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REVIEW: REVIEW

A commentary review of the cost effectiveness of manual therapies for neck and low back pain

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Summary *Background & purpose:* Neck and low back pain (NLBP) are global health problems, which diminish quality of life and consume vast economic resources. Cost effectiveness in healthcare is the minimal amount spent to obtain acceptable outcomes. Studies on manual therapies often fail to identify which manual therapy intervention or combinations with other interventions is the most cost effective. The purpose of this commentary is to sample the dialogue within the literature on the cost effectiveness of evidence-based manual therapies with a particular focus on the neck and low back regions.
Methods: This commentary identifies and presents the available literature on the cost effectiveness of manual therapies for NLBP. Key words searched were neck and low back pain, cost effectiveness, and manual therapy to select evidence-based articles. Eight articles were identified and presented for discussion.
Results: The lack of homogeneity, in the available literature, makes difficult any valid comparison among the various cost effectiveness studies.
Discussion: Potential outcome bias in each study is dependent upon the lens through which it is evaluated. If evaluated from a societal perspective, the conclusion slants toward "adequate" interventions in an effort to decrease costs rather than toward the most efficacious interventions with the best outcomes. When cost data are assessed according to a healthcare (or individual) perspective, greater value is placed on quality of life, the patient's beliefs, and the "willingness to pay."

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Introduction

The literature contains multiple studies (Beumer et al., 2015; Byström et al., 2013; Camargo et al., 2015; Maiers et al., 2014; Reid et al., 2014; Sampath et al., 2015) comparing the benefits of various manual therapies to other forms of intervention. The definition of manual therapy, however, is broad and ill defined in the literature. Additionally, there is a lack of clarity regarding the provider of manual therapy services, which is offered in varying degrees by massage therapists, chiropractors, physical therapists, and osteopaths, to name a few. In order to develop a clear understanding of the effectiveness of manual therapy, it is imperative that the consumer of research understands which manual therapy interventions are being provided and by what type of provider. Once there is a clear understanding of the interventions studied in a randomized controlled trial (RCT), a systematic review, or a meta-analysis and the provider performing the services, then the efficacy and cost effectiveness of the manual therapy interventions can be examined. Cost effectiveness in healthcare is defined as the minimal amount of dollars spent to obtain acceptable or necessary outcomes ("Definition of COST—EFFECTIVE," n.d.), where outcomes are defined as a reduction in symptoms or decreased treatment visits. In research, this definition becomes complicated by the definition of acceptable outcomes (acceptable to whom), the varied cost of providers, the political atmosphere, the region in which services are provided, and the budget of the payer. In the studies selected, cost effectiveness was measured by multiple metrics including incremental cost effectiveness ratio (ICER), quality adjusted life years (QALYs), and willingness to pay (WTP). Furthermore, studies have been conducted in multiple countries, making direct comparison of the cost effectiveness of manual therapies difficult. The reader should be cautious about applying findings from a different payer system. The purpose of this commentary was to sample the dialogue within the literature on the cost effectiveness of evidence-based manual therapies with a particular focus on the neck and low back regions. The studies, systematic reviews, and literature reviews of systematic reviews took place in multiple countries. The literature selected was published from 2000 to the 2014 and is presented in chronological order. This discussion differs from a literature review by highlighting the inconsistency of manual therapy definitions, the cost effectiveness benchmarks within the literature, and the lack of homogeneity for application purposes.

Defining manual therapy

Manual therapies include, but are not limited to, massage, dry needling, soft tissue mobilization, instrument-assisted soft tissue mobilization (IASTM), Rolfing, non-thrust manipulation (mobilization), thrust manipulation (HVLA), myofascial release, strain-counterstrain, muscle energy techniques (MET), Fascial Manipulation (FM®), craniosacral therapy, osteopathy (osteopathic manual medicine, OMM), neurodynamics (mobilization of neural tissue), visceral mobilization, etc. The imprecise definition of manual therapy interventions in the literature can be confusing and may lead to inaccurate conclusions and clinical interpretation. The term "manipulation," as a sub-category of manual therapy, is used liberally in the literature, both accurately and inaccurately, and is often the dominant term chosen to refer to joint or soft tissue interventions. For example, "manipulation" may refer to a spinal or a peripheral technique where it is defined as a low-velocity passive oscillation within the physiological range of motion (ROM). In other instances it may indicate an HVLA procedure performed at the end-range barrier (Cook et al., 2013), or it may mean both interventions performed together. Furthermore, manipulation may refer to various soft tissue interventions including, massage, FM®, IASTM, MET, and others. It is, therefore, evident that both terms, manual therapy and manipulation, have been broadly applied within the literature to a variety of neuromusculoskeletal system interventions for the treatment of joints and connective, nervous, and soft tissue. Interpreting research findings, especially from RCTs, systematic reviews, and meta-analyses may result in misleading findings if the interventions, like manipulation, are not clearly defined prior to inclusion. Unfortunately, not every article provided specifics on which interventions were performed or included in the manual therapy. In those cases, this commentary has used the most specific term used by the selected article. When discussing each article, this commentary has attempted to pinpoint the specific manual therapy or manipulation intervention each study or review used.

Prevalence of neck and low back pain

The prevalence of neck pain over a one-year time frame ranges from 20% to 40% with a lifetime prevalence of 67%, meaning that two out of every three individuals will experience neck pain during their lifetimes (Côté et al., 2008; Fejer et al., 2006; D. G. Hoy, Protani, De and Buchbinder, 2010). Low back pain (LBP) annual prevalence ranges from 22% to 65% with an estimated lifetime occurrence of 11%—84% (Dagenais et al., 2010; Hoy et al., 2012; Koyanagi et al., 2015; Loney and Stratford, 1999; Walker, 2000). From 1992 to 2006, a 14-year time period, in the United States (U.S.), the prevalence of debilitating chronic LBP increased 2—3% across all age ranges, both genders, and in both African-American and Caucasian races (Freburger et al., 2009).

In the U.S. the annual economic impact due to neck and low back pain is greater than 150 million lost workdays at a cost of $16 billion due to lost productivity (Deyo et al., 2006; Ricci et al., 2006). In the U.S., employer costs for lost productivity are estimated to be $7.4 billion annually for employees aged 40—65 years; those with recurrent back pain account for 71.6% of these expenses (Ricci et al., 2006). As evidenced by the international attention paid to the cost effectiveness of treatment for neck and low back pain, it is a global problem.

Cost effectiveness of manual therapies for neck and low back pain

Seferlis et al. (2000) compared cost analysis in Sweden for those with acute LBP focusing on interventions with the