

Effectiveness of Group Exercise for Pregnancy-Related Low Back and Pelvic Girdle Pain:

A Review of the Literature

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Introduction

Pain in the lumbar spine and pelvic girdle region is one of the most commonly reported complaints among pregnant women and is often referred to as “lumbopelvic pain” (LPP).^{1,2} Approximately 50-80% of women experience LPP at some point during pregnancy,^{3,4} and symptoms persist in up to 65% of women for as long as 12 months after delivery.⁵ LPP during pregnancy is described by one-third of women as a severe problem and interferes with everyday activities such as walking, housework, exercise, leisure, sexual life, personal relationships, and caring for other children.^{1,2,6} Women with LPP report a decrease in job performance,² and up to 52% of women take sick leave during pregnancy because of this problem.⁶ LPP often has considerable consequences on a women’s physical functioning and is correlated with a significantly lower health-related quality of life.^{6,7}

The exact etiology and pathogenesis of pregnancy-related LPP is not clearly understood.^{2,4,5} LPP may result from a combination of hormonal, circulatory and biomechanical factors.^{5,7,8} Typically, the biomechanical stress resulting from increased ligamentous laxity, weight gain, and changes in pelvic and spinal alignment receives the most attention in the literature.⁴ In addition, researchers suggest that a decrease in abdominal muscle function and altered motor control patterns impair the body’s ability to stabilize the lumbopelvic region during weight bearing.² The combination of these changes leads to compromised load transfers through the pelvis and ongoing discomfort.² Anatomical and physiological changes, however, are not the only factors that may contribute to LPP. Growing evidence suggests that psychological stress, experienced in early pregnancy is correlated with the development of LPP during late pregnancy.¹ The cause of LPP is complicated and multiple factors deserve consideration.

Current strategies for managing LPP during pregnancy vary greatly, and conclusive evidence of superior interventions is scarce due to variability and poor methodological quality in experimental design.^{2,4} Consequently, investigators often report that intervention programs customized to each woman's unique needs and that involve individualized supervision are beneficial and effective.^{2,4,7} Conversely, authors report that group exercise (i.e., community programs or yoga) is also effective at reducing LPP intensity and prevalence.^{3,4,9,10} Furthermore, an observed reduction in psychological disturbances, such as stress and depression, has also been reported for women who participate in group yoga classes.^{9,11}

In the past, LPP has been considered a normal part of pregnancy, a mere side effect that would spontaneously resolve after delivery.^{4,5} Awareness of this disabling condition that significantly impacts a woman's well-being, however, is on the rise,⁴ and women's voices are being heard and acknowledged. The purpose of this review is to summarize the literature regarding strategies for management of LPP during pregnancy. Pertinent literature will be reviewed to determine if group exercise, such as yoga, is as effective as individualized care from a physical therapist at reducing symptoms of LPP. Results from this review may assist physical therapists in clinical decision-making in order to plan interventions that will provide optimal care that matches the specific needs of individual patients.

Evidence for Treatment Efficacy for Lumbopelvic Pain

Performing cross-comparisons of the literature regarding LLP during pregnancy is challenging due to numerous variables. For the purpose of this review, the format in which an intervention was delivered (i.e., individualized care vs. group care, specifically yoga) and how the participants responded will be addressed. Specific treatment interventions, timeframe at

which the intervention were administered (pre-, peri-, postnatal), and differentiating between low back and pelvic girdle pain will not be the focus. Selected studies will be assessed in terms of the experiential design, outcome measures used, and results relating to LPP.

Individualized Care:

Many investigators agree that individualized instruction given by a physical therapist results in optimal care,^{2,4,7} yet, it is important to keep in mind that the success of a particular intervention plays a major role in the success of the individualized care. In a RCT involving 81 post-partum women with pelvic pain, Stuge et al assessed the effect of an individualized treatment approach using customized, specific stabilizing exercises.¹² Statistically and clinically significant lower pain levels, quality of life, and disability were reported by the intervention group compared to the control group.¹² Although the purpose of the study was to evaluate the effect of a specific exercise, it demonstrates the importance of individualized care to produce accurate exercise performance. Mens et al on the other hand performed an RCT to assess the effect of a different exercise strategy (diagonal trunk exercises) on pelvic pain, self-reported impression of improvement and function.¹³ The second major difference in this study was that the intervention group, 44 postpartum women with pelvic pain, was being instructed by use of self-guided videotape and lacked the individual care and attention provided in the Stuge et al investigation.¹³ Comparison of the intervention group with the control subjects in the Mens et al study revealed no difference in pain reduction and function, and in fact, a high drop-out rate was reported due do to an increased pain levels.¹³ Researchers believe lack of supervision during exercises that resulted in incorrect performance was a leading contribution to the results and increased pain experienced by the women.¹³ Nilsson-Wikmar et al. performed a RCT aimed to investigate the effect of three different physical therapy interventions on pain and activity levels

in pregnant women with pelvic pain.⁵ Only one of the interventions included was therapist guided exercise instruction; the other two involved home exercise and patient education.⁵ Interestingly, no significant difference among the three groups was noted, yet all experienced a reduction in pain and improved activity.⁵ The Nilsson-Wikmar et al results diminish support for the effectiveness of individualized care;⁵ yet, emphasize two important considerations. Are the specific exercises being instructed effective? And how is the success of individualized care affected by that intervention?

Using a randomized controlled trial design, control groups and a variety of outcome measures strengthens the experimental design of the above mentioned studies; however, critical analysis is warranted prior to using this information clinically. All three investigations used self-report measures as well as clinical measures to address impairment and function which provides both subjective and objective information. Both Mens et al and Stuge et al included a measure to address participation and quality of life as well. Unfortunately, sample size was not justified in any of these studies. In fact, due to decreased participant compliance, a large number of drop outs and an already small sample size, statistical power was extremely diminished in the Mens et al study.^{12,13} Results of Nilsson-Wikmar study raise another concern. What if the exercises being instructed (lateral pulls, standing leg press, sit-down rows, and curl ups) were ineffective leading to no significant difference between groups and the appearance that individualized care was not more beneficial than the other non-individualized interventions? Specific exercises used for treatment of lumbopelvic pain are again not the focus of this review, but studies like the ones performed by Mens et al and Nilsson-Wikmar et al underscore the need to critically review the current literature. It cannot be determined from Nilsson- Wikmar et al that individualized care is not more effective than patient education and home exercise programs used by controls; perhaps

the exercises chosen were inadequate at reducing pain no matter how well performed. Lastly, results of an investigation in which exercise performance is not monitored due to self-guided videotape instruction alone, as in the Mens et al study, remain insufficiently supported and questionable.

Group Care:

The efficacy for using group exercise for the prevention and treatment of lumbopelvic pain during pregnancy demonstrates inconsistencies and the literature regarding this topic is scarce. In an RCT involving 381 prenatal women with lumbopelvic pain, Morvek et al investigated the effectiveness of a 12-week group training program on the prevalence of lumbopelvic pain, reported sick leave and functional status during pregnancy.¹⁰ When assessed at 36 weeks gestation, the intervention group was significantly less likely to report lumbopelvic pain and demonstrated significantly higher functional status compared with the control group.¹⁰ Conversely, an RCT performed by Eggen et al involving 257 women with lumbopelvic pain during pregnancy revealed a different set of results.² The authors found no effect of the group training on prevalence or severity of lumbopelvic pain and recommended that group exercise may not be optimal when treating lumbopelvic pain patients.²

The interventions in the above mentioned studies were very similar and the studies are strengthened by randomization and use of control groups. Both studies, however, demonstrate weakness and variation in experimental design. Only self-reported levels of pain were used as a primary outcome measure in both, and a clinical, objective test for pain measurement was not primarily used. Currently, there is no standard outcome measure for lumbopelvic pain in pregnancy and self-reported measures are appropriate.¹⁰ Eggen et al performed regular

measurements throughout the intervention, whereas Morvek et al only assessed pain at 36 weeks gestation and on the basis of occurrence of pain once or more per week. Participant report of “some” pain once per week may only be a minor problem and limit the relevance of the Morvek et al research.² As a result of self-reported sick leave (yes/no question), bias may be present in the Morvek et al study as well.¹⁰ The authors suggest that reporting a specific number of days or at what weeks of gestation sick leave was needed would have decreased risk of bias and increased quality of results.¹⁰ The Eggen et al study demonstrated low statistical power which reduces ability to detect an effect.² Working in their favor, both studies had extremely low dropout rates and good participation adherence.^{2,10}

Yoga Specific Group Care:

Although a different patient population assessed, group yoga programs for the treatment of chronic low back pain have been found to reduce pain, analgesic requirement and disability and well as improve range of motion in the spine.¹¹ Yoga itself is a complimentary and alternative form of care that is gaining attention;^{3,9} yet, there is paucity in studies that address its effectiveness on reducing lumbopelvic pain during pregnancy. In a RCT performed by Martins and Silva involving 60 women with pregnancy related lumbopelvic pain, effectiveness of Hatha yoga on reducing lumbopelvic pain was evaluated.³ Results of this study revealed that after 10 weeks of group yoga (each 60 min. session including breath-work, warm-up, introspection, physical poses, meditation and relaxation), women reported lower pain intensity compared with the control group that received postural control education.³ Although not looking at lumbopelvic pain specifically, Chuntharapat et al performed a RCT including 74 pregnant women to determine the effect group yoga has on maternal comfort, labor pain, and birth outcomes (Apgar scores, labor time length).⁹ Participants in the intervention group demonstrated significantly

higher levels of maternal comfort during and after delivery and shortened labor times.⁹ In a RCT, involving 80 participants, Tekur et al compared the effect of a 7-day intensive, residential yoga program with a 7-day residential physical therapy program on pain levels, anxiety, depression and spinal mobility in individuals with chronic low back pain.¹¹ Both groups had a reduction in pain scores; however, the intervention group decreased within group results by 49% compared with the control group at 17%.¹¹

Randomized controlled design and inclusion of control subjects strengthens these three studies; yet, lack of generalizability and variation in intervention design are a major weakness. Chuntharapt et al addressed maternal comfort during labor and Tekur et al assessed chronic low back pain, neither of which are components of this particular literature review. These studies were chosen for this review, however, in order to gain insight into the effect participation in group yoga has on related circumstances and in light of the fact that there is a lack of sufficient, quality research addressing group yoga to treat lumbopelvic pain during pregnancy. Tekur et al displayed good statistical power;¹¹ however, intervention design warrants a close look. The intervention was an intense, 7-day residential program and although the authors argue that a short-term residential program like this may fit the fast pace of today's life,¹¹ this style of therapy may not be feasible for many individuals. Lastly, there are several schools of yoga that use different components, postures and styles of teaching.^{3,11} Careful evaluation of what a yoga intervention entails is critical when comparing research, determining efficacy and use in clinical practice.

Challenges & Application to Clinical Practice

A review of the literature addressing lumbopelvic pain in complicated due to several factors. First, many investigations examine particular treatment methods of which a variety exists including: positioning, ergonomic advice, bracing, exercise (core and lower extremity strengthening, specific pelvic stabilizing exercises), soft tissue and joint mobilization, aquatics, chiropractic care, acupuncture and activity modification.^{4,5} It remains unclear which of these treatments or combination of these treatments is most effective due to variability on experimental design, outcome measures used and heterogeneity in participants.⁴ Secondly, spontaneous recovery following delivery is a possibility and may skew results.^{5,7} Thirdly, literature spans many timeframes of pregnancy including pre-, peri- and postnatal, adding a challenge to discrete cross comparisons. Lastly, the literature addresses both low back pain and pelvic girdle pain, as well as the two combined. These two types of pains are reported to differ and patients with pelvic girdle pain alone are found to report higher pain scores and disability which increases difficulty for treatments.² Unfortunately, the literature often lacks clear differentiation between the two, leading to decreased validity of results. In light of the above mentioned factors, critical evaluation and interpretation is recommended before using the results of this research review in clinical practice.

Conclusion: Gaps, Clinical Insight & Future Investigations

This review highlights clear gaps in the literature pertaining to the effectiveness of group exercise on lumbopelvic pain during pregnancy compared to individualized care. Research that specifically investigates the effect of group yoga compared with individualized physical therapy does not exist, resulting in lack of sufficient evidence to support one intervention over the other. Additionally, several of the studies reviewed lack detail about the exact exercises used and why

those exercises were chosen. Lastly, many studies do not address psychosocial aspects that arise from pain during pregnancy. Overall, of the studies included in this literature review, lack of homogeneity in design yields the inability to draw definite conclusions about the effectiveness of group exercise on lumbopelvic pain during pregnancy and therefore leave the original clinical question unanswered.

Secondly, this review brings to light relevant pieces of information for clinical practice. It is well established in the literature that individualized care is an optimal choice for treatment of many patient populations as well as women during pregnancy.^{2,4,7} Using one-on-one interactions, a skilled physical therapist can make hands-on adjustments, assess and correct exercise performance, ensure safety and decrease pain provocation.^{2,12} Studies suggest a strong correlation between exercise performance and decreased pain;² when individualized care is available, it is typically the best choice. Group classes should not be overlooked, however, and may be a good recommendation for general health during pregnancy and prevention of lumbopelvic pain (rather than treatment).² Although there are inconsistencies in the evidence, participants in group yoga classes reported that the intervention methods were “excellent” and they would recommend that type of intervention 90% of the time.³ Participants reported that group exercise, like yoga, helped them improve their posture, perform daily activities safely, learn to control their pain, feel less stress, and closer connection to their baby.⁹ In all the group and yoga group studies assessed in this review extremely low dropout rates were demonstrated and patient adherence ran high. Additionally, group classes are cost effective and provide a positive social environment.² This type of exercise intervention typically has minimal risks, lacks adverse effects and provides the confirmed exercise benefits that are recommended for a healthy pregnancy.²

Lastly, ideas for future investigations have been revealed following this review. An investigation into exercise recommendations during pregnancy, adherence to recommendations, and determinates that limit participation would be useful. Exercise is very beneficial to a mother and her fetus and studies have reported participation in exercise is correlated with less intense reported lumbopelvic pain during pregnancy.⁶ Understanding common perspectives about exercise during pregnancy and continued investigation into amount and type of exercise for prevention of lumbopelvic is warranted. Psychosocial factors and their relationship to pain deserve attention as well. Recent evidence suggests that stress experienced early in pregnancy is a predictor of lumbopelvic pain experienced later in pregnancy.¹ Given the evidence that exercise and group yoga result in decreased stress and depression,^{9,11} it seems likely that future research should also assess the effect yoga has on decreasing stress as a means to preventing lumbopelvic pain during pregnancy.

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