



Prevalence and associated factors for persistent low back pain in the postpartum period

Prévalence et facteurs associés à la persistance de la lombalgie du post-partum

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ABSTRACT

Introduction: Low back pain (LBP) is common during pregnancy and tends to increase in the third trimester. This pregnancy-related condition may even persist through the postpartum period, and become a lifelong problem.

Aim: To determine the prevalence of persistent LBP in the postpartum and to identify factors associated with this condition.

Methods: In this cross-sectional study, we assessed a survey of women under the age of 40 for back pain symptoms during the postpartum period. Questions included sociodemographic data, data related to low back pain during pregnancy and the postpartum period as well as characteristics of the delivery. We identified factors associated with persistent LBP in postpartum. The level of significance was fixed at 0.05.

Results: We interviewed 100 women during their postpartum period. A history of LBP before and during pregnancy was found in 44.6% and 75% of cases respectively. In addition to pregnancy-related LBP, 53% experienced persistent postpartum LBP. A history of previous back pain episodes when not pregnant ($p < 0.001$), as well as during previous pregnancies ($p < 0.001$) were associated with persistent LBP. In contrast, no association was found between LBP in the postpartum and the number of children ($p = 0.681$), body mass index ($p = 0.37$), and physical activity ($p = 0.726$). In multivariate analysis, we did not identify any associated factors for persistent LBP.

Conclusions: Our study showed that the prevalence of persistent LBP in the postpartum is high. The main factors associated with this condition were previous episodes of back pain while non-pregnant or pregnant. Identification of these risk factors may help in the determination of appropriate prevention strategies and treatment options.

Key words: low back pain, postpartum, pregnancy

RÉSUMÉ

Introduction: La lombalgie est fréquente au cours de la grossesse particulièrement au cours du troisième trimestre. Cette affection liée à la grossesse peut même persister pendant la période post natale.

Objectif: Déterminer la prévalence de la lombalgie au cours de la période du post-partum et d'identifier les facteurs associés à cette affection.

Méthodes: Nous avons mené une enquête auprès de femmes âgées de moins de 40 ans concernant les lombalgies de la période postnatale. Les questions comprenaient les données sociodémographiques, celles relatives à la lombalgie pendant la grossesse et la période postnatale, ainsi que les caractéristiques de l'accouchement. Nous avons identifié les facteurs de risque de lombalgie persistante dans le post-partum. Le niveau de signification a été fixé à 0,05.

Résultats: Nous avons interrogé 100 femmes pendant la période du post-partum. Des antécédents de lombalgie avant et pendant la grossesse ont été retrouvés dans 44,6 % et 75 % des cas respectivement. Près de 53% des femmes souffraient de lombalgies persistantes pendant le post-partum. Des antécédents de lombalgies en dehors de la grossesse ($p < 0,001$), et lors des grossesses antérieures ($p < 0,001$) étaient associés à une lombalgie persistante. Aucune association n'a été trouvée entre la lombalgie du post-partum et le nombre d'enfants ($p = 0,681$), l'indice de masse corporelle ($p = 0,37$) et l'activité physique ($p = 0,726$). En analyse multivariée, nous n'avons pas identifié de facteurs associés à une lombalgie persistante.

Conclusions: Notre étude a montré que la prévalence de la lombalgie persistante dans le post-partum est élevée. Les principaux facteurs associés à cette pathologie sont les épisodes antérieurs de lombalgie. L'identification de ces facteurs de risque peut aider à déterminer les stratégies de prévention et les options de traitement appropriées.

Mots clés: lombalgie, post-partum, grossesse

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INTRODUCTION

Low back pain (LBP) is defined as pain and discomfort located between the twelve ribs and the gluteal fold [1]. It remains a significant global public health concern in the general population. In particular, LBP is frequent among pregnant women. Indeed, nearly 50% of women experience pregnancy-related low back pain (Preg-LBP) and 25% of them continue to suffer from LBP three years after delivery [2]. In addition, a 10-year follow-up study reported that 10% of women may suffer from Preg-LBP up to 11 years postpartum [3]. Despite its high prevalence, studies aiming at preventing postpartum LBP are scarce. As the definition and the exact pathophysiology of LBP in the prenatal and postnatal periods are not studied in-depth, it is difficult to determine a treatment consensus for each condition [4]. More importantly, many practitioners accept Preg-LBP as an inevitable process of the natural course of pregnancy and believe that remission of this condition occurs six months after delivery [5]. Disability during this period is responsible for a greater burden on pregnant women, especially during the postpartum period with a deteriorated perception of health quality and daily functioning [6].

The present study aimed to assess the prevalence of postpartum-related LBP and to investigate factors associated with persistent Preg-LBP.

METHODS

We conducted a cross-sectional study including women recruited between the period of August 2020 and April 2021. Inclusion criteria were patients under the age of 40 years old, achieving at least one full-term pregnancy who may be pregnant at the moment of the study but not holding the first baby. Women who agreed to participate in the study were invited to answer a web questionnaire using Google form.

The study was approved by the ethical committee of Mongi Slim Hospital (ethical committee number 04/23).

Survey questions

The current survey consisted of 40 items in total, grouped into two sections. The first section focused on LBP during pregnancy. The questions concerned their obstetric and gynecological history, previous and actual pregnancies, as well as the presence or not of gained weight after the last pregnancy. The second section concerned the postpartum period and focused on the delivery mode and whether new mothers resumed physical activity after giving birth.

In each section, we asked the respondents whether they experienced LBP during pregnancy or in the postpartum period. Information on pain patterns, treatment modalities, triggering factors, interference in activities of daily living and work were also collected.

Preg-LBP was defined as recurrent or continuous pain occurring during pregnancy. Postpartum LBP was defined as recurrent or continuous pain occurring after pregnancy or persistent preg-LBP. The postpartum period was fixed for a period up to 6 months.

Statistical analyses

The data was transcribed using Excel and analyzed using the SPSS version 12.0 for Windows. We calculated simple frequencies and relative frequencies (percentages) for qualitative variables. We calculated averages, standard deviations and determined the extent (extreme values - minimum and maximum) for quantitative variables. In

addition, the association of persistent LBP in the postpartum period and various risk factors, specifically age, number of births, workload, exercise, and pain during pregnancy, were examined using cross-tabulations and chi-square tests for categorical factors and using mean, SD, and t-tests for continuous measures. The differences were found to be significant for a coefficient of meaning $p < 0.05$. In order to identify risk factors linked independently to the event, we conducted a multivariate logistic regression analysis step-by-step. Odds ratios (OR) were calculated with a confidence interval (CI) fixed at 95%.

RESULTS

Population characteristics:

Overall, 100 women were interviewed. The mean age was 29.1 ± 2.8 years [24-38]. Twenty patients had a history of depression and one patient underwent surgical treatment on the back. Before pregnancy, 44.6% of the respondents experienced LBP and did not seek medical attention in most of the cases (80.2%).

Only 29% entertained physical activity before pregnancy. Among them, 25% resumed sporting activity after a mean period from delivery of 11.6 months [3-48]. In 63.6% of cases, practicing physical activity helped to improve LBP. The demographics and characteristics of the respondents are summarized in Table 1.

Table 1. Demographics and background of the respondents

	Value
Marital Status	
Married (%)	99
Divorced (%)	1
Level of education	
University degree (%)	100
Occupation (%)	
Stressful	49.4
Physical	5.1
Uncomfortable, not ergonomic	45.6
Previous live births (%)	
1	47.5
>1	32.7
The body mass index before the first pregnancy (Kg/m²)	23.2±4.02 [17-34]
Gained weight during pregnancy (%)	
<5 kg	6
5-10 kg	23
10-15 kg	51
>15 kg	20
Mode of delivery (%)	
Cesarean section	59.3
Vaginal delivery	40.7
Preterm birth (%)	3.3
Emergency delivery due to health problem (%)	24.4
Epidural anesthesia (%)	91.2

Characteristics of Low back pain during pregnancy

In the last pregnancy, Preg-LBP was found in 75% of cases. The pain started in the third trimester in 75% of the women. Forty-three percent of the respondents sought medical care from their doctors, 30.1% of them did not express the need for it as they considered Preg-LBP as a normal pain during pregnancy. In 48.8% of cases, LBP was responsible for sick leave. Only 23.3% received medical treatment and 24.4% of them were self-medicated. Treatment modalities consisted of medication (53.3%), physical therapy (27.9%), balneotherapy (9.3%), and corset (18.6%). The mean VAS prior and after treatment decreased from 5.4 ± 2.3 [0-10] to 3.2 ± 2.1 [0-9]. Improvement was noted in 57.1%.

Characteristics of low back pain in the postpartum period

Eighty-two percent of women were in the postpartum period, with an average of 7.2 months after delivery [1-18 months]. The remaining women pregnant at the moment of the study were from an average of 44 months from their last delivery.

In addition to Preg-LBP, 53% experienced persistent postpartum LBP. Ten patients (18.8 %) experienced LBP only during the postpartum period. The mean period of onset was inferior to one-month postpartum in 70%, between 1 and 6 months in 30%. Only 24% sought medical care from orthopedists (33.3%), rheumatologists (66.6%), or other specialties (22.2%). A visit to the chiropractor was found in 38.5% of cases. Regarding treatment modalities, 41.7% of the women were treated with oral medication (72.7%), epidural injections (18.2%), lumbar orthoses (36.4%), and physical therapy (36.4%). Only 10% of women reported improvement after a mean of 5 months since pregnancy [4-16].

Data related to LPB in pregnancy and postpartum are represented in Table 2 and Table 3 respectively.

Table 2. Data related to low back pain in pregnancy

	Value (%)
LBP before pregnancy	44
Preg-LBP in previous pregnancies	29.7
Preg-LBP in the last pregnancy	75
Preg-LBP frequency	
1 episode	17.7
2 episodes	13.5
>2 episodes	49
Duration of Preg-LBP	
<1 hour	31.3
1hour- less than 1day	22.5
1 day	12.5
Several days	33.3
Triggering factors	
Household chores	56.7
Long sitting	51.5
Physical activity	14.4
Working	36.7
Standing	54.4
Breastfeeding	21.9
Lying position	22.2
Impact on daily life	75
Working	32.9
Household chores	58.9
Sleeping	46.6
Walking	17.8
Sexual life	13.7
Baby care	41.1

LBP: low back pain, Preg-LBP: pregnancy-related Low back pain.

Associated factors of persistent postpartum low back pain

A history of LBP before or during pregnancy was associated with postpartum pain. However, we did not find any association between LBP in the postpartum nor with sociodemographic characteristics or with modalities of delivery (Table 4). In multivariate analysis, we did not identify any associated factors for persistent LBP (Table 5).

Table 3. Data related to low back pain in the post-partum

	Value (%)
Persistent LBP after delivery	53
LBP only during the post-partum	14
Mean onset at post-partum	
<1-month post-partum	48.9
1-6 months post-partum	22.2
After 6 months post-partum	28.9
Frequency of the post-partum LBP	
1 episode	6.7
<1 episode/week	37.3
<1 episode/month	18.7
Risk factors	p-value
Age	0.8
History of depression	0.741
Profession	0.9
Number of children	0.681
BMI before pregnancy	0.37
PA before pregnancy	0.726
LBP before pregnancy	0.006
LBP treatment before pregnancy	0.436
Frequency of LBP	0.514
Physical therapy treatment	0.9
History of LBP in previous pregnancies	0.024
Type of delivery	0.788
Epidural anesthesia	0.449
Complicated delivery	0.566
Resuming PA in the post-partum	0.216
<1 episode/6 months	6.7
Permanent	30.7

Table 4. Potential risk factors for persistent post-partum low back pain

Risk factors	p-value
Age	0.8
History of depression	0.741
Profession	0.9
Number of children	0.681
BMI before pregnancy	0.37
PA before pregnancy	0.726
LBP before pregnancy	0.006
LBP treatment before pregnancy	0.436
Physical therapy treatment	0.9
History of LBP in previous pregnancies	0.024
Type of delivery	0.788
Epidural anesthesia	0.449
Complicated delivery	0.566
Resuming PA in the post-partum	0.216

BMI: body mass index, PA: physical activity, LBP: low back pain

Table 5. Multivariate Analysis for Predicting Factors of persistent low back pain

Variables	OR	95% CI		P
		Min	Max	
Age	0.497	0.235	1.051	0.067
History of depression	4.286	0.386	47.62	0.236
BMI before pregnancy	1.51	0.923	2.572	0.098
LBP before pregnancy	6.821	0.246	188.97	0.257
LBP treatment before pregnancy	0.274	0.14	5.21	0.389
History of LBP in previous pregnancies	1.90.	0.119	30.6	0.648
Type of delivery	10.2	0.211	50	0.24
Complicated delivery	4.13	0.324	47.6	0.236

DISCUSSION

The definition of Preg-LBP, although recent, is well established in the literature. However, persistent LBP in the postpartum period was not studied previously in-depth [4,7,8]. The prevalence of LBP in the postpartum varied in the literature. Some studies reported a rate of 20% to 33% with a mean period from delivery ranging from 1 to 36 months [3].

However, in other studies, the prevalence was higher; up to 75% of women with Preg-LBP continued to have pain in the postpartum period [9]. In our survey, we found a rate of 53%. The disparities in the results may be explained by the lack of a universal classification system to define LBP in the postpartum period. Indeed, some studies also included other site-specific pain: pelvic girdle pain (PGP) defined as pain in the symphysis pubis and/or between the iliac crest, and the gluteal folds, and combination pain: the association of LBP and PGP [10].

The exact mechanism for LBP during and after pregnancy is not well-defined. From the biomechanical point of view, the increase of abdomen volume and weight gain is associated with changes in posture due to a shift in the center of gravity. This leads to pelvic anteversion and lumbar lordosis which increases the load on the lumbar muscles [11]. Moreover, ligament laxity as well as venous stasis and hypoxemia may be contributing to Preg-LBP [11].

In our study, LBP started one month after delivery in most of the cases with fewer women having LBP at 6 months (28.9%). These results are in line with the literature in which LBP improved in the first 6 months postpartum [3]. In contrast, one study showed that persistent LBP was found in 75% of cases after 3 years postpartum [12].

We did not identify associated factors for persistent LBP, including gained weight after pregnancy. In the literature, studies regarding higher BMI are conflicting. While two authors reported similar results [1,13], other studies showed that higher weight gain at 24 months postpartum was associated with further pain in the postpartum ($p < 0.01$) [14,15]. Surprisingly, neither the lack of PA nor heavy work led to persistent LBP in our study. Whereas, heavy work was considered as a risk factor according to Ostgaard et al [12]. Contrary to our results, the number of previous pregnancies, as well as younger maternal age, were reported to be associated with persistent LBP [16,17].

In previous studies, women with a history of LBP before or in previous pregnancies were more likely to experience persistent postpartum LBP [10,12,18,19]. Similar to our findings, more patients suffering from LBP had a history of previous back pain episodes when not pregnant ($p < 0.001$), as well as during previous pregnancies ($p < 0.001$).

Regarding treatment modalities, only 43% and 41.7% of women with preg-LBP and postpartum LBP respectively sought medical attention, and the most prescribed treatments were medication and physical therapy. Surprisingly, more than half of the respondents preferred to be treated alone or looked for sick leave, although they had a university degree. These results may be explained by the lack of awareness regarding the importance of maintaining normal activities and avoiding total rest when managing LBP. In our study, physical activity did not seem to be associated with LBP in the postpartum. Similarly, women who received physical therapy for LBP in pregnancy still suffered from persistent LBP.

In the literature, the role of physical activity was highlighted in some studies although results were conflicting [20,21,22]. A recent meta-analysis published in 2019 including 32 studies and 52 297 pregnant women assessed the relationship between prenatal exercise (i.e.,

aerobic exercise, yoga, specific strengthening exercises, general strengthening exercise, or a combination of different types of exercise), and LBP. The analyses concluded that initiating exercise during pregnancy did not decrease the prenatal or postnatal prevalence of LBP. However, evidence suggests that prenatal exercise decreased the severity of LBP during pregnancy but not in the postpartum period [20].

In contrast, only one RCT supported the benefits of exercising in the postpartum period. Indeed, a study published in 1999, showed that 30min of water aerobics performed once a week in the second half of pregnancy reduced LBP intensity in the first week postpartum ($P=0.034$) compared with no exercise [21]. The lack of an established treatment strategy may be explained by the complex nature and unpredictable course of this condition, which further complicates the prevention of first-time symptom onset [22].

The disparities between the different studies may be explained by the lack of an established definition of postpartum-related LBP. Indeed, the concept was not well delineated in the literature. In our study, we limited the duration of postpartum to 6 months. Thus, making direct comparisons may be challenging. Moreover, research gaps remain as few randomized controlled trials focused on this particular subject. Another limitation in the literature is the timing of the questionnaire which may be a source of recall bias and account for the differences in the results [22].

This is one of the rare studies that focused on postpartum rather than Preg-LBP. We focused on determining risk factors, which were not always assessed in the literature. Nevertheless, this study had some limitations and the primary one is its cross-sectional design and the lack of a control group. A longitudinal study may be interesting in the context of LBP as this condition evolves through time. However, this requires a longer follow-up. Another limitation is that the questionnaire was conducted online making interpreting some answers imprecise. Indeed, educational level was difficult to assess and all of its aspects could not be captured through online questionnaires. In addition, this may be a selection bias as it limits access to some women without internet connexion. However, this is the only possible way to collect the required information since asymptomatic women are not consulting physicians.

CONCLUSIONS

Our study highlighted the high prevalence of postpartum-related LBP. A history of LBP before or during pregnancy was associated with persistent LBP. Thus, it is important to target this particular population and offer a cost-effective, self-management strategy to prevent and alleviate symptom severity.

Abbreviation list

LBP: Low back pain

Preg-LBP: Pregnancy-related low back pain

OR: Odds ratios

CI: Confidence interval

PGP: Pelvic girdle pain

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