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Impact of postpartum lumbopelvic pain on disability, pain intensity, health-related quality of life, activity level, kinesiophobia, and depressive symptoms

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Abstract

The majority of women recover from pregnancy-related lumbopelvic pain within 3 months of delivery. Since biomechanical and hormonal changes from pregnancy are largely reversed by 3 months postpartum, consequently, it is assumed that other factors might interfere with recovery. Relative to the fear-avoidance model and with reference to previous studies, we chose to investigate some pre-decided factors to understand persistent lumbopelvic pain. The evaluation of lumbopelvic pain postpartum is mostly based on self-administered questionnaires or interviews. Clinical classification of the lumbopelvic pain may increase our knowledge about postpartum subgroups. Two hundred and seventy-two consecutively registered pregnant women evaluated at 3 months postpartum, answered questionnaires concerning disability (Oswestry disability index), pain intensity on visual analog scale, health-related quality of life (HRQL, EQ5D), activity level, depressive symptoms (Edinburgh postnatal Depression Scale) and kinesiophobia (Tampa Scale for Kinesiophobia). Women were classified into lumbopelvic pain subgroups according to mechanical assessment of the lumbar spine, pelvic pain provocation tests, standard history, and pain drawings. Multiple linear regression analysis was performed to explain the variance of disability. Thirty-three percent of postpartum women were classified with lumbopelvic pain; 40% reported moderate to severe disability. The impacts were similar among subgroups. Pain intensity, HRQL and kinesiophobia explained 53% of postpartum disability due to lumbopelvic pain. In conclusion, one of three postpartum women still had some lumbopelvic pain and the impacts were equivalent irrespective of symptoms in lumbar or pelvic areas. The additional explanations of variance in disability by HRQL and kinesiophobia were minor, suggesting that pain intensity was the major contributing factor.

Keywords: Postpartum, Disability, Prevalence, Pain intensity, Low back pain (LBP)

Introduction

Back pain is considered a normal consequence of pregnancy and is expected to disappear shortly after delivery [32]. The majority of women recover from pregnancy-related lumbopelvic pain within 3 months of delivery [27]; however, postpartum follow-up studies have shown that about 8–20% of women still have persistent non-specific lumbopelvic pain 2–3 years after delivery that interferes with daily activities [1, 25]. Since few women recover from lumbopelvic pain later than 3 months after delivery, women still in pain at 3 months are considered at risk for persistent pain [27].

The evaluation of lumbopelvic pain postpartum is mostly based on self-administered questionnaires or interviews, and the lumbopelvic pain is occasionally assessed by clinical evaluation [1, 17]. In addition, postpartum follow-ups seldom include the entire initial pregnant cohort [17], which may be important since the debut of lumbopelvic pain may present even in relation to delivery [23].

Recent studies indicate the importance of lumbopelvic pain classification when choosing optimal treatment strategies [9, 19]. Some types of lumbopelvic pain in pregnancy seem to have an increased risk of persistent pain [15]. Likewise, subgroups of lumbopelvic pain seem to have different consequences in terms of pain intensity, disability and health-related quality of life (HRQL) in early pregnancy [14]. More knowledge about the subgroups of lumbopelvic pain postpartum could help to identify obstacles to recovery leading to development of targeted preventive strategies and interventions to specific subgroups.

Having persistent pain was not found to be an important impetus for women to seek care postpartum, but a delay in becoming active again [3]. A decreased activity level can lead to disability, which has been found to be closely related to fear of movement in patients with chronic lower back pain [33]. In some clinical practice, women with pelvic girdle pain (PGP) are taught to avoid pain-increasing activities. It is possible that this message leads to fear of movement and avoidance behavior that reaches beyond normal, i.e. kinesiophobia, and could be part of the reason why the pregnancy-related PGP did not resolve despite pregnancy being over. Previously, we reported that the prevalence of depressive symptoms was three times higher in women with lumbopelvic pain 3 months postpartum than in women without lumbopelvic pain [12]. Biomechanical and hormonal changes from pregnancy are largely reversed by 3 months postpartum; consequently, it is assumed that other factors might interfere with recovery and explain the disability level postpartum.

Thus, we wanted to evaluate the association between factors expected to influence the level of disability postpartum in women with persistent lumbopelvic pain after pregnancy. The factors considered were pain intensity, HRQL, activity level, kinesiophobia, and depressive symptoms, which have not been studied together in postpartum women.

The aim of this study was to evaluate the prevalence of subgroups of lumbopelvic pain, disability, pain intensity, HRQL, activity level, and kinesiophobia in a cohort of women at 3 months postpartum and to investigate the association between disability and these factors, including depressive symptoms. Further aims were to evaluate the experience of symptoms and expectations of recovery after future treatment.

Materials and methods

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Subjects

The antenatal health care system serves almost 100% of the pregnant women in Sweden, providing regular physical and psychological health check-ups during pregnancy and postpartum. The present study was part of a larger cohort study that included baseline evaluations during early pregnancy. The cohort comprised all pregnant women consecutively registered at two prenatal health care clinics in a community of 26,000 people. Swedish-speaking women with an expected normal pregnancy were approached for participation between gestational weeks 12 and 18. The women received written and verbal information about the study from their midwife before giving oral consent. Women were excluded if they had a systemic locomotor system disease, verified specific diagnosis of spinal problems in the previous 2 months, or a history of fracture, neoplasm, or previous spinal, pelvic, or femur surgery.

The study was approved by the Regional Ethical Review Board (Ö 414-00).

Assessment

All women completed one questionnaire at the clinic between gestational weeks 12 and 18 and another at 3 months postpartum. The postpartum questionnaire collected background data and information about delivery, disability [a modified version (2.0) of the Oswestry disability index (ODI) [8]], pain intensity as scored by visual analog scale (VAS; 0–100 mm), HRQL (as scored by the EQ5D [29]), activity level [10, 20], and depressive symptoms (using the Edinburgh Postnatal Depression Scale; EPDS [6, 12]). The participants also answered questions about how troublesome their lumbopelvic pain was during the preceding week (not at all to extremely difficult) and expectations of recovery after future treatment (full recovery to no expectations of recovery). To measure kinesiophobia, the Tampa Scale for Kinesiophobia (TSK) [16] was added to the questionnaire after the start of the study.

Classification of lumbopelvic pain

Participants were assigned, by a physiotherapist (AG), to one of four groups based on the type of pain experienced and the clinical examination described in a previous publication [13]: (1) no lumbopelvic pain, (2) PGP, (3) lumbar pain, and (4) combined pelvic girdle and lumbar pain (combined pain). The classification scheme included a standard history that focused on characteristics of lumbar pain and PGP, mechanical assessment of the lumbar spine based on Mechanical Diagnosis and Therapy (MDT) protocol [21], pelvic pain provocation tests, the active straight leg raising test, neurological examination, and a hip rotation range of motion test. Pain site was indicated by the participants on a pain drawing. Participants were assigned to the no lumbopelvic pain group if they reported no subjective lumbopelvic pain or had fewer than two positive pelvic pain provocation tests and no lumbar pain or change in range of motion from repeated movements, according to the MDT classification.

Criteria for PGP were two or more positive pelvic pain provocation tests, the absence of centralization or peripheralization phenomena during repeated movement assessment and no lumbar pain or change in range of motion from repeated movements, according to the MDT classification. Only women with PGP symptom onset during a pregnancy or within 3 weeks of delivery were included. Lumbar pain was classified based on reproducible pain and/or a change in range of motion from repeated movements or different positions of the lumbar spine or experience of centralization and peripheralization phenomena during examination and fewer than two positive pelvic pain provocation tests.

Statistics

Statistical analyses were performed using SPSS v.14.0-15.0 (SPSS Inc., Chicago, IL). Spearman's correlation was computed to evaluate relationships among variables on nominal and ordinal levels. The Kruskal–Wallis test was used for multi-group comparisons of nonparametric ordinal data. The Chi-square test was performed for nominal data; Fischer's exact test when appropriate. The ODI score was classified according to Fairbank [8]. Multiple linear regression analysis was performed to explain the variance of disability level at 3 months postpartum as measured by ODI (the dependent variable). The independent variables were chosen based on our questions about possible associations between disability, pain intensity, HRQL, activity level, kinesiophobia, and depressive symptoms. Statistical significance was set at α level equal to 0.05.

Results

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A cohort of 457 pregnant women attended 2 antenatal care clinics between August 2001 and September 2003. A total of 308 women were included in the study (17% declined participation, Fig. 1). Five participants miscarried or had an interrupted pregnancy due to disease of the child. Thirty-one participants delivered but were not included in the postpartum analysis; 272 women were included in the analysis (Fig. 1; Table 1). Of the 31 participants who were not included in the 3-month postpartum analysis, 19 (6.5%) declined to participate due to lack of time, fatigue, or no given reason. The habitation status of the 31 not included women was to a higher degree single ($p < 0.02$), they had lower endurance of back flexors (21 vs. 33 s, $p = 0.009$), lower self-rated health (EQ5D score 0.74 vs. 0.80, $p = 0.03$) and higher pain intensity (36 vs. 22 mm, $p = 0.03$) in gestational weeks 12–18 than the 272 included.

Fig. 1
Enrolment of the study

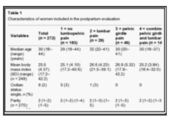

Table 1
Characteristics of women included in the postpartum evaluation

At 3 months postpartum, 89/272 participants (33%) experienced some form of lumbopelvic pain: 46/272 (17%) had PGP, 29/272 (11%) had lumbar pain and 14/272 (5%) had combined pain (Table 1). These numbers include women with pre-existing pain. A greater proportion of the women with combined pain had experienced lumbopelvic pain before their first pregnancy compared to the other subgroups ($p = 0.04$). The consequences of having lumbopelvic pain in terms of disability, pain intensity (Fig. 2), HRQL, and activity level were equivalent among the lumbopelvic pain subgroups (Table 2). In the lumbopelvic pain subgroups, 40% reported moderate to severe disability (Table 3).

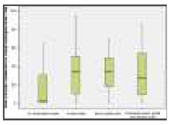

Fig. 2

Pain intensity as measured by visual analog scale (VAS) at 3 months postpartum

Table 2

Disability, pain intensity, health-related quality of life, activity level and kinesiophobia at 3 months postpartum

Table 3

Impacts of lumbopelvic pain on disability levels at 3 months after delivery

Kinesiophobia

Kinesiophobia was studied in a consecutive subsample of 129 postpartum women; 35 had some type of lumbopelvic pain. No difference in kinesiophobia was seen among lumbopelvic pain subgroups. There was also no difference according to lumbopelvic pain experience prior to the index pregnancy (TSK median = 33).

Associations between pain intensity, HRQL, activity level, kinesiophobia, depressive symptoms, and disability

Most women filled in questions on HRQL, activity level, and depressive symptoms. Women who had experienced lumbopelvic pain filled in the ODI and VAS since these are instruments for subjects in pain. In addition to the other questionnaires and evaluations, a subsample of women had also filled in the TSK (n = 49). These answers of these 49 women were included in the regression model (Table 4). The highest correlations were seen between pain intensity and disability (0.708) and between HRQL and disability (−0.739). In multiple linear regression analysis, the three factors that were significantly associated with disability level postpartum were pain intensity, HRQL, and kinesiophobia. These factors explained 53% of the variance in disability as measured by ODI. When answers to the EQ5D and the TSK were added to the model, an additional 7.5 and 4.0%, respectively, of the variance was explained. There was no statistically significant difference between women included in the regression model and the women not included regarding disability level, pain intensity, HRQL, activity level, and depressive symptoms.

Table 4

Multiple linear regression analysis in which the dependent variable was disability level according to the Oswestry disability index at 3 months postpartum

Experience and expectation of recovery

When asked how they rated their persistent lumbopelvic pain symptoms, 46% of women classified with PGP and 48% of women classified with lumbar pain reported their symptoms as *rather* to *extremely troublesome*. The majority of women (72–93%) expected to improve or fully recover from their syndrome independent of lumbopelvic pain classification.

Discussion

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At 3 months postpartum, the consequences of having lumbopelvic pain were equivalent irrespective of symptoms in lumbar or pelvic areas in terms of disability, pain intensity, HRQL, activity level, and kinesiophobia. Pain intensity, HRQL, and kinesiophobia explained as much as 53% of the variance in postpartum disability due to lumbopelvic pain. The additional explanations of variance in disability by HRQL and kinesiophobia were minor, suggesting that pain intensity was the major contributing factor. Almost half of all women classified with PGP or lumbar pain reported their symptoms as rather to extremely troublesome. This suggests that in addition to the sensory-discriminative components, affective-motivational and cognitive-evaluative components are included in the pain intensity estimation, indicating that postpartum lumbopelvic pain is a complex phenomenon [22].

Compared to patients seeking primary care for back pain, self-reported functioning of the women at 3 months postpartum was high, probably due to their young age and wide range in pain severity [7]. Three months after delivery, women classified with lumbar pain reported consequences similar to those of women with PGP and combined pain in terms of disability and pain. This is in contrast to women with lumbar pain in early pregnancy who reported less consequences than women with combined pain [14]. After delivery, there tends to be an increased demand for the types of activities that increase lumbar pain, i.e. lifting and carrying, and it can be difficult to refrain from these types of activities due to the requirements of caring for a baby. The postpartum ODI scores observed in the present study were lower than the baseline ODI scores at 6–16 weeks postpartum in a study of women seeking treatment for persistent PGP postpartum [30]. However, in the study by Stuge et al., all of the women included were profoundly affected by their pain and required treatment for PGP, whereas we studied a cohort of previous pregnant women with wide range of consequences. To develop prevention and management strategies for pregnancy-related lumbopelvic pain, it is important to consider the entire range of related problems.

Relative to the fear-avoidance model [33], most postpartum women are at an early stage in the course of their syndrome. They do not yet expect persistent problems and do not yet experience many consequences. Only a small proportion of women with lumbopelvic pain develop severe persistent pain [1, 4]. However, these women should be highlighted because syndromes with a low prevalence tend to be overlooked and women with these syndromes are at risk for persistent pain as well as sick leave.

In contrast to our previous results regarding lumbopelvic pain in women in early pregnancy [14], we found no difference in HRQL between the subgroups of women with pain postpartum. It has previously been shown that women in late pregnancy report lower HRQL than do nonpregnant healthy women [26]. Pregnant women with back pain reported the most impaired HRQL but because back pain was not classified it is impossible to draw conclusions about possible subgroup differences. The women in our study reported a somewhat higher HRQL on the EQ5D as compared to women in a treatment study. This could be explained by the fact that women who had the whole range of lumbopelvic pain problems were included in our study, whereas the study by Bastiaenen et al. [2] included only those women with problems severe enough to need treatment. Comparing the EQ5D scores in our study with those from an age-matched normal population of women, the women in the lumbopelvic pain subgroups reported worse HRQL postpartum (0.73–0.80 vs. 0.88–0.86, respectively) [5], suggesting that the influence of lumbopelvic pain on HRQL persisted when the pregnancy-related influence was gone. Thus, consequences in terms of disability, pain intensity, and HRQL look different among subgroups in early pregnancy as compared to postpartum.

Activity level and kinesiophobia

The activity levels were about equal among the subgroups with lumbopelvic pain, belying the assumption that women with PGP decrease their activity level because of increased pain on most activities. A greater proportion of postpartum women reported lower activity levels (80%) than did women in early pregnancy (68%; $p < 0.001$) [14]. Only a few studies have evaluated the implications of activity and exercise levels before and during pregnancy on lumbopelvic pain, and the results are contradictory [18, 24]. In addition, because no established common measurement was used, it is difficult to compare the results of these studies. To clarify the relationship between lumbopelvic pain and activity level, a better instrument for evaluating activity level in this group of young women is needed.

The incidence of kinesiophobia was low in this population, and the women exhibited no differences in TSK scores according to the presence of lumbopelvic pain. When answers to the TSK were added to the multivariate analyses, only an additional 4% of the variance in disability was explained suggesting that kinesiophobia had a minor contribution. We identified two studies that evaluated kinesiophobia postpartum [3, 11]. Gustavsson et al. reported different courses of kinesiophobia for eight women in a single subject study. In a treatment study, women’s worries about pelvic girdle and/or lumbopelvic pain were targets for experimental intervention [2, 3]. The women’s scores on the TSK did not indicate kinesiophobia either at baseline (32.9–35.7) or at early or late follow up (31.0–32.4 and 28.6–28.7, respectively), and the difference in TSK scores between treatment groups was not clinically relevant. This results of this study and our current results support that kinesiophobia is not a major explanation of disability in this relatively young group of women with persistent lumbopelvic pain.

Prevalence of lumbopelvic pain postpartum

When all forms of non-specific lumbopelvic pain were considered together, one of three women had some type of lumbopelvic pain 3 months after delivery. Apart from this study, the only identified cohort study that clinically evaluated all women postpartum reported an almost identical overall point prevalence as in the present study (31.6 vs. 33%, respectively) [17]. This point prevalence is similar to that previously self-reported at the same time point after delivery (33%) [27] but different from that reported by a cohort of 7,526 pregnant women (1.7%) [2]. However, the reported prevalence reflected the proportion of women needing therapy at 3 weeks postpartum. Pain flare ups were reported during follow up of the 126 women in the treatment study, suggesting that the prevalence might have differed if follow up of all women of the cohort would have been longer.

The prevalence of lumbopelvic pain postpartum in the present study is higher than that self-reported by nonpregnant 25–44 year olds (26%) [28]. This could be due to the short time that had passed since delivery. In the present study, the participants could have been influenced by the previously reported elevated prevalence of lumbopelvic pain related to pregnancy [27]. Even though most postpartum women have a good prognosis, long-term follow up has shown that for those women with persistent pain, recurrent pain episodes with sick leave are to be expected [4].

Conclusions

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In conclusion, one of three women had a lumbopelvic pain classification at 3 months postpartum. Among women with lumbopelvic pain, 40% reported moderate to severe disability. Pain intensity was the major explanation for disability level. The impacts of having PGP, combined pain or lumbar pain were equivalent in terms of disability, pain intensity, HRQL, activity level, and kinesiophobia.

Subgroups of lumbopelvic pain need identification in order to direct specific treatments. Our studies show that in early pregnancy, women classified with combined pain should be targeted since they have the highest impact of their syndromes and the highest risk for persistent pain [14]. Postpartum women still in pain at 3 months should be managed due to its impacts and to the risk of persistent pain. Because 10–20% of women report pregnancy as a debut of persistent lumbopelvic pain [31] and because pregnancy is a specific situation that is easy to identify, pregnancy is a potential "prevention point" for persistent lumbopelvic pain. Further studies are needed to understand what more factors interfere with recovery.

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