time since last birth (*multipar/n = 182)				2.077[‡] .911
1 year	12 (44.4)	15 (55.6)	12.6 ± 6.5	
2 years and above	76 (48.7)	79 (51.3)	12.6 ± 7.8	
Trimester				26.181[‡] 1-2: .253 **2-3: .042** 1.3: .996
First trimester	9 (50.0)	9 (50.0)	12.5 ± 6.3	
Second trimester	30 (61.2)	19 (38.8)	10.4 ± 6.9	
Third trimester	127 (48.5)	135 (51.5)	12.3 ± 7.4	
Prepregnancy BMI				
Underweight (<18.50)	9 (42.9)	12 (57.1)	13.3 ± 6.2	5.415[†] .144
Normal range (18.50-25)	91 (54.2)	77 (45.8)	11.1 ± 7.1	
Overweight (25.00-29.9)	42 (45.2)	51 (54.8)	12.8 ± 8.0	
Obesity (>30.00)	24 (51.1)	23 (48.9)	13.0 ± 6.9	
Exercise in pregnancy				
Yes	62 (51.7)	58 (48.3)	11.6 ± 7.3	11.909[‡] .447
No	104 (49.8)	105 (50.2)	12.2 ± 7.3	
Weight gained during pregnancy				
Below the expected weight	61 (49.6)	62 (50.4)	11.7 ± 7.1	12.621[†] .819
Expected weight	57 (54.3)	48 (45.7)	12.0 ± 7.1	
Above the expected weight	48 (47.5)	53 (52.5)	12.3 ± 7.8	
LPP in the past (unrelated with pregnancy)				
Yes	50 (45.5)	60 (54.5)	12.7 ± 7.1	11.132[‡] .061
No	116 (53.0)	103 (47.0)	11.6 ± 7.4	
Presence of LPP in the previous pregnancy (*multipar/n = 182)				
Yes	18 (32.7)	37 (67.3)	15.3 ± 6.4	2.476[‡] **.002**
No	69 (54.3)	58 (45.7)	11.4 ± 7.6	
Subgroups of LPP (current pregnancy)				44.090[†] **1-2 :.036** 1-3: 1.000 2-3: 1.000
Low back pain (LBP)	123 (53.5)	107 (46.5)	11.5 ± 7.2	
Pelvic girdle pain (PGP)	36 (43.9)	46 (56.1)	13.5 ± 6.9	
Combined pain (LBP + PGP)	7 (41.2)	10 (58.8)	11.5 ± 9.7	
Pain negatively affected my sex life				
Yes	29 (26.1)	82 (73.9)	16.8 ± 5.0	5.233[‡] **< .001**
No	137 (62.8)	81 (37.2)	9.5 ± 7.1	

[a]Low-activity limitation is classified with an RMDQ score of 1-12, [b] High-activity limitation is classified by a baseline RMDQ score of 13-24.
[†]Kruskal–Wallis *H*-test.
[‡]Mann–Whitney *U*-test, $P < .05$.
Kruskal–Wallis *H*-test, post hoc comparisons: Bonferroni correction–Dunn's test, $P < .005$. *Results that are significant according to the P value are indicated in bold in the table.*
BMI, body mass index; combined pain, LBP + PGP; LBP, low back pain; LPP, lumbopelvic pain (LBP, PGP, or combined pain); PGP, pelvic girdle pain; RMDQ, Roland–Morris Disability Questionnaire.

DISCUSSION

It was determined that the LPP prevalence of the participants was high, and the disability due to LPP was mild level. This high prevalence confirms the view that LPP during pregnancy is a public health issue. Our finding is similar to the prevalence (70-85%) reported in the Cochrane review.[4] In the literature, it has been reported that the prevalence of LPP in pregnancy is similarly high in many studies conducted in Turkey and in different countries.[10,14,21]

As the gestational week increased, an increase was found in all subgroups of LPP, but this was not statistically significant. Review studies in the literature indicate that the evidence for the relationship between gestational week and LPP is not sufficient.[2,4,7,15] The result supports the literature.

The frequency of LBP was higher than PGP and combined pain in all 3 trimesters of pregnancy. Similar to our findings, according to the Cochrane review, more than two-thirds of pregnant women with LPP are reported to have LBP and about one-fifth to have PGP.[2] While PGP is higher in some of the studies examining LPP subgroups in the literatüre[14,22,23] in others, the number of women who stated that they experienced LBP was higher, similar to our study.[24,25] Different results may be due to sampling variation, differences in the questions asked, or cultural and environmental factors of countries. The lack of a standard classification of LPP may be one of the reasons. On the other hand, cultural and environmental factors can affect women's work status, household responsibilities, leisure, and daily living activities, including sleep. These differences may affect the prevalence. Studies on LPP during pregnancy in Turkey are relatively few.[21,26] While the prevalence of LBP was 75.3% in the study of Berber and Satmış,[21] it was found to be 53.9% in the study of Sencan et al.[26] However, other subgroups of LPP were not examined in these studies.

In the systematic review in which 107 LPP studies were examined in the literature, it was stated that different measurement tools were used to measure similar outcomes, especially pain, function, and disability.[27] In the present study, the RMDQ was used to determine LPP-related disability. It was determined that the cases had mild disability according to the RMDQ total score average and approximately half of them had low-activity limitation. When the studies using RMDQ in the literature are examined, in the study of Bryndal et al.[28] it was found that pregnant women had mild level disability according to their mean RMDQ scores (8.2 ± 4.34). In the study of Padua et al.[12] it was found that 61% of the pregnant women had a mild disability, and the RMDQ scores were between 1 and 10. In the study of Mens et al[18] mild disability was found in the majority of pregnant women, while severe disability was found in approximately 20% of them. In the study of Pierce et al.[14] the majority of pregnant women (65%) were classified as mildly disabled. These results support our study findings. However, in a group of studies examined in the literature, it is seen that the disability level due to LPP is moderate or severe.[29,30] In a multinational study, it was determined that there is a difference between countries in terms of disability.[1] The fact that perception, experience, belief, and perspective on pain and disability may differ across cultures and environmental factors might explain the difference in results.

It was determined that the RMDQ average score of the cases who were primary school graduates was significantly higher than those who graduated from high school and university. This finding may be due to several reasons. First, women with lower levels of education are likely to have less knowledge of strategies to prevent or manage LPP. On the other hand, studies conducted in Turkey show that as the education level of women increases, household welfare increases and the total fertility rate decreases.[31] This finding may also be related to socioeconomic status and parity. Women with low income may have limited financial resources to acquire equipment to support the lumbopelvic region and alleviate pain intensity. In a study examining biopsychosocial risk factors affecting lumbopelvic pain, it was found that lower education level was associated with higher pain severity, similar to our study result.[32] If this finding about education level is replicated in future research, it will lead clinical nurses and midwives to act as advocates of pregnant women with lower education levels.

An interesting finding is that the disability score of nonworking (housewife) pregnant women is significantly higher than that of employees. The literature states that tiring work, work dissatisfaction, and job stress are risk factors for LPP.[7,22] However, no source has been found that examines the level of disability due to LPP in working and nonworking pregnant women. This finding from the study can be explained in several ways. First, a large part of the cohort (70.2%) was composed of nonworking (housewives) pregnant women, and this may have affected the statistics. Another is that while working life provides the economic power to receive support in housework, it may cause more difficulty in housework since nonworking (housewife) women cannot have such an opportunity. Another possibility is that being at home may increase the risk of LPP by sitting more.[28] However, such a possibility is not very valid for housewives, who are held responsible for meeting the expectations of their spouses and surroundings in Turkish culture. The gender roles assigned to women in Turkey impose many traditional responsibilities on married women.

Another factor affecting disability level was parity. It was determined that the mean RMDQ score of the women who gave birth at least once was statistically significantly higher compared to the women who never gave birth. Studies in the literature indicate that parity is among the risk factors of LPP.[10,33] Rabiee and Sarchamie[29] found in their study that parity is one of the factors that significantly affect disability. This result supports our findings.

A statistically significant difference was found between the LPP subgroups in terms of disability score averages. The mean disability score of women with PGP was found to be statistically significantly higher than the mean disability score of the LBP group. In the literature, it is stated that there are differences between LPP subgroups in terms of pain intensity, disability, and quality of life and that PGP affects women more seriously. Studies have associated PGP with more pain and disability, similar to our findings.[9,22,30]

A statistically significant difference was found between the mean disability score and the gestational week. It was determined that the disability score of the pregnant women in the third trimester (25th gestational week and after) was found to be significantly higher than the pregnant women in the second trimester (13-24 gestational weeks). In the study of Lardon et al.[34] the prevalence and severity of LPP increased throughout pregnancy. In another study, it was stated that the highest disability score was in the third trimester.[29] These findings support the results of the study.

It was found that the mean RMDQ scores of women who stated that they had previously experienced pregnancy-related LPP were significantly higher. The literature states that pregnancy-related/unrelated LPP is a risk factor for the development of LPP in the current pregnancy, and 85% of women who experienced LPP in their previous pregnancies experience a recurrence in their next pregnancies.[4,7,9,18] There is relatively little study in the literature examining the relationship between disability and LPP history. In the study of Rabiee and Sarchamie,[29] a significant relationship was found between LBP-related disability and a history of chronic LBP. In the study of Berber and Satmış[21] with 400 pregnant women, it was determined that the history of LPP in the previous pregnancy was among the related factors.[21] In the study of Padua et al.[12] it was found that a history of back pain and sciatica before pregnancy was associated with the level of disability.

The RMDQ mean scores of the cases who experienced work stress were found to be significantly higher. In the literature, it is stated that high anxiety and depression scores are associated with LPP, and it is emphasized that there is a significant relationship between lumbopelvic pain outputs and perceived psychological-physical distress and disability.[34,35] Literature and our study findings suggest that preventive and therapeutic strategies for LPP and related disabilities should not only focus on physical exertion but should also include psychological determinants, especially stress.

Finally, the mean RMDQ score of women who stated that LPP negatively affected their sexual life was found to be significantly higher. The literature states that LPP has a negative effect on sexual life.[7,13,30] In the study of Mogren,[13] more than one-third of women who experienced LPP of any level reported "disorder" in sexual life, and this rate reached 50% in pregnant women who reported high-intensity pain. In a cohort study of women who developed LPP during pregnancy and experienced constant pain in the 6th month after pregnancy, it was found that women with recurrent LPP had statistically significantly lower relationship satisfaction.[36]

As a result, the data obtained give an idea about the prevalence of pregnancy-related lumbopelvic pain, the level of disability it causes, and the variables that may affect the level of disability. Antenatal caregivers should not view LPP as an expected, not requiring intervention and temporary problem of pregnancy, and should be aware of the fact that it is a common problem that can cause varying degrees of disability.

The presence of LPP can be routinely questioned in pregnancy follow-ups. Measuring tools for determining disability status and severity due to LPP can be incorporated into clinical practice routines. Pregnant women who are found to have LPP during antenatal follow-ups can be evaluated especially for the presence of PGP, and referred to the relevant units for differential diagnosis and support when necessary. It should be taken into account that pregnant women with low education level and high parity may have less knowledge about prevention or management strategies for LPP and may be more affected by the problem due to cultural factors and gender inequality. Pregnant women who are in the third trimester and have experienced LPP in the previous pregnancy can be supported more with education, lifestyle, and other conservative approaches in antenatal follow-ups. Stress conditions of pregnant women with LPP can be determined using appropriate scales, and more support can be provided if necessary.

Nurses and midwives can touch women's lives by removing this common problem from being invisible. Evidence showing that conservative approaches recommended/applied by antenatal care providers are effective in reducing pain and disability and improving functional status, and quality of life should be considered.

Study Limitations

Some limitations of the study design are acknowledged. The population that volunteered to participate in the study may not be representative of all pregnant women, and therefore the results should be interpreted with caution. In this study, LPP subgroups (PGP, LBP, and combined pain) were reported by the pregnant women themselves. The limitation of the study is that the participants were not clinically examined, although the presence of pain and the affected area were confirmed with additional questions and a visual pain diagram.

Ethics Committee Approval: Ethics committee approval was received for this study from the ethics committee of Zeynep Kamil Gynecology and Pediatrics Training and Research Hospital (date: March 25, 2016, number: 89).

Informed Consent: Verbal informed consent was obtained from all participants who participated in this study.

Peer-review: Externally peer-reviewed.

Author Contributions: Concept - H.E.; Design - H.E., M.A.; Supervision - H.E., M.A.; Resources - H.E., T.Y.E., Y.D.M.; Materials - H.E.; Data Collection and/or Processing - T.Y.E., H.E., Y.D.M.; Analysis and/or Interpretation - H.E., M.A.; Literature Search - H.E.; Writing Manuscript - H.E.; Critical Review - M.A., H.E.;

Declaration of Interests: The authors have no conflicts of interest to declare.

Funding: The authors declared that this study has received no financial support.

Etik Komite Onayı: Bu çalışma için etik komite onayı Zeynep Kamil Kadın ve Çocuk Hastalıkları Eğitim ve Araştırma Hastanesi Klinik Araştırmalar Etik Kurulundan (Tarih: 25 Mart 2016, Sayı: 89) alınmıştır.

Hasta Onamı: Tüm katılımcılardan bilgilendirilmiş sözlü onam alınmıştır.

Hakem Değerlendirmesi: Dış bağımsız.

Yazar Katkıları: Fikir - H.E.; Tasarım - H.E., M.A.; Denetleme- H.E., M.A.; Kaynaklar - H.E., T.Y.E., Y.D.M.; Malzemeler- H.E.; Veri Toplanması ve/veya İşlemesi - T.Y.E., H.E., Y.D.M.; Analiz ve/veya Yorum - H.E., M.A.; Literatür Taraması - H.E.; Yazıyı Yazan - H.E.; Eleştirel İnceleme - M.A., H.E.

Çıkar Çatışması: Yazarlar çıkar çatışması bildirmemişlerdir.

Finansal Destek: Yazarlar bu çalışma için finansal destek almadıklarını beyan etmişlerdir.

REFERENCES

1. Gutke A, Boissonnault J, Brook G, Stuge B. The severity and impact of pelvic girdle pain and low-back pain in pregnancy: a multinational study. *J Womens Health (Larchmt)*. 2018;27(4):510-517. [CrossRef]
2. Liddle SD, Pennick V. Interventions for preventing and treating low-back and pelvic pain during pregnancy. *Cochrane Database Syst Rev*. 2015;2015(9):CD001139. [CrossRef]
3. Vyas H. Impact of musculoskeletal dysfunctions on quality of life of pregnant women. *IJoNMR*. 2020;07(2):27-31. [CrossRef]
4. Aragão FF. Pregnancy-related lumbosacral pain. *J Pain*. 2019;2(2):176-181. [CrossRef]

5. Vermani E, Mittal R, Weeks A. Pelvic girdle pain and low back pain in pregnancy : a review. *Pain Pract*. 2010;10(1):60-71. [CrossRef]
6. Gutke A, Kjellby-Wendt G, Öberg B. The inter-rater reliability of a standardised classification system for pregnancy-related lumbopelvic pain. *Man Ther*. 2010;15(1):13-18. [CrossRef]
7. Wu WH, Meijer OG, Uegaki K, et al. Pregnancy-related pelvic girdle pain (PPP), I: Terminology, clinical presentation, and prevalence. *Eur Spine J*. 2004;13(7):575-589. [CrossRef]
8. Vleeming A, Albert HB, Östgaard HC, Sturesson B, Stuge B. European guidelines for the diagnosis and treatment of pelvic girdle pain. *Eur Spine J*. 2008;17(6):794-819. [CrossRef]
9. Casagrande D, Gugala Z, Clark SM, Lindsey RW. Low back pain and pelvic girdle pain in pregnancy. *J Am Acad Orthop Surg*. 2015;23(9):539-549. [CrossRef]
10. Gutke A, Olsson CB, Völlestad N, Öberg B, Wikmar LN, Robinson HS. Association between lumbopelvic pain, disability and sick leave during pregnancy - A comparison of three Scandinavian cohorts. *J Rehabil Med*. 2014;46(5):468-474. [CrossRef]
11. Elden H, Lundgren I, Robertson E. Life's pregnant pause of pain: pregnant women's experiences of pelvic girdle pain related to daily life: A Swedish interview study. *Sex Reprod Healthc*. 2013;4(1):29-34. [CrossRef]
12. Padua L, Padua R, Bondì R, et al. Patient-oriented assessment of back pain in pregnancy. *Eur Spine J*. 2002;11(3):272-275. [CrossRef]
13. Mogren I. Perceived health, sick leave, psychosocial situation, and sexual life in women with low-back pain and pelvic pain during pregnancy. *Acta Obstet Gynecol Scand*. 2006;85(6):647-656. [CrossRef]
14. Pierce H, Homer CSE, Dahlen HG, King J. Pregnancy-related lumbopelvic pain: listening to Australian women. *Nurs Res Pract*. 2012;2012:387428. [CrossRef]
15. 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. [CrossRef]
16. Davenport MH, Marchand AA, Mottola MF, et al. Exercise for the prevention and treatment of low back, pelvic girdle and lumbopelvic pain during pregnancy: A systematic review and meta-analysis. *Br J Sports Med*. 2019;53(2):90-98. [CrossRef]
17. Sklempe Kokic IS, Ivanisevic M, Uremovic M, Kokic T, Pisot R, Simunic B. Effect of therapeutic exercises on pregnancy-related low back pain and pelvic girdle pain: secondary analysis of a randomized controlled trial. *J Rehabil Med*. 2017;49(3):251-257. [CrossRef]
18. Mens JMA, Veld YHH, Goudzwaard AP, Pool-Goudzwaard A. Severity of signs and symptoms in lumbopelvic pain during pregnancy. *Man Ther*. 2012;17(2):175-179. [CrossRef]
19. Roland M, Morris R. A study of the natural history of back pain Part I. *Spine*. 1983;8(2):141-144. [CrossRef]
20. Küçükdeveci AA, Tennant A, Elhan AH, Niyazoglu H. Validation of the Turkish version of the Roland-Morris Disability Questionnaire for use in low back pain. *Spine*. 2001;26(24):2738-2743. [CrossRef]
21. Berber MA, Satılmış İG. Characteristics of low back pain in pregnancy, risk factors, and its effects on quality of life. *Pain Manag Nurs*. 2020;21(6):579-586. [CrossRef]
22. Gutke A, O¨. stgaard HC, O¨ berg BP. Pelvic girdle pain and lumbar pain in pregnancy: a cohort study of the consequences in terms of health and functioning. *Spine*. 2006;31(20):149-155.
23. Mousavi SJ, Parnianpour M, Vleeming A. Pregnancy related pelvic girdle pain and low back pain in an Iranian population. *Spine*. 2007;32(3):E100-E104. [CrossRef]
24. Kovacs FM, Garcia E, Royuela A, González L, Abraira V, Spanish Back Pain Research Network. Prevalence and factors associated with low back pain and pelvic girdle pain during pregnancy: a multicenter study conducted in the Spanish national health service. *Spine*. 2012;37(17):1516-1533. [CrossRef]
25. Ramachandra P, Maiya AG, Kumar P, Kamath A. Prevalence of musculoskeletal dysfunctions among Indian pregnant women. *J Pregnancy*. 2015;2015:437105. [CrossRef]
26. Sencan S, Ozcan-Eksi EE, Cuce I, Guzel S, Erdem B. Pregnancy-related low back pain in women in Turkey: prevalence and risk factors. *Ann Phys Rehabil Med*. 2018;61(1):33-37. [CrossRef]
27. Wuytack F, O'Donovan M. Outcomes and outcomes measurements used in intervention studies of pelvic girdle pain and lumbopelvic pain: a systematic review. *Chiropr Man Therap*. 2019;27(1):62. [CrossRef]
28. Bryndal A, Majchrzycki M, Grochulska A, Glowinski S, Seremak-Mrozikiewicz A. Risk factors associated with low back pain among a group of 1510 pregnant women. *J Pers Med*. 2020;10(2):3-10. [CrossRef]
29. Rabiee M, Sarchamie N. Low back pain severity and related disability in different trimesters of pregnancy and risk factors. *Int J Womens Health Reprod Sci*. 2018;6(4):438-443. [CrossRef]
30. Persson M, Winkvist A, Dahlgren L, Mogren I. "Struggling with daily life and enduring pain" : A qualitative study of the experiences of pregnant women living with pelvic girdle pain. *BMC Pregnancy Childbirth*. 2013;13:111. [CrossRef]
31. Turkey Demographic and Health Survey. Hacettepe University of population studies. In: *Hacettepe University of Population Studies*. Ankara: TR Ministry of Health; 2018. Available at: http://www.hips .hacettepe.edu.tr/tnsa2018/rapor/TNSA2018 _ana_ Rapor.pdf
32. Chang HY, Jensen MP, Yang YL, Lee CN, Lai YH. Risk factors of pregnancy-related lumbopelvic pain: A biopsychosocial approach. *J Clin Nurs*. 2012;21(9-10):1274-1283. [CrossRef]
33. Bliddal M, Pottegärd A, Kirkegaard H, et al. Association of pre-pregnancy body mass index, pregnancy-related weight changes, and parity with the risk of developing degenerative musculoskeletal conditions. *Arthritis Rheumatol*. 2016;68(5):1156-1164. [CrossRef]
34. Lardon E, St-laurent A, Babineau V, Descarreaux M, Ruchat S, Babineau V. Lumbopelvic pain, anxiety, physical activity and mode of conception : a prospective cohort study of pregnant women. *BMJ Open*. 2018;1-11. [CrossRef]
35. Bakker EC, van Nimwegen-Matzinger CW, Ekkel-van der Voorden W, Nijkamp MD, Völlink T. Psychological determinants of pregnancy-related lumbopelvic pain: A prospective cohort study. *Acta Obstet Gynecol Scand*. 2013;92(7):797-803. [CrossRef]
36. Bergström C, Persson M, Mogren I. Pregnancy-related low back pain and pelvic girdle pain approximately 14 months after pregnancy – pain status, self-rated health and family situation. *BMC Pregnancy Childbirth*. 2014;14:48. [CrossRef]