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Pregnancy-related lumbar and pelvic girdle pain in Polish women

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Summary

Purpose of investigation: To examine lumbo-pelvic pain (LPP) characteristics in pregnant Polish women. *Materials and Methods:* The study population consisted of 189 Poles aged 21 to 40 (mean age 29.86 sd. 3.84) years, between 12 and 36 gestation weeks. The control group consisted of 36 non-pregnant Poles. On the basis of body diagrams the authors found three distinctive kinds of pain: lumbar, pelvic girdle, and mixed pain. For further pain characteristics visual analogue scale (VAS) scale, Oswestry Disability Index (ODI), and Pelvic Girdle Questionnaire (PGQ) were used. *Results:* Sixty-five percent of pregnant women reported suffering from LPP. Mean pain intensity was 4.84 for lumbar pain (LP) and 4.87 for pelvic girdle pain (PGP) on the VAS scale. Mean activity limitation caused by PGP was 32.67% and mean disability caused by LP was 17.92%. The control group reported PGP significantly less often. *Conclusions:* LPP can cause significant problems in pregnant women and they also experience PGP more often than non-pregnant women.

Key words: Pelvic girdle; Lumbar pain; Pregnancy.

Introduction

Lumbo-pelvic pain (LPP) affects a significant number of pregnant women, and has a negative impact on their professional life, everyday activity, and sleep [1]. Different authors estimate the prevalence of LPP at 44% to 91% [2-8] depending on classification, on methodology applied, and on the advancement of pregnancy. According to European guidelines and international literature, LPP has to be differentiated into the lumbar pain (LP), pelvic girdle pain (PGP) and mixed pain, i.e. simultaneous pain of both lumbar spine and pelvic girdle [1, 6, 9-11]. LP is defined as pain located above the lumbosacral junction radiating or not to one or both lower extremities [6]. PGP, as defined by European guidelines, can be felt between posterior iliac crest and gluteal folds, in the region of one or both sacroiliac joints and/or the pubic symphysis, possibly radiating to the posterior part of the thigh [9]. Individual constituent elements of LPP have to be analyzed separately, as they are related to distinct clinical symptoms and to different risk factors [4], and therefore they require different treatment [9, 12]. PGP results in greater pain and greater limitations to everyday activity than LP [6, 13, 14]. It also shows a greater tendency to continue after childbirth, thus significantly affecting everyday life [15]. Women who suffer from PGP are less active during pregnancy and therefore they suffer from accompanying issues, among others from depression [11]. The Polish literature uses various terms when discussing health issues related to pregnancy. Some of the terms that are used include "low back pain" [16], "lumbosacral region pain" [17], "lower spinal segment pain syndrome" [18], "lumbosacral region, and pelvic pain" [19].

The aim of the study was to determine the prevalence of individual kind of LPP in pregnant Poles in accordance with European guidelines and the latest trends in the literature.

Materials and Methods

The study population consisted of 234 pregnant Poles. The control group consisted of 47 non-pregnant Poles. The criteria for subject inclusion in the study were: a single uncomplicated pregnancy, informed consent to participate in the study, age between 18 and 40 years, week of pregnancy between 12 and 36. The criteria for subject exclusion from the study were: additional diseases or disorders that can result in LP/PGP (inter alia scoliosis, discogenic disease, hip dysplasia, constitutional hypermobility, or Scheuremann's disease).

The control group consisted of randomly chosen women, aged 18 to 40 years, who did not suffer from diseases that would result in LP or PGP. Pregnant women were surveyed in childbirth classes, fitness classes, and in obstetric clinics.

On the basis of the questionnaires received, and having rejected those incorrectly filled out, 189 pregnant women qualified for the

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Table 1. — *Participants' biometric data.*

	Mean		SD		Min		Max		Median		*p*
	pregnant	controls	pregnant	controls	pregnant	controls	pregnant	controls	pregnant	controls	
Age (years)	29.85	29.58	3.84	4.93	21	21	40	39	30	29	1
Height (m)	1.67	1.66	0.06	0.06	1.52	1.53	1.80	1.78	1.68	1.65	1
BMI before pregnancy (kg/m^2)	21.66	22.89	3.00	3.13	15.67	17.58	36.57	31.61	21.30	22.08	0.06
Gestation week	26.89	-	5.67	-	12	-	36	-	28	-	-

Table 2. — *LPP among pregnant women.*

Type of pain	Pregnant group (n=189)		
	n	%	% of LPP women
LPP (any type)	122	65	-
LP (isolated)	43	23	35
PGP (isolated)	32	17	26
Mixed (LP+PGP)	47	25	39
Without pain	67	36	-

Table 3. — *LP and PGP prevalence.*

	Pregnant group (n=189)		Controls (n=36)		*p*
	n	%	n	%	
LP overall	90	47	16	44	0,98
PGP overall	79	42	8	22	<0,01

Table 4. — *LP and PGP characteristics.*

	VAS PGP 5	*p*	PGQ	*p*	VAS LP	*p*	ODI	*p*
Pregnant (n=189)	4.87±1.73	0.55	32.67±17	0.28	4.83±1.73	1	17.92±12.15	0.22
Controls (n=36)	5.75±2.43		22.63±15.81		5.19±2.04		11.5±5.19	

study population and 36 women for the control group. Table 1 presents biometric data for both subject groups.

The questionnaires were anonymous. The questions concerned the type and character of occupation, pregnancy course, physical activity in the year prior to pregnancy, pain from the lumbar spine and/or pelvic girdle in the year prior to pregnancy, current pain from the lumbar spine and pelvic girdle, pain from the lumbar spine and/or pelvic girdle in previous pregnancies, chronic disorders, and urinary incontinence. Additional research instruments included: body diagrams with LP and PGP marked, body diagram for marking the actual pain - "pain map" - to verify the reliability of declarations and to identify PGP location, the visual analogue (VAS) scale (0-10), the Oswestry Disability Index (ODI) [20], used to assess LP, and the Pelvic Girdle Questionnaire (PGP) [21], translated into Polish, to assess pelvic girdle pain.

To process and analyze the data the authors used the following statistical tools: arithmetic mean with standard deviation and median, the Mann-Whitney U-test, Chi-squared test, Fisher's exact test, and Kendall's tau coefficient. Statistical significance was set at $p < 0.05$.

Results

LPP was reported by 65% (n=122) of pregnant women, 23% (n=43) subjects reported isolated LP, 17% (n=32) reported isolated PGP, and 25% (n=47) reported mixed pain. The incidence of LP and of PGP pain was 47% and 42%, respectively. In the control group, 44% of subjects reported LP and 22% reported PGP. This was significantly less ($p < 0.05$) when compared to pregnant women. Tables 2 and 3 present the discussed results. The compared mean values of the VAS, ODI, and PGQ did not result in significant differences between the study population and the control group. Table 4 presents the discussed parameters.

The authors decided to ascertain what percentage of pain syndromes reported by pregnant women may result in limitations to everyday activity and decreased quality of life. Such changes were indicated by the following reference values: values higher than 5 on the VAS scale, values higher than 30% on the PGQ, and higher than 20% on the ODI. They found higher VAS and ODI values of 33% and 32%, respectively, in pregnant women with LP. 35% and 52% of pregnant women with PGP had higher VAS and PGQ values, respectively. The authors also found that LPP in non-pregnant women was significantly more prevalent in those subjects who had been pregnant before and who had then been suffering from similar pain.

Discussion

The present study of a group of pregnant Poles presented results that are in line with previous studies on LPP prevalence in pregnant women in other countries. These studies were based either on self-reported LPP or involved functional tests on patients. A survey by Kovacs *et al.* [4] involved 1,158 Spanish women 31 to 38 (mean 35) weeks of pregnancy. Prior to the test 71.3% patients reported LPP. Pierce *et al*. [5] studied 96 Australian women 28 to 41 weeks (mean 34.8) weeks pregnant and had similar results: 71% of patients reported LPP during pregnancy. Robinson *et al.* [22] analyzed declarations of 283 Norwegians who

were 30 weeks pregnant. They found LPP in 82% of them. The methodology the abovementioned authors used was similar to the present one: they differentiated pain on the basis of body diagrams. The scope of individual types of pain was the same used in the present study. The fact that the abovementioned authors found higher incidence of LPP than the present can most likely be attributed to the fact that they studied women at later weeks of pregnancy. Gutke *et al.* [8] in their study on LPP analyzed its prevalence in two groups of patients: first between ten and 24 (mean of 17) weeks of pregnancy and second between 28 and 38 (mean 33) weeks of pregnancy. In the first group of patients (10-24 weeks pregnant) 58% (n=177) of Swedes and 44% (n=136) of Norwegians reported LPP. In the second group of patients (28 to 38 weeks pregnant) 63% (n=173) of Swedes and 81% (n=215) of Norwegians reported LPP.

Al-Sayegh *et al.* [7] surveyed 280 Kuwaiti women aged 17 to 42 (mean 29.6) years and had significantly different results: 91% of their patients declared LPP. The results were explained in relation to the Middle Eastern culture that resulted in low physical activity and in following overweight or obesity in a large number of subjects.

In the studies that diagnosed LPP using additional subject examination and functional tests, the prevalence of pain was slightly lower. However, these studies focused on women whose pregnancies were less advanced. In the study by Gutke *et al*. [23] on 313 Swedes between 12 and 18 weeks pregnant, LPP was found in 61.9% of them. Mens *at al*. [3] studied 182 Dutch women between 20 and 30 weeks pregnant. They used pain maps accompanied by a series of functional tests and diagnosed LPP in 60.4% of their subjects. Gupta *et al*. [2] found LPP in 60.3% of pregnant Indians. Their study population (n=227) was similar to the present in terms of pregnancy advancement (12-36 weeks), while their age was younger (20-35 years, mean age 23.83). In addition, the pain analysis did not entail pain from the pubic symphysis. Musavi *et al.* [24] found a lower incidence of LPP in Iranian women. Their study population consisted of 325 women, aged 16 to 42 years, 12 to 36 weeks pregnant and 49.5% of subjects were diagnosed with LPP. Alike Gupta *et al.* and Musavi *et al*. did not take pubic symphysis pain into account, which may explain the lower pain prevalence.

While LPP incidence seems to be consistent in studies by different authors, significant differences appear in differentiating the pain according to the pain location - LP, PGP or the mixed pain. In the studies based on self-reported pain, the results were as follows: among subjects studied by Pierce *et al.* [5] 22% reported isolated PGP, 11% reported isolated LP, and 33% reported mixed pain. Among subjects studied by Al-Sayegh *et al.* [7], 14.3% reported isolated PGP, 38.3% reported isolated LP, and 26.4% reported mixed pain. Among subjects studied by Robinson *et al.* [22] 5% reported isolated LP, 52% reported isolated PGP, and 25% reported mixed pain. Gutke *et al.* [22] used additional tests and they found isolated PGP in 33.2% of their subjects, isolated LP in 10.5% of subjects and mixed pain in 18.2% of subjects. Mousavi *et al.* [24] used additional patient examination too and they found isolated (posterior) PGP in 28% of their subjects, isolated LP in 13.2% of subjects, and mixed pain in 8.3% of subjects. Gupta *et al.* [2] found isolated (posterior) PGP in 29.5% of subjects, and mixed and isolated LP in 30% of their subjects.

The reasons for the differences in results in the discussed studies may be related to the way the authors differentiated between symptoms, differences in subjects' age, type of the study (prospective *vs*. retrospective), point prevalence, period prevalence, or how advanced the pregnancies were.

Notably, incidence of LP was high among the Polish subjects, and even higher among the Kuwaiti subjects [7]. It had been hypothesised that in the Middle Eastern women, sedentary lifestyle and overweight may lead to the symptoms. It can also be assumed that these factors led to the increased incidence of LP in Poles. Though cultures of these two region are very different, the issue of sedentary lifestyle and overweight are present in both. According to the Polish Central Statistical Office 2011 report [25], Poland ranked seventh among 18 European countries in overweight incidence in adults. This hypothesis seems to be confirmed by a similar incidence of LP in the clinical control group. However, the obtained BMI results do not support the hypothesis. The composition of the body is not reflected in the BMI. This may have been the factor that was different in the two groups. Another hypothesis may relate to the fact that the subjects had low body awareness and they had difficulties in locating the pelvic area. When conducting the present study, the authors were confronted with the inability of the Polish subjects to locate the pain they suffered from. In the Polish literature, the term "pelvic girdle pain" seems to be relatively rare. When referring to pregnancy-related symptoms, the term "lumbo-sacral region pain" or "sacral pain" are much more common. The new terminology that subjects had previously been unaware of may have distorted pain location reports, although body maps were used for illustration.

According to Rost *et al.* [15] 10% of women who experienced PGP when pregnant still experienced moderate to strong pain as long as 18 months after labour. Engeset *et al.* [26] confirm these and conclude that PGP may affect quality of life as long as months and years after labour. The present authors were not able to find reports on persistent PGP in pregnant Polish women. However, in the present study the declared PGP in the clinical control group was significantly related to the symptoms experienced when being pregnant, and this may indicate to a kind of prolonged PGP. Some alarming reports of a number of authors and observed correlations indicate a need of further studies of PGP in Poles.

In the report by Pierce *et al.* [5], only 25% of pregnant women who complained of PGP received some form of

treatment. The complexity of chronic pain syndromes signifies that they require to be identified as early as possible and that they also require early, effective, and appropriate treatment.

The main limitation of this study was the fact that it was conducted in the form of a survey. Using body diagrams and pain maps instead of an examination limits the value of the observations presented. Still, the collected results on LPP prevalence were largely in accordance with reports by other authors, and also with the reports where functional tests were used. Another factor limiting the interpretation of the collected data is the significant difference in study group numbers. In subsequent studies, it would be advisable to compose groups of comparable numbers, so that the results collected are more reliable. The PGQ version used was the present authors' translation and it had not undergone the Polish language validation process. This may result in certain limitations in comparison to results by other authors. The present authors decided that using an international questionnaire, even in its non-standardized version, would have a higher study value than creating a survey of their own.

According to the best of the present authors' knowledge, this is the first study in Poland to attempt to classify pregnancy-related LPP according to European guidelines and the latest trends in the literature. Contemporary medical world attempts to introduce unified classification and treatment. Introducing international termin- ology on pregnancy-related symptoms will allow for facilitated exchange of knowledge among professionals and improved patient treatment.

Conclusions

LPP can cause significant problems in pregnant women. PGP is more prevalent in pregnant than in non-pregnant women.

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