

A narrative review of massage and spinal manipulation in the treatment of low back pain

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ABSTRACT

Low back pain (LBP) is one of the most common musculoskeletal problems that affect patients' daily life. Nowadays, treatment of LBP is very challenging due to the recurrent nature of the problem. This narrative review focuses on massage and spinal manipulation on LBP condition. The other issues consist of epidemiology, etiology, symptoms, and rapport between clinician and patient on treatment were explored. Online electronic search in databases (Ovid™, Scopus, EMBASE and PubMed) was performed using key words such as LBP, massage, and spinal manipulation. Textbooks and web page are additional sources that were used for gathering information. Literature reported that high incidence of LBP in agriculture areas which is farmer, in the urban area mainly office worker and industrial area mainly factory operator. LBP frequently occurs among office workers, pregnant, and obesity due to poor body mechanics. Building a successful rapport is a single most important factor in a relationship between clinician and patient. Understanding patient's perspective in their illness such as belief about cause, treatment approaches, and quality-of-life will help clinician create plans that are more appropriate to patient's situation and preferences. Patient's trust is the easing way for the clinician to provide treatments. Based on current evidence, there are arrays of conservative treatments shown to be effective in treating LBP. However, massage and spinal manipulation are the most popular among LBP patients because it contributes good effect in reducing pain intensity. Massage preferred by certain patient such as traditional Malay massage, Thai massage, Tui Na because it provide a relaxation on the body. In addition, spinal manipulation also showed a positive outcome on pain reduction and joint hypomobility. LBP is a common problem, and various methods could be used as a treatment. However, traditional massage is fast gaining popularity even in the modernized society.

Key words: Evidence-based medicine, health belief, musculoskeletal problems, patients' daily life, quality of life

INTRODUCTION

Low back pain (LBP) is one of the musculoskeletal

problems with high recurrence rate and caused the loss of function and disability.^[1] Generally, the pain area is below the last ribs margin (costal margin) and above the inferior gluteal line sometimes it's radiating or nonradiating lower limb area.^[2] The extension of pain into the lower limb is depending on which nerve is involved. The LBP can be classified into three; mechanical, nonmechanical, and psychogenic. The back pain can be further classified based on its intensity and duration. The sudden onset of pain with a duration <6 weeks is considered as acute pain. The

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duration for subacute pain begins on 6-12 weeks and more than 12 weeks is chronic pain.^[3]

Low back pain is affecting worldwide and mostly attack activity daily living. Therefore, it has a negative impact to individual's life which influences on social, physical, economy, and psychology. The LBP management for LBP can be divided into surgical and nonsurgical management. In terms of nonsurgical include pharmacology (opioids, paracetamol, antidepressants), physical rehabilitation, and traditional and complementary medicine (T and CM) (massage, spinal manipulation, exercises, acupuncture, electrical modalities), and cognitive behavioral therapy.^[1] However, this literature review focuses only massage and spinal manipulation in the treatment of LBP. In addition, other issues consist of epidemiology, etiology, symptoms, and relationship between clinician and patients on planning treatment are also explored.

METHODS

The published studies were searched through online databases include Ovid™, Scopus, EMBASE, and PubMed. Textbooks and web page are additional sources that were used for gathering information. The search keywords were entered via using Boolean operator. "AND" were used to combine the keywords and to narrowing searching process whereas "OR" were used to capture a different keywords. In this narrative study focus two interventions of LBP; massage and spinal manipulation. Every search engine was used the same keywords "massage," "spinal manipulation," and "LBP." First, articles about massage on LBP are identified using keywords "massage" and "LBP." Then, Boolean search strategy plays a role to specify the articles into related one using "AND" search. Roughly, 2770 articles were found. Then, articles available on full text and study years between 2010 until 2014 were selected as inclusion criteria and remove duplicate articles as exclusion criteria. Finally, only seven articles were found for this study.

Next articles are about spinal manipulation on LBP. The keywords used are "spinal manipulation" and "LBP" and using similar step as above, so the total was found are 3587 articles and then narrowing to related articles based on criteria as mentioned above. Finally, only five articles are required for this study. The other issues consist of epidemiology, etiology, symptoms, and relationship between clinician and patient on treatment were explored based on any related articles on LBP.

DISCUSSION

Epidemiology of low back pain

In Malaysia, about 11.6% of 2600 populations in a semirural area has suffered LBP.^[4] The high prevalence of LBP mainly in rural, urban, and industrial areas with 47.8%, 46.3%, and 40.2%, respectively.^[27] A study done by Tamrin *et al.* reported high prevalence of LBP was among workers in transport sectors^[6] and similar with Taiwan region.^[7]

The LBP occurs regardless of age. A study at Srinakarind Hospital, Thailand in 2002 showed approximately about 1740 patients suffer LBP, and this problem commonly arise in this country.^[8] The demand for health care treatment services on LBP had caused high economic burden in developing countries. Annually, United States spent \$25 billion for back care services^[9] and its expenses trend gradually increase and has been reached \$90.7 billion in 1998.^[10]

Etiology of low back pain

Occupation related to common risk factor in the development of LBP. The characteristics of occupation can contribute musculoskeletal problem include repetitive movement, heavy lifting frequently with poor body posture, inadequate rest, overtime work, and heavy work load. The study reported 37% suffer back pain caused by their work exposure. Farmers were found to be high risk to get back disorder followed by operators and service workers as well as clerical based on its ergonomic work features^[11] and physical workload.

High prevalence of LBP has been reported among pregnancy women. Interestingly, most of pregnant women claimed that they were experienced LBP within pregnancy phase, history of LBP within menstruation period as well as in the previous pregnancy.^[12,13] Majority of studies reported that pregnant women with LBP mostly affect their daily life activities and recur again after postpartum.^[14,15]

Obesity is also other contributing risk factor of LBP. A person who has overweight with body mass index (BMI) 25-29 showed a high incidence of back pain problem compared to underweight with BMI <20.^[16] This is because overweight populations tend to be less active and more sedentary in daily life or working period due to body weight restriction. The pressure exerted on the back area during working such as heavy lifting is very high among obesity people because more energy is needed to do the job which cause muscle strain.^[17]

Symptoms of low back pain

The symptoms of LBP depend on its causes. Majority of the patient claimed heavy pain on low back region and sometimes radiated to the buttock area when performing certain activities such as walking and sitting as well as reduce pain when rest.^[18] In advance case which involved of nerve root compression, pain is radiating from the back to the lower limb depending which nerve is affected. Usually, the symptoms include numbness, tingling, and weakness on lower limbs due to nerve pressure.^[19]

Patient-clinician relationship

The concept of the therapeutic alliance between clinician and patient can be used as a platform to recognize, support, and plan for better management of patient future outcomes.^[20] In this concept introduced by Bordin (1979) consist of three section which are the therapist-patient agreement on goals and interventions, as well as the affective rapport between therapist and patient. Indeed, the therapeutic alliance seems to be effective method on gaining better health condition as well as a psychological aspect.^[21,22]

Patient's trust is the easing way for the clinician to provide treatments.^[23] Patients will understand their problem so they can cooperate with the treatment given and also they can actually participate on the management of LBP. In a patient-centered model approach, the health care provider must be approachable and friendly, focus and attentive with every patient's complaints and problem and how its affect activity daily living include the activities must be avoided and how to solve it.^[24] Once the gap between clinician and patient is bridged, patient was confident, and trust clinician can help them on improving their health condition.^[25]

Massage

Massage is a classified as traditional healing method or therapeutic intervention that applied by qualified practitioner on the affected area. The practitioners use their hand, fingers, forearm, and elbow on patient's body during the massage.^[26] Traditional massages differ from each country. They have own technique depends on ethnic's belief such as Thai massage, Tui Na, and Malay massage.

In Malaysia, traditional Malay massage (TMM) is considered as popular conventional treatment among Malay populations. The practices and understanding are originally from Malay's belief and conducted in the Islamic approach using verses in Al-Quran

prior.^[26] Interestingly, TMM has been recognized in some integrated government hospital since 2007 which first launch at Hospital Kuala Batas. Subsequent year, Ministry of Health introduced TMM in two other selected government hospitals which are Hospital Putrajaya and Hospital Sultan Ismail.

Patient with LBP has improved their quality of life after seeking TMM.^[27] The positive effect of massage mostly in reducing pain.^[28] In physiological effect, the pressure applied during massage can inhibit pain transmission to the brain area through pain gate theory.^[54] In this theory, A-delta fibers will transmitted pressure impulse more faster than pain impulse which carried by C-fibers and cause closing the pain gate.^[29] As a result, pain impulse unable to reach spinal cord area and brain cannot interpret pain.^[30]

A recent study suggested traditional Thai massage can contribute therapeutic and physiological effects on back area.^[31] These effects cause pain relief and slow down sympathetic activity as well as increasing cardiac parasympathetic activity. The comparative study between Thai and Swedish massage showed that Swedish massage is more effective than Thai massage on pain intensity and disability.^[32] However, both types of massage still showed positive effects on low back pain with the evidence of improving physical and psychological functions^[33] rather than other non-surgical interventions such as placebo treatment, electrotherapy modalities and pharmacotherapy.^[34] Since a massage treatment has no adverse effects, it may be considered as a viable treatment option.^[35,36]

Spinal manipulation

Spinal manipulation includes high-velocity thrust technique applied on synovial joint when range of motion achieved at the end (passively) with "crack" sound.^[37] The force applied during manipulation would open up lumbar facets joints the space around more than 0.7 mm.^[38] The LBP with involvement of nerve impingement like radiculopathy is contraindicated.^[39] In neurophysiology aspect, lumbar paraspinal muscles fibers, and Golgi tendon organ will be activated after received mechanical impulses from spinal manipulation which transmitted by primary afferents of sensory input.^[40] Then, this activation will alter central neural mechanisms which later on increase pain threshold level.^[41]

A recent trial revealed that most patients experienced reducing in pain intensity on the back region after spinal manipulation.^[42] Several studies has shown

similar findings whereby spinal manipulation provide positive outcome among acute and chronic non-specific LBP patients^[43] even in older population.^[44] In addition, one study find out spinal manipulation has shown improvement on joint hypomobility among chronic LBP include flexion and extension phase.^[45]

CONCLUSION

As a conclusion, the LBP is a worldwide problem and had shown high recurrence problem. The high prevalence of LBP is typically among agriculture sector especially farmers followed by urban area and industrial area. Job features play an important role in contributing back pain disorders like body posture during prolonged working period, and excessive workload which lead to muscle fatigue. The psychosocial factors also contribute the occurrence of LBP. The other factor, a good relationship between clinician and patient must be established in order to get a positive outcome. The variety of treatments recommended for LBP can be offered. However, the most popular treatment approach of nonsurgical management is manual handling technique. Massage and spinal manipulation are recommended interventions for back pain disorders, and usually traditional massage is a popular fast gaining even in modernized society.

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