Rev Bras Anestesiol. 2017;67(3):266–270

Sociedade Brasileira de Anestesiologia

REVISTA BRASILEIRA DE ANESTESIOLOGIA

Publicação Oficial da Sociedade Brasileira de Anestesiologia
www.sba.com.br

SCIENTIFIC ARTICLE

# Low back pain during pregnancy

**Maria Emília Coelho Costa Carvalho[a], Luciana Cavalcanti Lima[a,b], Cristovam Alves de Lira Terceiro[a], Deyvid Ravy Lacerda Pinto[a], Marcelo Neves Silva[a], Gustavo Araújo Cozer[a], Tania Cursino de Menezes Couceiro[a,c,d,e,f,*]**

[a] *Instituto de Medicina Integral Professor Fernando Figueira (IMIP), Recife, PE, Brazil*
[b] *Universidade Estadual Paulista ''Júlio de Mesquita Filho'' (Unesp), Botucatu, SP, Brazil*
[c] *Neuropsiquiatria e Ciência do Comportamento, Universidade Federal da Pernambuco (UFPE), Recife, PE, Brazil*
[d] *Sociedade Médica Brasileira de Acupuntura, São Paulo, SP, Brazil*
[e] *Sociedade Brasileira de Anestesiologista, Rio de Janeiro, RJ, Brazil*
[f] *Hospital Barão de Lucena, Recife, PE, Brazil*

Received 11 June 2015; accepted 25 August 2015
Available online 25 November 2016

**KEYWORDS**
Low back pain;
Frequency and characteristics of low back pain;
Pregnant women

**Abstract**
*Objective:* Low back pain is a common complaint among pregnant women. It is estimated that about 50% of pregnant women complain of some form of back pain at some point in pregnancy or during the postpartum period. The aim of this study was to evaluate the frequency of low back pain during pregnancy and its characteristics.
*Methods:* Cross-sectional study with low-risk pregnant women. After approval by the Human Research Ethics Committee and receiving written informed consent, we included pregnant women over 18 years of age and excluded those with psychiatric disorders, previous lumbar pathologies, and receiving treatment for low back pain.
*Results:* We interviewed 97 pregnant women. The frequency of low back pain was 68%. The mean age was 26.2 years and the median gestational age was 30 weeks. Fifty-eight pregnant women declared themselves as brown (58%). Most (88.6%) were married or living in common-law marriage, 56 (57.7%) worked outside the home, and 71 (73.2%) had completed high school. Low back pain was more frequent during the second trimester of pregnancy (43.9%), referred to as a ''burning'' sensation in 37.8% of patients, with intermittent frequency in 96.9% of the women. The symptoms got worse at night (71.2%). Resting reduced low back pain in 43.9% of pregnant women, while the standing position for a long time worsened it in 27.2% of patients.
*Conclusion:* Low back pain is common in pregnant women, has specific characteristics, and is more frequent in the second trimester of pregnancy. This indicates the need for prevention strategies that enable better quality of life for pregnant women.


* Corresponding author.
*E-mail:* taniacouceiro@yahoo.com.br (T.C. Couceiro).

http://dx.doi.org/10.1016/j.bjane.2015.08.014

**PALAVRAS-CHAVE**
Lombalgia;
Frequência e características da lombalgia;
Gestantes

**Lombalgia na gestação**

**Resumo**
*Objetivo:* A lombalgia é uma queixa comum entre grávidas. Estima-se que cerca de 50% das gestantes queixam-se de algum tipo de dor lombar em algum momento da gravidez ou durante o puerpério. O objetivo deste estudo foi avaliar a frequência da lombalgia na gestação e suas características.
*Método:* Estudo de corte transversal com gestantes de baixo risco. Após a aprovação pelo Comitê de Ética em Pesquisa em Seres Humanos e a assinatura do termo de consentimento livre e esclarecido, foram incluídas maiores de 18 anos e alfabetizadas e excluídas gestantes com distúrbios psiquiátricos, com patologias lombares prévias e em tratamento para dor lombar.
*Resultados:* Foram entrevistadas 97 gestantes. A frequência de dor lombar foi 68%. A média de idade foi 26,2 anos e a mediana da idade gestacional de 30 semanas; 58 consideraram-se pardas (58%). A maioria (88,6%) era casada ou vivia em união estável, 56 (57,7%) trabalhavam fora e 71 (73,2%) tinham o ensino médio completo. A lombalgia foi mais frequente durante o segundo trimestre gestacional (43,9%), referida como ''em queimação'' por 37,8% das pacientes e com frequência intermitente em 96,9%. Os sintomas pioravam no período noturno (71,2%). O repouso reduzia a dor lombar em 43,9%, enquanto a posição ortostática por longo tempo agravava em 27,2%.
*Conclusão:* A lombalgia é comum em gestantes, apresenta características específicas e é mais frequente no segundo trimestre. Isso alerta para a necessidade de serem instituídas estratégias de prevenção que possibilitem melhor qualidade de vida para a gestante.


## Introduction

Low back pain is usually defined as the axial or parasagittal discomfort in the lower back region. It is essentially musculoskeletal and may be due to a combination of mechanical, circulatory, hormonal, and psychosocial factors.[1]

It is a common complaint among pregnant women.[1] It is estimated that about 50% of pregnant women complain of some sort of back pain at some point in pregnancy or during the postpartum period.[2]

The etiology of pregnancy-specific low back pain is not well defined.[3] From a biomechanical standpoint, the center of gravity moves forward due to the increase in the abdomen and breasts, which leads to posture changes, such as reduction in plantar arch, knee hyperextension, and pelvic anteversion. These changes generate stress in the lumbar lordosis and consequent tension in the paraspinal muscles. The compression of great vessels by the gravid uterus decreases spinal blood flow and may cause low back pain, particularly in the last half of pregnancy.[4] Significant water retention determined by progesterone stimulation[5] and ligamentous laxity by relaxin secreted from the *corpus luteum* may also be seen, leaving the lumbar spine and hip joints less stable and therefore more susceptible to stress and pain.[4]

Some risk factors related to low back pain during pregnancy have been reported,[6] including low back pain during the menstrual period and previous history of low back pain. Regarding age, it is known that the younger the patient, the greater the chance of developing pregnancy-related low back pain.[6,7] Another factor related to low back pain is the increased weight, which results in sacroiliac joint instability, in addition to increased spinal flexibility and consequent onset or worsening of low back pain.[7,8]

Most prevalence studies confirm that low back pain during pregnancy is a major complaint due to the high frequency of affected women and the severity and discomfort caused by pain.[5] Besides influencing negatively the quality of sleep, physical condition, performance at work, social life, household activities, and leisure,[5] it causes economic losses due to absenteeism.[9,10] Based on the above, the objective of this study was to evaluate the frequency of low back pain during pregnancy and its features.

## Method

A cross-sectional cohort study was performed involving pregnant women, from the first to third trimester of pregnancy, attending the prenatal low-risk program at the Center for Women Care (CWC) of the *Instituto de Medicina Integral Professor Fernando Figueira* (IMIP) who agreed to participate in the study.

The project was approved by the IMIP Ethics Committee, No. 23173313800005201. Data were collected from December 2013 to January 2014. A list of questions determined by the researchers and the database filled by them with the responses were used as tools. The questionnaire was composed of simple and direct questions, including the pregnant woman personal data, such as age, weight, occupation, and information related to pregnancy and presence or absence of low back pain and its peculiarities.

The pregnant women were informed about the research, its objectives and procedures and consulted on the participation in the study. After explanations, those who agreed to voluntarily participate in the study gave written informed consent (WIC).

Pregnant women aged over 18 years and literate who were attended at the IMIP Hospital Complex were included in the sample. Patients with psychiatric disorders, previous spinal pathologies, those in treatment for low back pain and taken analgesics or nonsteroidal anti-inflammatory drugs (NSAIDs) were excluded from the study.

For data analysis, the EPI-INFO™ software version 3.5.1 for Windows™ was used; data were described as absolute and relative frequency distribution and presented in tables. Numerical variables were represented by central tendency and dispersion measures. Chi-square test and Fisher's exact test were used to check for association between categorical variables.

## Results

Ninety-seven patients completed the questionnaire. The mean age was 26.2 years; the median gestational age was 30 weeks; and 58% considered their skin color as brown, 88.6% were married or living in common-law marriage, 50% and 57.7% worked out, and 73.2% had completed high school. Regarding the number of pregnancies, 51.5% were in their first pregnancy. Regarding the number of live births, 28 women (28.8%) had live birth. The frequency of patients who had had abortions was 13.3%.

Of the 97 patients interviewed, 68% reported low back pain and of these 43.9% reported that low back pain began in the second trimester. Pain was characterized as severe (median = 7), and more than half (71.2%) patients reported that it was more painful at night; 37% reported pain as a ''burning'' sensation, and most of the surveyed patients (72.7%) denied urinary tract infection (Table 1). Data regarding pain frequency, irradiation, and most painful time are in Table 2. Regarding pain aggravating and mitigating factors, less than half of pregnant women (43.9%) claimed that resting was a relief factor and only 27.2% identified the fact of standing for long periods of time as an aggravating factor (Table 3).

History of low back pain in previous pregnancies, advanced pregnancy as a cause of pain worsening, and the fact that this pain limits daily physical activities are shown in Table 3.

**Table 1** Low-back pain frequency, onset time, relationship with UTI, and feature.

| Variable | *n* | % |
|---|---|---|
| *Low back pain* | | |
| No | 31/97 | 31.9 |
| Yes | 66/97 | 68 |
| *Onset time* | | |
| First trimester | 23/66 | 34.8 |
| Second trimester | 29/66 | 43.9 |
| Third trimester | 14/66 | 21.2 |
| *UTI during pregnancy* | | |
| No | 48/66 | 72.7 |
| Yes | 18/66 | 27.2 |
| *Relationship with UTI/pain onset* | | |
| No | 15/18 | 22.7 |
| Yes | 3/18 | 4.5 |
| *Pain type* | | |
| Griping | 8/66 | 12.1 |
| Griping/burning | 1/66 | 1.5 |
| Stinging | 5/66 | 7.5 |
| Twinging | 5/66 | 7.5 |
| Throbbing | 2/66 | 3 |
| Stabbing | 14/66 | 21.2 |
| Stabbing/burning | 5/66 | 7.5 |
| Burning | 25/66 | 37.8 |
| Burning/twinging | 1/66 | 1.5 |

## Discussion

The human pregnancy period involves physical changes. Throughout pregnancy, the woman undergoes physiological changes caused by anatomical and functional needs. Physiological changes affect the musculoskeletal system and usually generate pain, including lower back pain.[10–12]

The frequency of low back pain was found to be 68% among the pregnant women interviewed. This finding is in agreement with those found in the literature, whose prevalence ranges from 68.5% to 80%.[5,6,13] This prevalence is considered high, as this is a group of low-risk pregnant women, that is, patients without significant pathological conditions that often worsen back pain, such as obesity, advanced age, and twin pregnancy.

Low back pain is usually defined as axial or parasagittal discomfort in the lower back region. It is essentially musculoskeletal and may be due to a combination of mechanical, circulatory, hormonal, and psychosocial factors.[1]

Risk factors related to low back pain during pregnancy have already been reported, which include low back pain during the menstrual period and previous history of low back pain.[3] Regarding age, it is known that the younger the patient, the greater the chance of developing pregnancy-related low back pain.[3,5] Increased weight is also identified as a risk factor because the greater weight gain during pregnancy, the greater the chance of sacroiliac joint instability and increased lumbar lordosis, which results in pain.[7]

In this study assessing pregnant women in the three trimesters of pregnancy, it was found that the low back pain reported by the women starts more often in the second trimester of pregnancy (43.24%). These data were also found by other authors[8,11] and may be justified by the changes in the spinal flexibility aforementioned. Our study sample included the three trimesters of pregnancy in order to identify if low back pain occurred preferably in any of the trimesters. But some prospective studies[14,15] found that the prevalence of low back pain was higher in pregnant women from the third trimester, these results are different from those found in our study.

In a study with pregnant women attending a prenatal program, the pain in most cases radiated to the legs and

**Table 2** Characteristics of low back pain regarding weekly frequency, onset time, more severe time, duration, and irradiation.

| Variable | *n* | % |
|---|---|---|
| *Weekly frequency* | | |
| >3 times/week | 13/66 | 19.9 |
| once/week | 2/66 | 3 |
| twice/week | 12/66 | 18.1 |
| Everyday | 39/66 | 59 |
| *Onset time* | | |
| Morning | 10/66 | 15.1 |
| Night | 17/66 | 25.7 |
| No relationship | 30/66 | 45.4 |
| Afternoon | 9/66 | 13.6 |
| *More severe time* | | |
| Morning | 7/66 | 10.6 |
| Night | 47/66 | 71.2 |
| No relationship | 3/66 | 4.5 |
| Afternoon | 9/66 | 13.6 |
| *Duration* | | |
| Continuous | 2/66 | 3 |
| Intermittent | 64/66 | 96.9 |
| *Irradiation* | | |
| Abdomen | 4/66 | 6 |
| Thigh | 9/66 | 13.6 |
| Thigh and abdomen | 1/66 | 1.5 |
| Thigh and lower leg | 4/66 | 6 |
| Buttocks | 6/66 | 9 |
| Buttocks and thigh | 1/66 | 1.5 |
| No | 37/66 | 56 |
| Legs | 4/66 | 6 |

**Table 3** Aggravating and mitigating factors and interference in daily activities related to low back pain.

| Variable | *n* | % |
|---|---|---|
| *Mitigating factors* | | |
| Physical exercise | 2/66 | 3 |
| Massage | 9/66 | 13.6 |
| Massage/medicines | 1/66 | 1.5 |
| Medicines | 3/66 | 4.5 |
| Medicines/physical exercise | 1/66 | 1.5 |
| Medicines/massage | 2/66 | 3 |
| Position | 7/66 | 10.6 |
| Resting | 29/66 | 43.9 |
| Resting and position | 2/66 | 3 |
| Resting/massage | 4/66 | 6 |
| Resting/medicines | 3/66 | 4.5 |
| Resting/medicines/massage | 2/66 | 3 |
| Resting/position | 1/66 | 1.5 |
| *Aggravating factors* | | |
| Household activities | 14/66 | 21.2 |
| Household activities/remain standing | 2/66 | 3 |
| Household activities/remain seated | 1/66 | 1.5 |
| Household activities/remain seated position | 1/66 | 1.5 |
| Remain standing | 18/66 | 27.2 |
| Remain seated | 13/66 | 19.7 |
| Remain seated and standing | 2/66 | 3 |
| Remain seated/standing | 2/66 | 3 |
| Position | 10/66 | 15 |
| Position/remain standing | 1/66 | 1.5 |

gluteal region.[13] In the present study, most pregnant women reported no low back pain irradiation.

By studying the characteristics of low back pain, the following characteristics were observed: severe intensity, ''burning'' sensation, without irradiation, intermittent and daily occurrence, starting at any time of day and more severe at night—data differing from those found by Assis and Tibúrcio[16] who identified it as ''stabbing pain'' and ''griping pain''. Thus, the multifactorial genesis of pain is justified.

Regarding pain severity, there is disagreement between our data and those found by a US study[5] that evaluated the severity of gestational low back pain in 645 women who quantified pain as moderate. This difference may be explained by the different ethnicity of the studied populations.

The standing position has long been identified as a pain aggravating factor and resting as the main relief factor. This data speaks in favor of muscle involvement in the lumbar pain reported by pregnant women. More than half of pregnant women interviewed said that low back pain was not an obstacle to their daily activities. This finding differs from those of the literature, as previous studies have shown that low back pain can be so severe that affect the daily activities of pregnant women.[8,11,16] However, it is important to emphasize that not all low back pain during pregnancy has the pregnancy itself as a triggering factor.[17] Much of the low back pain existed before the pregnancy and persists or worsens during this period, which means that low back pain during pregnancy should be analyzed in many ways, not simplified.

Gestational age was found to be a risk factor; that is, the more advanced, the greater the risk of developing low back pain. Other authors have shown that the prevalence of low back pain during pregnancy increases with gestational age. Assis and Tibúrcio[16] also reported that it happened in 60% of cases, although the results of Wang et al.[5] have shown that the prevalence of low back pain was not affected by gestational age.

This study shows that even in patients with low-risk pregnancy low back pain is present, there is a direct relationship with increasing gestational age and this finding emphasizes the biomechanical origin of low back pain in pregnant women.

Based on the results provided by this study regarding low back pain during pregnancy, new studies should be performed assessing preventive treatment for low back pain.

## Conflicts of interest

The authors declare no conflicts of interest.

## References


1. Sabino J, Grauer JN. Pregnancy and low back pain. Curr Rev Musculoskelet Med. 2008;1:137–41.
2. Vadivelu R, Green TP, Bhatt R. An uncommon cause of back pain in pregnancy. Postgrad Med J. 2005;81:65–7.
3. Santos MM, Gallo AP. Lombalgia gestacional: prevalência e características de um programa pré-natal. Arq Bras Ciên Saúde. 2010;35:174–9.
4. Katonis P, Kampouroglou A, Aggelopoulos A, et al. Pregnancy-related low back pain. Hippokratia. 2011;15:205–10.
5. Wang SM, Dezinno P, Maranets I, et al. Low back pain during pregnancy: prevalence, risk factors, and outcomes. Obstet Gynecol. 2004;104:65–70.
6. Novaes FS, Shimo AKK, Lopes MHBM. Lombalgia na gestação. Rev Latino-am Enfermagem. 2006;14:620–4.
7. Ferreira CHJ, Nakano AMS. Lombalgia na gestação: etiologia, fatores de risco e prevenção. Femina. 2000;28:435–8.
8. Gomes MRA, Araújo RCL, Pitangui ACR. Lombalgia gestacional: prevalência e características clinicas em um grupo de gestantes. Rev Dor. 2013;14:114–7.
9. Moura SRV, Campos SR, Mariani SHV, et al. Dor lombar gestacional: impacto de um protocolo de fisioterapia. Arq Med ABC. 2007;32:S59–63.
10. Ferreira CHJ, Nakano AMS. Reflexões sobre as bases conceituais que fundamentam a construção do conhecimento acerca da lombalgia na gestação. Rev Lat Am Enfermagem. 2001;9:95–100.
11. De Carvalho YBR, Caromano FA. Alterações morfofisiológicas com lombalgia gestacional. Arq Ciên Saúde Unipar. 2001;5:267–77.
12. Stapleton DB, MacLennan AH, Kristiansson P. The prevalence of recalled low back pain during and after pregnancy: a South Australian population survey. Aust NZJ Obstet Gynaecol. 2002;42:482–5.
13. Fast A, Weiss L, Parich S, et al. Night backache in pregnancy hypothetical pathophysiological mechanisms. Am J Phys Med Rehab. 1989;68:227–9.
14. Martins RF, Silva JLP. Prevalência de dores nas costas na gestação. Rev Assoc Med Bras. 2005;51:144–7.
15. Sant'anna PF, Freire SS, Alves AT, et al. Caracterização da dor lombar em gestantes atendidas no Hospital Universitário de Brasília. Universitas: Ciências da Saúde. 2006;4:37–48.
16. Assis RG, Tibúrcio RES. Prevalência e características da lombalgia na gestação: um estudo entre gestantes assistidas no programa de pré-natal da maternidade dona Íris em Goiânia. Trabalho de conclusão de curso. Goiânia: Universidade Católica de Goiás; 2004. p. 10–28.
17. Young G, Jewell D. Interventions for preventing and treating backage in pregnancy (Cochrane review). The Cochrane library, 4. Oxford: Update Software; 2001. p. CD001139.