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Review article

Effect of education on non-specific neck and low back pain: A meta-analysis of randomized controlled trials

Kantheera Ainpradub [a], Ekalak Sitthipornvorakul [a], Prawit Janwantanakul [a, *], Allard J. van der Beek [b]

[a] Department of Physical Therapy, Faculty of Allied Health Sciences, Chulalongkorn University, Bangkok, Thailand
[b] Department of Public and Occupational Health, VU University Medical Center, Amsterdam, The Netherlands

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ABSTRACT

Background: Neck and low back pain are significant health problems due to their high prevalence among the general population. Educational intervention commonly aims to reduce the symptoms and risk for additional problems by increasing the participant's knowledge, which in turn will alter the person's behavior. The primary aim of this study was to review randomize controlled trials (RCTs) to gain insights into the effectiveness of education for the prevention and treatment of non-specific neck and low back pain.

Methods: Publications were systematically searched from 1982 to March 2015 in several databases. Relevant RCTs were retrieved and assessed for methodological quality. Meta-analysis was conducted to examine the effectiveness of education for the prevention and treatment of non-specific neck and low back pain. The overall quality of evidence was assessed using the GRADE system.

Results: Thirty-six RCTs (30 high-quality studies) were identified. A total of 15 RCTs, which compared education programs to no education program, were included for further analysis. All studies included investigated the effectiveness of education with intermediate- and long-term follow-ups. The results showed that education programs were not effective in preventing and treating neck pain as well as treating low back pain. Conflicting evidence was found for the effectiveness of education on prevention of low back pain.

Conclusions: Evidence suggests that education programs are not recommended in preventing or treating neck pain as well as treating low back pain, unless supplementary high-quality studies provide evidence to the contrary.

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1. Background

Neck and low back pain are significant health problems due to their high prevalence among the general population (Walker, 2000; Croft et al., 2001). One-year prevalence rates for neck pain range between 20% and 40% and lifetime prevalence of neck pain is 14% up to 71% (Fejer et al., 2006; Côté et al., 2009). For low back pain, one-year prevalence rates range from 22% to 65%, while estimates for lifetime prevalence range from 11% up to 84% (Walker, 2000).

The World Health Organization (1998a, 1998b) defines therapeutic patient education as education that helps patients to learn and to develop many competencies as well as to adapt behaviors leading to the improvement of health. Education is recommended as an important component of neck and low back pain care (Gross et al., 2009; Koes et al., 2010), which commonly aims to reduce the symptoms and risk for additional problems by increasing the participant's knowledge, which in turn will alter the person's behavior (Linton and van Tulder, 2001; Haines et al., 2009).

A number of systematic reviews have been conducted to evaluate the effectiveness of education aiming to prevent or alleviate neck or low back pain; however, the findings are still controversial (Leclaire et al., 1996; van Poppel et al., 2004; Ribeiro et al., 2008; Tavafian et al., 2008; Sahin et al., 2011). For example, Haines et al. (2009) found educational interventions to have no effect on reducing pain intensity, decreasing disability, or improving the

* Corresponding author. Department of Physical Therapy, Faculty of Allied Health Sciences, Chulalongkorn University, Bangkok 10330 Thailand. Tel.: +66 2 218 3767; fax: +66 2 218 3766.
E-mail address: prawit.j@chula.ac.th (P. Janwantanakul).

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quality of life in neck pain patients with various pathologies. However, Heymans et al. (2005) found moderate evidence supporting the effectiveness of back schools for patients with chronic and recurrent low back pain. The primary aim of this study was to systematically review randomized controlled trials to gain insights into the effectiveness of education on the prevention and cure of non-specific neck and low back pain. The secondary aim was to identify effective educational content to prevent and treat non-specific neck and low back pain.

2. Methods

2.1. Search strategy

Online searches were conducted on PubMed, CINAHL Plus with full text, The Cochrane Library, ScienceDirect, PEDro, ProQuest, and Scopus databases from 1982–March 2015 using the following keywords: neck or low back pain paired with education, self-management, prevention, or treatment. The search and full inclusion process was performed by one reviewer (KA). After the inclusion of articles based on the selection criteria, references were searched for additional articles.

2.2. Selection of studies

The selection criteria of relevant articles were:

(1) The study design was a randomized controlled trial (RCT) that used education as an intervention and had follow-up.
(2) The article was a full report published in English. Letters, abstracts, books, conference proceedings, and posters were excluded.
(3) Neck and/or low back pain was assessed in the study. Studies on neck and low back pain due to specific underlying pathology, such as tumors, fractures, infection, dislocation, whiplash-associated disorder, and osteoporosis were excluded.

2.3. Quality assessment of studies

The articles were evaluated for methodological quality by two reviewers (KA and ES) using the PEDro scale, which contains 11 yes/no items (Maher et al., 2003). A high-quality study was defined as scoring positive in at least 50% (5/10) of the items. Disagreements between the reviewers were discussed in an attempt to achieve consensus. If agreement could not be reached, a third reviewer (PJ) was consulted to achieve a final judgment. If a study had already been rated according to the PEDro scale and its score confirmed on the Physiotherapy Evidence Database (www.pedro.org.au), this score was used in the present study (Machado et al., 2006).

2.4. Data extraction

Data extraction was performed by two reviewers (KA and ES). The reviewers independently extracted the data using a standardized form, including characteristics of participants, intervention parameters, outcomes, and results. The consensus method was used to resolve disagreements between the two reviewers.

2.5. Data analysis

Only studies which compared education programs to no education program were included for analysis of the effectiveness of education on the prevention and cure of non-specific neck and low back pain. The primary outcomes for prevention were prevalence and incidence of diseases. The secondary outcomes for prevention were fear-avoidance beliefs, quality of life, and work-limitations. The primary outcomes for treatment were pain and disability. The secondary outcomes for treatment were fear-avoidance beliefs, quality of life, and work-absenteeism. The effects of education on outcomes were divided into three groups: short-term (less than 3 months), intermediate-term (between 3 and 12 months), and long-term effects (12 months or more).

For each study, any finding was classified as *positive* if an education program was demonstrated to be statistically more effective than no education program in at least one primary/secondary outcome. Any finding was classified as *negative* if an education program was demonstrated to be statistically less effective than no education program in at least one primary/secondary outcome. A *neutral* rating (no effect) was classified if the education program did not statistically differ from no education program in any primary/secondary outcomes (Linton and van Tulder, 2001).

Studies that used the same tools for outcome assessment were compared using the mean difference (MD) and 95% of the confidence intervals (CI) to allow for direct comparison of the results. If studies used different measurement tools for the same outcome, the standardized mean difference (SMD) and 95% of the CI was calculated using random-effect models. The relative risk (RR) was calculated using a random-effect model for dichotomous data. Assessment of clinical relevance was made using the recommendations of the Cochrane Back Review Group (CBRG). A small effect was defined as MD less than 0.1, SMD less than 0.5, and RR greater than 0.8. A medium effect was defined as MD from 0.1 to 0.2, SMD from 0.5 to 0.8, and RR from 0.5 to 0.8. A large effect was defined as MD > 0.2, SMD >0.8, and RR < 0.5 (Furlan et al., 2009). The

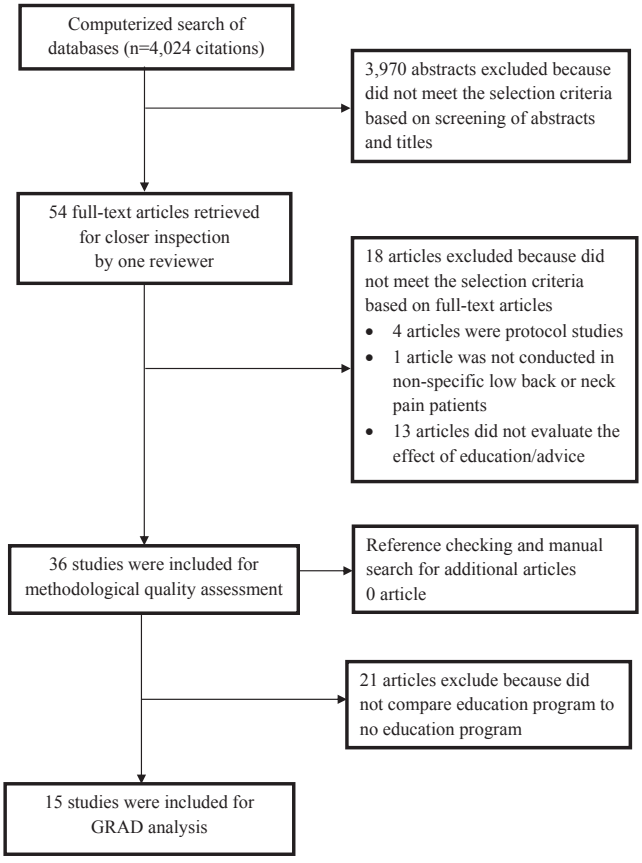

Fig. 1. Flow diagram of the searching and screening process.

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