**Article Full Title**

Manual therapy versus advice to stay active for nonspecific back and/or neck pain: a cost-effectiveness analysis

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**Paper Abstract**

Background: Low back and neck pain are the most common musculoskeletal disorders worldwide, and imply suffering and substantial societal costs, hence effective interventions are crucial. The aim of this study was to evaluate the cost-effectiveness of manual therapy compared with advice to stay active for working age persons with nonspecific back and/or neck pain. Methods: The two interventions were: a maximum of 6 manual therapy sessions within 6 weeks, including spinal manipulation/mobilization, massage and stretching, performed by a naprapath (index group), respectively information from a physician on the importance to stay active and on how to cope with pain, according to evidence-based advice, at 2 occasions within 3 weeks (control group). A cost-effectiveness analysis with a societal perspective was performed alongside a randomized controlled trial including 409 persons followed for one year, in 2005. The outcomes were health-related Quality of Life (QoL) encoded from the SF-36 and pain intensity. Direct and indirect costs were calculated based on intervention and medication costs and sickness absence data. An incremental cost per health related QoL was calculated, and sensitivity analyses were performed. Results: The difference in QoL gains was 0.007 (95% CI −0.010 to 0.023) and the mean improvement in pain intensity was 0.6 (95% CI 0.068–1.065) in favor of manual therapy after one year. Concerning the QoL outcome, the differences in mean cost per person was estimated at −437 EUR (95% CI −1302 to 371) and for the pain outcome the difference was −635 EUR (95% CI −1587 to 246) in favor of manual therapy. The results indicate that manual therapy achieves better outcomes at lower costs compared with advice to stay active. The sensitivity analyses were consistent with the main results. Conclusions: Our results indicate that manual therapy for nonspecific back and/or neck pain is slightly less costly and more beneficial than advice to stay active for this sample of working age persons. Since manual therapy treatment is at least as cost-effective as evidence-based advice from a physician, it may be recommended for neck and low back pain. Further health economic studies that may confirm those findings are warranted.

**NIH Risk of Bias Tool**

Quality Assessment of Controlled Intervention Studies

1. **Was the study described as randomized, a randomized trial, a randomized clinical trial, or an RCT**

Yes

1. **Was the method of randomization adequate (i.e., use of randomly generated assignment)?**

Yes

1. **Was the treatment allocation concealed (so that assignments could not be predicted)?**

Yes

1. **Were study participants and providers blinded to treatment group assignment?**

No

1. **Were the people assessing the outcomes blinded to the participants' group assignments?**

Yes

1. **Were the groups similar at baseline on important characteristics that could affect outcomes (e.g., demographics, risk factors, co-morbid conditions)?**

Yes

1. **Was the overall drop-out rate from the study at endpoint 20% or lower of the number allocated to treatment?**

Yes

1. **Was the differential drop-out rate (between treatment groups) at endpoint 15 percentage points or lower?**

Yes

1. **Was there high adherence to the intervention protocols for each treatment group?**

Cannot Determine, Not Reported, or Not Applicable

1. **Were other interventions avoided or similar in the groups (e.g., similar background treatments)?**

Cannot Determine, Not Reported, or Not Applicable

1. **Were outcomes assessed using valid and reliable measures, implemented consistently across all study participants?**

Yes

1. **Did the authors report that the sample size was sufficiently large to be able to detect a difference in the main outcome between groups with at least 80% power?**

Yes

1. **Were outcomes reported or subgroups analyzed prespecified (i.e., identified before analyses were conducted)?**

Yes

1. **Were all randomized participants analyzed in the group to which they were originally assigned, i.e., did they use an intention-to-treat analysis?**

Yes

**Key Finding #1**

Manual therapy appears to lead to larger clinically meaningful improvements in pain intensity and pain related disability in those with nonspecific back and/or neck pain after one year when compared to those who received evidenced based advice to remain active.

**Key Finding #2**

Differences in mean costs per person demonstrated that manual therapy achieves better outcomes at lower costs compared advice to stay active, however, the differences in cost were not statistically significant between groups.

**Key Finding #3**

Overall, manual therapy is more cost-effective than advice to stay active because it is both slightly less costly and results in better health related QoL and improved pain intensity.

**Key Finding #4**

**Please provide your summary of the paper**

Back and neck pain are among the most common reasons individuals seek out medical care. Therefore, it is important to not only understand the effectiveness of various interventions, but also the cost associated with them in order to control the cost imparted on the individual and healthcare system. This cost-effectiveness analysis showed that manual therapy for nonspecific back and/or neck pain is slightly less costly and more effective than advice to remain active among working age individuals. Due to the fact that this analysis was based on a large RCT, it includes minimal risk from confounding differences in prognostic factors between the index and control groups. However, the larger loss-to-follow-up experienced by the index group may have introduced selection bias, although this is not suspected to have affected the conclusions of this study. It is important to note that this study was performed in 2005 and therefore estimated cost per person for both groups are likely to have changed since then, but since this change would affect both groups, the main conclusions of this study should remain valid. Also of importance, this study did not report any methods or data related to how diligently the individuals in the control group followed the advice to remain active. Therefore, this study only represents those who received advice to remain active and should not be used as a comparison between manual therapy and following advice to remain active.

**Please provide your clinical interpretation of this paper. Include how this study may impact clinical practice and how the results can be implemented.**

The results of this study indicate that manual therapy can be a lower cost, higher impact treatment for those experiencing nonspecific back and/or neck pain when compared to evidence based advice to remain active and education on pain coping strategies. Therefore, if a clinician must chose one over the other, it appears to be more beneficial to focus on manual therapy interventions. However, both groups showed improvements in pain intensity and disability and, therefore, the best treatment for these patients is likely a combination of both manual therapy techniques and advice on remaining active and how to use different pain coping strategies.