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# Research Paper Review

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## Outcomes of Pregnant Patients with Low Back Pain undergoing Chiropractic Treatment: A prospective cohort study with short term, medium term and 1 year follow up

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## ABSTRACT

### BACKGROUND

*Low back pain in pregnancy is common and research evidence on the response to chiropractic treatment is limited. The purposes of this study are 1) to report outcomes in pregnant patients receiving chiropractic treatment; 2) to compare outcomes from subgroups; 3) to assess predictors of outcome.*

### METHODS

*Pregnant patients with low back or pelvic pain, no contraindications to manipulative therapy and no manual therapy in the prior 3 months were recruited.*

*Baseline numerical rating scale (NRS) and Oswestry questionnaire data were collected. Duration of complaint, number of previous LBP episodes, LBP during a previous pregnancy, and category of pain location were recorded.*

*The patient's global impression of change (PGIC) (primary outcome), NRS, and Oswestry data (secondary outcomes) were collected at 1 week, 1 and 3 months after the first treatment. At 6 months and 1 year the PGIC and NRS scores were collected. PGIC responses of 'better' or 'much better' were categorized as 'improved'.*

*The proportion of patients 'improved' at each time point was calculated. Chi-squared test compared subgroups with 'improvement'. Baseline and follow-up NRS and Oswestry scores were compared using the paired t-test. The unpaired t-test compared NRS and Oswestry scores in patients with and without a history of LBP and with and without LBP during a previous pregnancy. Anova compared baseline and follow-up NRS and Oswestry scores by pain location category and category of number of previous LBP episodes. Logistic regression analysis also was also performed.*

### RESULTS

*52% of 115 recruited patients 'improved' at 1 week, 70% at 1 month, 85% at 3 months, 90% at 6 months and 88% at 1 year. There were significant reductions in NRS and Oswestry scores ($p < 0.0005$). Category of previous LBP episodes number at one year ($p = 0.02$) was related to 'improvement' when analyzed alone, but was not strongly predictive in logistic regression. Patients with more prior LBP episodes had higher 1 year NRS scores ($p = 0.013$).*

### CONCLUSIONS

*Most pregnant patients undergoing chiropractic treatment reported clinically relevant improvement at all time points. No single variable was strongly predictive of, improvement' in the logistic regression model.*

## ANALYSIS

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**Background Information**
Low back and pelvic pain are so common during pregnancy, they are often considered normal. However, this is a concern due to their high prevalence (50-80%), impact on quality of life for those affected, and common link to general back pain persisting after pregnancy. Low back pain related to pregnancy is most commonly divided into three categories: lumbar spine pain (LP), posterior pelvic pain (PPP), or a combination of the two. PPP has been shown to be most common. There has been no current definitive etiology identified for low back pain associated with pregnancy, but it is thought to be related to biomechanical changes caused by the enlarging uterus and the influence of relaxin on stabilizing ligaments, which leads to increased (an even hyper-) mobility of joints, particularly those in the pelvic ring.

Recent systematic reviews have found low and moderate quality evidence indicating that chiropractic care is associated with improved outcomes, although the outcomes varied depending on the location of the pain. In addition, a recent prospective randomized trial found that women receiving chiropractic care and routine obstetrical care versus women receiving only routine obstetrical care showed statistically and clinically significantly greater improvements in pain after 5 and 9 weeks (1).

The current study aimed to further knowledge in this area by:

1. Reporting outcomes for pregnant patients receiving chiropractic treatment for low back and pelvic pain at various time points up to one year after baseline;
2. comparing outcomes by subgroup, and;
3. investigating demographic factors as predictors of outcomes.

## PERTINENT RESULTS

Baseline and 1 year data were available on 115 patients, treated by 15 chiropractors. The average patient age was 33 and the average gestation week was 26.2 at baseline, with a slight majority of patients in their 3rd trimester. 53 patients (46%) had at least one previous pregnancy, and 58% of those reported back pain during a previous pregnancy.

At 1 week, over half of the patients reported clinically relevant improvement. At all other data collection points, the vast majority of patients were improved, with statistically significant reductions seen in the NRS and Oswestry scores. Patients reporting LBP in previous pregnancies showed significantly lower NRS scores at baseline, but no significant differences were revealed between this subgroup and all other patients' NRS scores at any follow-up point. No significant link was found between the category of location of LBP (LBP only, PPP only, or both) and improvement at any of the follow-up points. Patients who had more previous episodes of LBP showed less improvement, with significantly higher NRS scores at 1 year. More specifically, patients who reported a high number (5+) previous episodes of LBP were less likely to report clinically significant improvements, particularly at the 1 week and 1 year points, but not at the 1, 3, and 6 month points. Patients with LBP during a previous pregnancy did not show worse outcomes than those without LBP in previous pregnancies.

At 1 year, 85.2% of patients were 'happy' or 'very happy' with their chiropractic care and only 6% were 'unhappy'. A final important note is that no serious adverse events were reported.

## CLINICAL APPLICATION & CONCLUSIONS

This study suggests that a large proportion of pregnant patients with LBP or pelvic pain will report clinically relevant improvement in symptoms with chiropractic care at all time points up to one year (after delivery). This, combined with the lack of serious adverse effects from treatment, suggest that *chiropractic care is an effective and safe treatment choice for pregnant patients with LBP and pelvic pain*. It is important to note that a history of multiple episodes of LBP (5+) may lead to less significant changes at the 1 year time point. It is reasonable that at the one year point the patient would have given birth, so this frequency of episodes may reflect a more persistent form of LBP for an individual patient (that is, a return to their episodic LBP, rather than pregnancy related LBP).

## STUDY METHODS

A prospective, cohort, outcomes study was performed on pregnant patients over the age of 18, suffering from low back pain, pelvic pain, or both of any duration who have had no chiropractic or manual therapy in the 3 months prior to the baseline data collection. Chiropractors throughout the German and French speaking regions of Switzerland were invited to submit patients but most came from 2 multi-clinician practices. Patients were excluded if they had specific pathologies of the lumbar spine that made chiropractic care contraindicated, if they had Paget's disease, or if they had osteoporosis. Patients who missed 3 consecutive data collection telephone interviews were deleted from the study. Chiropractic care delivery was not standardized, with the techniques utilized and frequency of care left to the discretion of the treating clinician. However, the Swiss job analysis study has shown that most chiropractors in the country use diversified method (2)*[Academy note: "Diversified Technique" = High Velocity Low Amplitude Technique]* , so we can likely infer that this was the most commonly used treatment.

Immediately prior to the first treatment, patients were asked to fill out the numerical rating scale (NRS) for pain and the Oswestry questionnaire. Additionally, the treating chiropractor provided information on the patients' age, gestational week, number of previous pregnancies, work status, smoking, duration or current complaint, number of previous episodes of LBP, LBP during a previous pregnancy (yes/no), location category of pain (LP only, PPP only, or both areas), and exercise level (regular, occasional, none).

At one week after the first consultation/treatment, a short telephone interview was performed to collect data from the NRS, patient's global impression of change (PGIC) scale, and the Oswestry questionnaire. The same data were collected again via telephone interview at 1 month and 3 months after starting chiropractic treatment. Further telephone interviews at 6 months and 1 year after beginning chiropractic treatment collected the NRS and PGIC scores, but not the Oswestry data. Additionally, at 1 year, data was collected with regards to the patient's satisfaction with treatment. The options included: 'very happy', 'happy', 'neutral', 'unhappy', and 'very unhappy'. Trained research assistants who were unknown to the patients and clinicians conducted the telephone interviews.

The PGIC scale was a 7-point verbal scale that gave the patient's the option of rating themselves as 'much worse', 'worse', 'slightly worse', 'no change', 'slightly better', 'better', or 'much better'. Only those patients responding 'better', or 'much better' were categorized as improved. All other patients were categorized as not improved. This was the primary outcome measure for the study.

## STUDY STRENGTHS/WEAKNESSES

### Strengths

- Telephone interviews were conducted by trained research assistants who were unknown to both the patients and clinicians to help avoid bias or unintentional influence over patient answers.
- Patients selecting the option 'slightly better' on the PGIC scale were classified as unchanged for the purposes of the study. This helps to ensure that those classified as improved are improved to a level adequate for clinical significance.

### Weaknesses

- Due to the use of a cohort study rather than a randomized control trial the outcomes cannot be attributed to chiropractic treatment. However, the strong similarities between these results and those from a recently published RCT (1) support the validity of the results.
- Patients in this study were treated at multiple practice sites by a variety of chiropractors and no details were provided with regards to the type of treatments and the treatment dosage provided.
- The Oswestry was not the best choice for the population but was the best choice available in both French and German. The Bournemouth questionnaire would have been a better outcome measure for the patient population as it measures more pertinent domains such as psychosocial factors. However, at the time of the study the Bournemouth had not been translated and validated in German.

### Additional References

1. George JW, Skaggs CD, Thompson PA, et al. A randomized controlled trial comparing a multimodal intervention and standard obstetrics care for low back and pelvic pain in pregnancy. American Journal of Obstetrics and Gynecology. 2013, 295:e1-e7.
2. Humphreys BK, Peterson CK, Muehlemann D, Haueter P. Are Swiss chiropractors different than other chiropractors? Results of the job analysis survey 2009. Journal of Manipulative and Physiological Therapeutics. 2010, 33:519-535