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ORIGINAL RESEARCH

Repercussion of pelvic girdle pain on pregnant women's functionality evaluated through the Brazilian version of the Pelvic Girdle Questionnaire (PGQ-Brazil): a cross-sectional study

Repercussão da dor da cintura pélvica na funcionalidade de gestantes avaliadas através da versão brasileira do Pelvic Girdle Questionnaire (PGQ-Brasil): estudo transversal

La repercusión del dolor pélvico en la funcionalidad de embarazadas evaluadas desde la versión brasileña del Pelvic Girdle Questionnaire (PGQ-Brasil): estudio transversal

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ABSTRACT | To analyze the impact of pelvic girdle pain on pregnant women's functionality, a cross-sectional study involving pregnant women, aged between 18 and 30 years, with a clinical diagnosis of pregnancy-related pelvic girdle pain (PGPP) was performed. Clinical data were collected followed by the application of the Brazilian version of the Pelvic Girdle Questionnaire (PGQ-Brazil). One hundred and five pregnant women participated, of which 62.9% were multiparous. The most frequent diagnostic was the unilateral sacroiliac syndrome. About the onset of pain, 45.7% of them reported that pain occurred on movement and the activities that had greater limitation were sitting, standing, and walking for more than 60 minutes. The average pain according to the Visual Analog Scale (VAS) was 6.59 (SD 1.8), considered a moderate pain. Pregnant women with pelvic girdle syndrome had a mean of 54.86 (SD 22.39) for the total score of PGQ-Brazil; with unilateral sacroiliac syndrome, 31.11 (SD 17.37); and bilateral sacroiliac syndrome, 40.32 (SD 17.46). When the average pain was compared among the groups assessed by the VAS, the pelvic girdle syndrome had the highest average pain (7.67; SD 1.72), followed by bilateral sacroiliac syndrome (6.86; SD 1.95), and the unilateral sacroiliac syndrome (6.21; SD 1.72). By correlating the average VAS with the total score of PGQ-Brazil, there was a positive correlation (r=0.458, p=0.01), indicating that the greater the pain, the greater the level of disability of the pregnant woman. The findings suggest that PGPP may result in different levels of disability, which may directly affect the pregnant women's functionality.

Keywords | Pregnancy; Activities of Daily Living; Pelvic Girdle Pain; Questionnaires.

RESUMO | Com o objetivo de analisar a repercussão da dor da cintura pélvica na funcionalidade de gestantes, foi realizado um estudo transversal envolvendo mulheres grávidas, com idade entre 18 e 30 anos e diagnóstico clínico de dor da cintura pélvica relacionada à gravidez (DCPG). Foram coletados dados clínicos, seguidos da aplicação do *Pelvic Girdle Questionnaire* versão brasileira (PGQ-Brasil). Participaram do estudo 105 gestantes, das quais 62,9% eram multíparas. O diagnóstico mais frequente foi o de síndrome sacroilíaca unilateral. Quanto ao aparecimento da dor, 45,7% relataram que a dor ocorria durante os movimentos e as atividades que apresentaram maior limitação eram ficar sentada, em pé e andar por

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mais de 60 minutos. A média da dor na Escala Visual Analógica (EVA) foi 6,59 (1,8 DP), considerada dor moderada. As gestantes com síndrome da cintura pélvica apresentaram uma média de 54,86 (22,39 DP) para o escore total do PGQ-Brasil, as com síndrome sacroilíaca unilateral, 31,11 (17,37 DP) e com síndrome sacroilíaca bilateral 40,32 (17,46 DP). Quando comparada a média de dor entre as síndromes mediante a EVA, a síndrome da cintura pélvica apresentou a maior média (7,67; 1,72 DP), seguida pela síndrome sacroilíaca bilateral (6,86; 1,95 DP) e síndrome sacroilíaca unilateral (6,21; 1,72 DP). Ao correlacionar a média da EVA com o escore total do PGQ-Brasil, observou-se uma correlação positiva (r=0,458, p=0,01), indicando que quanto maior a dor, maior a incapacidade da gestante. Dessa forma, os achados sugerem que a DCPG pode acarretar diversos níveis de incapacidade e afetar diretamente a funcionalidade das gestantes.

Descritores | Gravidez; Atividades Cotidianas; Dor da Cintura Pélvica; Questionários.

RESUMEN | A fin de evaluar la repercusión del dolor pélvico en la funcionalidad de embarazadas, se realizó un estudio transversal con mujeres embarazadas, entre 18 y 30 años de edad y diagnosticadas clínicamente con dolor pélvico en el embarazo (DPE). Se recolectaron datos clínicos, después de aplicado la versión brasileña del *Pelvic Girdle Questionnaire* (PGQ-Brasil). Han participado del estudio 105 embarazadas, de las cuales 62,9% eran multíparas. El diagnóstico más común fue el síndrome sacroilíaco unilateral. Al respecto de la aparición del dolor, un 45,7% dijeron que este dolor ocurría en movimientos y las actividades que les presentaban una mayor limitación eran estar sentada, de pie y caminar por más de 60 minutos. El promedio del dolor en la escala visual analógica (EVA) fue de 6,59 (1,8 DP), considerado un dolor moderado. Las embarazadas con el síndrome pélvico presentaron el promedio de 54,86 (22,39 DP) para la puntuación total del PGQ-Brasil, las con síndrome sacroilíaco unilateral 31,11 (17,37 DP) y con síndrome sacroilíaco bilateral 40,32 (17,46 DP). Al compararse el promedio de dolor entre los síndromes utilizando la EVA, el síndrome pélvico presentó el promedio mayor (7,67; 1,72 DP), enseguida del síndrome sacroilíaco bilateral (6,86; 1,95 DP) y del síndrome sacroilíaco unilateral (6,21; 1,72 DP). Al correlacionarse el promedio de EVA con la puntuación total del PGQ-Brasil, se ha observado una correlación positiva (r=0,458, p=0,01), que muestra que cuanto mayor es el dolor, mayor será la incapacidad de la embarazada. De esta manera, los resultados mostraron que el DPE puede resultar en diversos niveles de incapacidad y puede afectar directamente a la funcionalidad de las embarazadas.

Palabras clave | Embarazo; Actividades Cotidianas; Dolor Pélvico; Cuestionarios.

INTRODUCTION

Pregnancy-related pelvic girdle pain is defined as pain experienced between the posterior iliac crest and the gluteal sulcus, especially around the sacroiliac joints; it may radiate to the posterior region of the thigh and be simultaneous to pubic symphysis pain. Its clinical presentation varies greatly; however, it is generally described as a dull pain that hurts and burns in the affected region, as a stab or gunshot wound[1-5].

Prevalence studies have shown that pelvic girdle pain in pregnant women ranges from 4 to 76%. When only prospective studies are considered with diagnoses through clinical exams, such prevalence falls to approximately 20%[6,7] . The condition becomes serious to 25 to 30% of pregnant women. Women who have already experienced pelvic pain during pregnancy experienced a relapse during a subsequent pregnancy in 85% to 95% of the cases, which makes this a recurring condition during pregnancy[8-10].

Pelvic girdle impairment leads to several physical limitations and disabilities, as well as emotional and social problems. It may also interfere in the performance of activities of daily living (ADL) and professional duties. Pregnant women with pelvic pain have trouble doing simple tasks, such as standing up from a sitting position, turning oneself in bed, sitting for long periods, having long walks, getting dressed or undressed, and carrying small weights[11]. There is also a high frequency of problems concerning "getting up from the floor" (97%) and sexual intercourse (82%), as well as problems involving nighttime sleep[12].

Pain or functional disorders related to pelvic pain must be identified through specific clinical tests. To do so, the Pelvic Girdle Questionnaire (PGQ) was developed. It is a specific instrument to measure pelvic pain during pregnancy and after childbirth. The questionnaire is simple and easy to be applied. It also has a high level of consistency for evaluating the construct, and it includes items concerning two

sub-scales: one regarding activity/participation and body functions, and another one on symptoms[5,13]. The Brazilian version of the questionnaire (PGQ-Brazil) was validated in 2014[14], and it helps evaluate and monitor the impact PRPGP may cause in the functional ability of pregnant women, considering the whole social and cultural contexts they are inserted in, besides contributing in the search for more adequate manners to plan a specific treatment for this condition.

Considering what was exposed, this study intends on analyzing the consequences of pelvic girdle pain in the functional ability of pregnant women through the Brazilian version of the Pelvic Girdle Questionnaire.

METHODOLOGY

This is a cross-sectional study that was conducted in six Family Health Care Units (*USF - Unidade de Saúde da Família*) corresponding to Sanitary District IV of the city of Recife, state of Pernambuco, Brazil. The data were collected from August 2013 to July 2014, after the study was approved by the Research Ethics Committee of Federal University of Pernambuco's Health Care Sciences Center, under protocol no. CAAE 07215712.3.0000.5208.

The sample was calculated by the Epi Info 7 software, using an event frequency (of moderate functional disability) of 40%[4]. An absolute error of 10% and confidence level of 95% were calculated, resulting in 93 participants plus an extra 10% for occasional losses, adding up to 102 pregnant women. Women at the 18th week or further in their pregnancy took part in the study. Their ages ranged between 18 and 35 years, and they had been clinically diagnosed with PRPGP. The women with pregnancy-related lower back pain were excluded, as well as the ones who reported having neurological, urological, gynecological, and orthopedic disorders. The pregnant women who had trouble understanding the items in the questionnaire were also excluded.

Pregnant women who were having appointments at the USFs were verbally invited to take part in the study, and they were asked if they experienced pain before the initial diagnoses were conducted. The ones who were considered eligible and accepted participating signed consent forms. After that, their sociodemographic and clinical data were collected, and the Visual Analog Scale (VAS) was applied to characterize the sample according to a standardized sheet. The pregnant women were also asked about the nature of their pain according to descriptions from previous studies[15,16]. A previously trained researcher conducted diagnostic tests for pregnancy-related pelvic girdle pain as instructed by the European Guideline, which recommends the conduction of a functional test (straight leg raise), four tests for the sacroiliac joint (posterior pelvic pain provocation test, Faber test, Gaenslen's test, and long posterior sacroiliac ligament palpation), and two tests for pubic symphysis pain (pubic symphysis palpation, and modified Trendelenburg test for pelvic girdle pain)[5].

The diagnose of pelvic girdle pain was confirmed in case the functional test result was positive along with either one positive result for a sacroiliac pain test or a positive diagnose of pelvic girdle pain. Based on the test confirmation, PRPGP was classified in five subgroups, four of which being for classification (which were confirmed by objective tests) and one was varied: 1) Pelvic girdle syndrome, when pain is felt in the three pelvic joints; 2) Bilateral sacroiliac joint syndrome, whose pain is reported in both sacroiliac joints; 3) Unilateral sacroiliac joint disease, with pain in one sacroiliac joint; 4) Symphysiolysis, when pain is only experienced in the pubic symphysis; and 5) Miscellaneous group, when there is pain in one or more of the pelvic joints, but with inconsistent conclusions. PGQ-Brazil was applied after the categorization[14].

PGQ-Brazil includes items regarding two sub-scales: the first one, containing 20 items, regards activity / participation and body functions, and the second one comprises 5 items, corresponding to the symptoms. Each item has a score ranging from 0 to 3, and higher scores indicate trouble performing a task or more intense pain regarding the symptom[14].

At the end of the evaluation, the pregnant women who experienced pelvic girdle pain received an information booklet on the subject and postural instructions to be followed at home to alleviate the pain. In case a pregnant woman's clinical condition worsened after the clinical tests had been performed, she was sent to be treated in the Federal University of Pernambuco's Physiotherapy Hospital School, which only happened with one of the study subjects.

The collected data were arranged in the Statistical Package for the Social Science software

(SPSS), version 20.0, through double input by two independent researchers. The data were analyzed via descriptive statistics, averages and standard deviations for quantitative variables (age, height, weight, body mass index, number of pregnancies, VAS) and frequency distribution for categorical variables (parity, pregnancy period, marital status, education level, family income, type of syndrome, pain location, pain onset circumstances, and nature of pain). Kolmogorov-Smirnov test was used for assessing normality in the distribution of quantitative variables. The analysis of quantitative variables with normal distribution was conducted through ANOVA-One Way test. Kruskal-Wallis test was used for non-parametric data. A significance level of $\alpha = 0.05$ was adopted in all situations. Pearson's correlation coefficient was used to check the correlation degree between the intensity of pelvic girdle pain in the evaluated pregnant women through VAS and the total average score was obtained through the PGQ-Brazil questionnaire.

RESULTS

We found 159 pregnant women to be eligible, 105 of which were confirmed to have a diagnose of pelvic girdle pain. Therefore, without sample losses, 105 pregnant women took part in the study. In average, they were 24.94 years old (4.97 SD) and had been pregnant 2.2 times (1.03 SD). When the pregnancy period they were at was observed, 59% of them had been pregnant for three quarters, and 41%, for two quarters. Regarding parity, 62.9% of the pregnant women were multiparous (Table 1).

Table 1. Sample characterization regarding sociodemographic and clinical aspects

Variables	$\bar{X}$ (SD)
Age (years)	24.94 (4.97)
Height (cm)	160.7 (7.21)
Weight (Kg)	68.82 (12.42)
Body mass index (Kg/m²)	26.80 (5.05)
Number of pregnancies	2.27 (1.03)
Parity N(%)	
Primiparous	39 (37.1)
Multiparous	66 (62.9)
Pregnancy period N(%)	
2nd quarter	43 (41)
3rd quarter	62 (59)
Marital status N(%)	
Single	53 (50.5)
Married	52 (49.5)
Education Level N(%)	
< 12 years	34 (32.4)
> 12 years	71 (67.2)
Family income N(%)	
< 1 minimum monthly wage	17 (16.2)
> 1 minimum monthly wage	88 (83.8)

continue...

Table 1. Continuation

Through the visual analog scale (VAS) of pain, an average of pain of 6.59 (1.85 SD) was verified, which is considered as moderate pain[17]. The most frequent diagnose was unilateral sacroiliac joint disease, whereas symphysiolysis was only identified in 1% of the sample. Asked about their pain onset circumstances, 45.7% of the pregnant women reported feeling pain while moving. Regarding the nature of their pain, the majority of the sample reported feeling a prickling pain. Among the activities in the questionnaire, the ones that were found to be the most limited were sitting, standing, and walking for over 60 minutes (Table 2).

Table 2. Sample characterization regarding pain characteristics

Variables	N(%)
Distribution of Syndromes	
Pelvic girdle syndrome	12 (11.4)
Bilateral sacroiliac joint disease	36 (34.3)
Unilateral sacroiliac joint disease	56 (53.3)
Symphysiolysis	1 (1)
Pain location	
Pelvis (Left and Right)	53 (50.5)
Pelvis (Right)	29 (27.6)
Pelvis (Left)	23 (21.9)
Pain onset circumstances	
While moving	48 (45.7)
While resting	35 (33.3)
While moving and resting	22 (21)
Nature of pain	
Prickling	60 (57.1)
Burning	17 (16.2)
Squeezing	11 (10.5)
Shocking	2 (1.9)
Others	15 (14.3)
VAS $\bar{X}$ (SD)	6.59 (1.85)

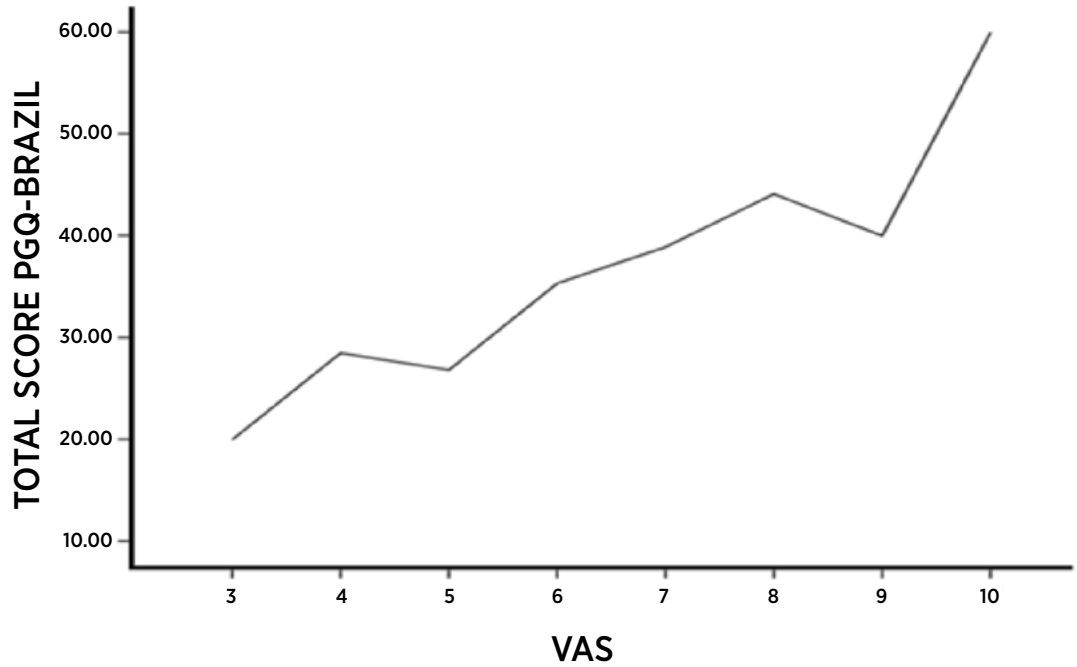

Chart 1. Correlation between intensity of pregnancy-related pelvic girdle pain as evaluated through Visual Analog Scale of pain and the total score from the Brazilian version of Pelvic Girdle Questionnaire

Table 3. Comparison between the pain average of Visual Analog Scale of pain and the total average score of the Brazilian version of Pelvic Girdle Questionnaire (PGQ-Brazil) among pregnancy-related pelvic girdle pain

Classification N(%)	Pelvic Girdle Syndrome 12 (11.4)	Bilateral Sacroiliac Joint Syndrome 36 (34.3)	Unilateral Sacroiliac Joint Syndrome 56 (53.3)	p
Pain $\overline{X}$ *(SD)*	7.67 (1.72)	6.86 (1.95)	6.21 (1.72) 0.027	0,027
Average score of PGQ-Brazil $\overline{X}$ *(SD)*	54.8 (22.3)	40.3 (17.4)	31.12 (17.3) 0.001	0,001

By correlating the values obtained through VAS with the total average score of PGQ-Brazil, it was possible to observe a positive correlation (r=0.458, p=0.01), which indicated that pregnant women's functional ability decreases with pain (Chart 1).

Upon comparing pain average and total average scores between analyzed groups, pregnant women with pelvic girdle syndrome were found to have the highest pain averages and also a higher total average score in the PGQ-Brazil questionnaire (Table 3).

DISCUSSION

The results from this study showed pregnant women's functional disability levels increase with higher pregnancy-related pelvic girdle pain.

No studies were published yet on the functional evaluation of pregnant women with pelvic pain using the Pelvic Girdle Questionnaire; however, in 2006, a study[18] was developed to investigate the use of crutches and waking up during the night in 1,817 multiparous and primiparous pregnant women with and without pelvic pain. The pain caused by this condition was observed to cause 16% of its total sample to need crutches for walking. Among women with pelvic girdle syndrome, this percentage was 36%. A total of 33% women with pelvic pain reported frequently waking up in the middle of the night because of pain, and this happened more often with women suffering from pelvic girdle syndrome, whose percentage was 63%. Besides showing the interference pelvic pain causes in the functional ability of pregnant women, the study also found pregnant women with pelvic girdle syndrome to have remarkably more functional problems as compared to women with fewer pelvic joints affected. That might justify the moderate correlation, rather than a strong one, which was found, once the sample comprised over 80% of pregnant women only with

sacroiliac impairment and the 11% with diagnosed pelvic girdle syndrome.

Upon comparing the pain average and the total average scores of PGQ-Brazil questionnaire between analyzed groups and observing that pelvic girdle syndrome was found to have the highest pain average and also a higher total average score among the different syndromes, this study also suggests that pregnant women with pelvic pain syndrome have more impaired function (Table 3). Similar conclusions were found by a study[19] involving pain evaluation through a questionnaire drafted by its researchers, in 405 primiparous and multiparous pregnant women at their 33rd week of pregnancy, with pelvic pain as confirmed by clinical tests. Its subjects were subdivided in four classification groups or in the miscellaneous group, and examined again after one, three, six, twelve, eighteen, and twenty-four months, or after symptoms disappeared. The results showed that women with pelvic girdle syndrome were the most affected by daily pain at the initial evaluation. They also had the worst prognosis, as even two years after childbirth, 21% of the women who had the syndrome still felt pain every day in the joints affected by the syndrome.

Some authors[20,21] also state that some risk factors may be considered for worsened prognoses: higher pain intensity (VAS > 6) and pain in more than one pelvic joint, which might be related to the fact that pregnant women with pelvic girdle syndrome in this study were found to have the highest pain averages and a higher number of affected pelvic joints. However, despite the pain intensity average of all PRPGP classifications found having been superior to score 6 of VAS, this study has not monitored the subjects, which renders impossible to make any conclusions on the prognoses of the syndromes.

Regarding the nature of pain, it is important to point out that "prickling" and "burning" were the most reported adjectives by patients. This finding reflects a specific clinical characteristic of pregnant women with impaired pelvic girdles, who always use stronger adjectives to characterize their pain, and that differs from those who only have lumbar impairment[15,16].

Among the activities in the PGQ-Brazil questionnaire, the ones that were found to be the most limited were sitting, standing, and walking for over 60 minutes. A study[22] conducted in 2003 evaluated the pain in pregnant women (primiparous and multiparous) with pelvic pain through a questionnaire that was drafted by the researchers themselves, and it found that it is generally felt 30 minutes after an activity was initiated or after patients remained in a certain position for that time, which corroborates the findings from this study. An European guideline was developed in 2008, regarding diagnose and treatment of evidence-based pelvic pain[5], which, through the use of systematic reviews and existing clinical guidelines, concluded that pelvic girdle pain affects activities of daily living and especially activities involving carrying weights, besides reducing the ability to stand and walk. These conclusions may be related to the symptoms of the subjects of this study, once they reported having limitations related to activities performed for over 60 minutes.

It is important to point out that more than half of the pregnant women in this study sample (62.9%) reported being multiparous. A study[23] that evaluated the impact from parity in pregnant women with pelvic pain found that 11% of the sample who reported pelvic pain comprised first-time mothers, as compared to 18% of pregnant women who had already had one child and 21% of pregnant women with two previous pregnancies. These results suggest that parity is related to pelvic pain. Also according to the European Guidelines[5], there is consensus that multiparity is a conflicting risk factor for the development of pelvic pain. Thus, it is understandable that this study sample comprised more multiparous pregnant women, once pelvic pain is more frequent in them as compared to primiparous pregnant women.

CONCLUSION

Considering what was exposed, it is possible to conclude that the more intense pelvic girdle pain is, the higher is a pregnant woman's functional disability level. Besides that, it was also possible to observe that the number of involved joints seems to interfere both in the intensity of pain and in functional ability.

As future perspectives, we suggest that future studies divide the sample of pregnant women in equivalent groups according to their syndrome types, so that separate correlation analyses between pain and functional ability can be conducted, in order to make the interference of pain in functional ability

according to PRPGP classification clearer and more reliable.

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