

McKenzie Method for Chronic Low Back Pain: Review

Imran Safei¹, Zulfahmidah^{2*}

¹Departement of Medical and Rehabilitation, Faculty of Medicine, Universitas Muslim Indonesia, Makassar, Indonesia

²Department of Biochemistry, Faculty of Medicine, Universitas Muslim Indonesia, Makassar, Indonesia

*Corresponding Author. E-mail: zulfahmidah@umi.ac.id Mobile number: 082345319900

ABSTRACT

Background: Chronic low back pain (CLBP) is one of the most prevalent and expensive musculoskeletal issues in contemporary culture. It is defined as low back pain that lasts for more than three months or longer than the anticipated recovery period.¹ 70 to 80 percent of adults have dealt with CLBP at some point in their lives. This study sought to assess the McKenzie method's contribution to the treatment of low back pain and determine whether it could be compared to other forms of therapy.

Content: A narrative review of the literature was performed using the following search engines: PubMed, Cochrane, and Scopus. Inclusion criteria were articles published in the last 10 years, randomized clinical trials, the mean age of patients between 18 and 70 years and full English text. Exclusion criteria were observational studies, case reports and articles without abstract or full text. The outcomes that were used to review included chronic pain, disability, Quality of Life (QoL) and psychological aspects.

Conclusion: Even though it has helped treat patients with chronic low back pain, the McKenzie method needs more research to be proven effective in particular patient populations.

Keywords: Chronic low back pain; McKenzie method; Humans



GREEN MEDICAL
JOURNAL
E-ISSN 2686-6668

Article history:

Received: 15 July 2022
Accepted: 15 August 2022
Published: 31 August 2022

Published by:

Faculty of Medicine
Universitas Muslim Indonesia

Mobile number:

+62821 9721 0007

Address:

Jl. Urip Sumoharjo Km. 5, Makassar
South Sulawesi, Indonesia

Email:

greenmedicaljournal@umi.ac.id

Introduction

Chronic low back pain (CLBP) is one of the most prevalent and expensive musculoskeletal issues in contemporary culture. It is defined as low back pain that lasts for more than three months or longer than the anticipated recovery period.ⁱ 70 to 80 percent of adults have dealt with CLBP at some point in their lives.ⁱⁱ Surgery, medication therapy, and non-medical interventions including rehabilitation are only a few of the intervention options used in its management. It is well known that the behavioral or biopsychosocial approach provides the groundwork for a better understanding of chronic pain among other rehabilitative methods.ⁱⁱⁱ

Robin McKenzie proposed the McKenzie approach, commonly referred to as "Diagnostic and Mechanical Therapy," in 1981.^{iv} There are 4 steps in MDT: (1) Assessment: The doctor records the patient's history of symptoms as well as the activities that either make the symptoms worse or make them better. The patient is then evaluated for movement loss, and the relationship between the symptoms and the movement is determined. Then, in order to assess the impact on the symptoms, the clinician asks the patient to make a series of predetermined sustained or repeated motions. (2) Classification: A classification is offered based on evaluation of the clinical response during the repeated or sustained movement tests. Derangement syndrome, dysfunction syndrome, postural syndrome, and other symptoms are the most common classifications for patient symptoms. The direction that the symptoms reduce, centralize, or disappear depends on the MDT exercise selection. (3) Treatment: Finding a consistent or repeated movement that reduces or eliminates the symptoms is the first step in treatment. The next step is to keep this improvement going for a few days. The patient then carries out recovery of function, which involves having them perform previously painful motions to see if their pain has subsided. (4) Prevention: The prevention step entails educating and encouraging the patient to engage in self-care and regular exercise. Usually, based on the clinical response, the exercise is delivered in a particular direction. Depending on what happens with the symptoms, the exercise may involve repetitive movements or a continuous position. It may also demand reaching the end of the range or perhaps the middle. All distal referred symptoms are sequentially and permanently eliminated by a single direction of repetitive movements or sustained postures, followed by the elimination of any lingering spinal discomfort.^v

Due to the significant risk of bias among the studies, the data on the efficacy of these techniques in treating patients with persistent nonspecific low back pain is inconclusive. This narrative review aims to demonstrate the effectiveness of McKenzie therapy in reducing pain intensity and their effects on function, quality of life, and healthcare utilization.

Materials and methods

A narrative review of the literature was performed using the following search engines: PubMed,

Cochrane, and Scopus. In order to perform the search, these keywords were used: Chronic Low Back Pain AND/OR McKenzie Therapy. There are 53 articles in first identification, After use Inclusion criteria were articles published in the last 10 years, randomized clinical trial, the mean age of patients between 18 and 70 years and full English text. Exclusion criteria were observational studies, case reports and articles without abstract or full text, CAM therapy and different rehabilitative approaches. Articles published between 2012 up to 2022 were included in the research. The outcomes that were used to review included: chronic pain, disability, QoL and psychological aspects.

A total of 53 articles were identified in the title search after excluding the duplicates. A total of 8 articles were included in this review. All 8 studies are RCTs; additionally, all of these trials target people that have chronic low back pain. All of them are comparison trials that compared to McKenzie exercise with other kinds of exercises, compare stabilization with other kinds of treatments and compare McKenzie exercise with stabilization.

Table 1. Literature Review McKenzie Method for Chronic Low Back Pain

Study	Patients	Intervention	Time of evaluation	Outcome	Results
Garcia AN, Costa LDCM, et al (2018) ^{vi}	G1=McKenzie (n=74) G0=Placebo (n=74)	G1= 10–15 repetitions of exercise, three to five times per day into the painful or stiff direction G0= detuned pulsed ultrasound for 5min with patients in side lying. They also received detuned short wave diathermy (IbramedR) in pulsed mode for 25min (in a supine position).	5 weeks	Pain intensity= NPRS scored from 0 (no pain) to 10 (worst possible pain) Disability = the Roland Morris Disability Questionnaire (RMDQ), scored from 0 (no disability) to 24 (high disability)	Reduce Pain, G1>G0 Reduce Disability, G1>G0
Halliday MH, Pappas E, Hancock MJ, et al. (2019) ^{vii}	G1= McKenzie (n=35) G2= Motor Control Exercise (n=35)	G1= exercises according to the McKenzie method for a total of 12 sessions	8 weeks	Function = the Patient Specific Functional Scale (3–30)	Function G1=G2 Perceived recovery G1=G2

		divided into 8 weeks G2= Exercises for motor control according to Hodges principles for a total of 12 sessions divided into 8 weeks		Perceived recovery = the Global Perceived Effect questionnaire (-5 to 5) Pain= 11-point visual analog scale.	Pain G1=G2
Garcia AN, Costa Lda C, da Silva TM, et al (2013) <small>viii</small>	G1= Back School group (n=74) G2=McKenzie group (n=74)	G1=Back School exercises of mobility, flexibility and strength (1 time per week/4 weeks) + work at home. G2= exercises according to the McKenzie method modifying postures and spinal motility range (1 time per week/4 weeks)	T0=baseline T1=end of treatment T2=3 months after randomization T3=6 months after randomization	Pain: VAS Disability RMDQ Quality of life: World Health Organization Quality of life-BREF Instrument Trunk bending range: inclinometer	Pain G2=G1 Disability G2>G2 T0 QoL G2=G1 Trunk bending range G2=G1
Murtezani A, Govori V, Meka VS, et al (2015). <small>ix</small>	G1=McKenzie group (n=134) G2=electro-physical agents (n=137)	G1=exercises according to the McKenzie method for a maximum of 7 sessions in 4 weeks G2=use of interferential current ultrasound and thermotherapy for 10 session in 4 weeks	T0=baseline T1= end of treatment T2=2 months follow-up T3=3 months follow-up	Pain: VAS Disability perception: Oswestry Low Back Pain Disability Questionnaire Trunk flexion: fingertip to floor distance test	Pain G1>G2 Disability perception G1>G2 Trunk Flexion G1>G2
Waqar S, Shakil-Ur-Rehman S, Ahmad S. 2016. <small>x</small>	A total of 37patients were screened out as per inclusion criteria and		4 weeks intervention	Visual Analogue Scale (VAS), Oswestry Disability Scale (ODI)	clinically the McKenzie EEP improved pain (mean 9.12 to 1.46)

	randomly placed into two groups. Twenty patients in group A were treated with Mulligan SNAGs and 17 patients in group B with McKenzie EEP			and lumbar Range of Motion (ROM)	and disability (73.82 to 6.24) slightly more than Mulligan SNAGs (pain: from 8.85 to 2.55, disability 73.75 to 7.05), while the Mulligan SNAGs improved lumbar ROM more effectively than McKenzie EEP in all directions including flexion, extension, side bending and rotation.
Hansapour-Dehkordi et al (217) ¹² G1=McKenzie exercises (1h/day for 20 days)	G1=McKenzie (n=36) G2= pilates (n=36) G0= group (n=36)	G2= 1 h of pilates session (3times/week for 6 weeks) G0= control group- no treatment	T0=baseline T1= 6 weeks after randomization	Pain McGill Pain Questionnaire QOL: General Health Questionnaire	Pain G2=G1G2 and G11>G0 QoL G2>G0 G2>G1
Hosseinfar et al (2013)	G1=McKenzie group (n=15) G2=stabilization exercises group (n=15)	G1=6 exercises; 4 types of extension and 2 types of flexion (3 times per weeks/6 weeks6) G2=stabilization exercise divided into 6 steps (3 times a week/6 weeks)	T0=baseline T1=after intervention	Pain: VAS Disability-function: Functional Rating Index Questionnaire Thickness of transversus abdominal muscle and multifidus muscle : ultrasound	Pain G2=G1 Disability-function G2>G1 Thickness of transversus abdominal muscle and multifidus muscle G2>G1
Szulc et al (2015)	G1=Mckenzie group+		T0=baseline	Pain: VAS and	

	muscle energy technique (n=20) G3=group with standard exercises (n=20)	G1=exercise according to the McKenzie method, integrating with the muscle energy technique (10 sessions) G2= exercises according to the McKenzie method (10 sessions) G3= standard exercises that included classic massage, laser therapy and TENS applied to the lumbosacral region (10 sessions)	T1= end of treatment T2= 3 months follow up	Oswestry pain Questionnaire Extension of spinal movements: electrogoniometry Structure of the spinal discs: magnetic resonance	Pain G1>G2>G3 Extension of spinal movements G1>G2>G3 structure of the spinal discs G1>G2>G3
--	---	--	--	--	--

Discussion

The outcomes of the reviewed studies' findings were grouped together based on their effects on chronic pain, functional limitations, quality of life, and psychological factors.

The most significant symptom of CLBP is chronic pain. Consequently, figuring out how to improve it is crucial. The most used measures for defining this symptom are the numerical rating scale (NRS) and the visual analog scale (VAS).

For instance, MDT contains scientific proof demonstrating that its workouts activate the immune system while also raising levels of the pain-relieving cytokine IL-4.^{xi} The evaluation method was also more effective than MRI in differentiating between painful and non-painful discs.^{xii}

In his article, Ali Hasanpour-Dehkordi contrasts the MK and Pilates approaches. Participants in the MK group worked out for an hour every day for 20 days, while those in the pilates group trained three times per week for six weeks. Both groups were compared to control groups (CGs). After therapeutic activities, there was little to no difference in pain reduction between the Pilates group and the MK group (P=0.327), however both techniques improved when compared to the CG in terms of pain score.¹¹

Garcia compares the MK approach to BS in his article. Exercises were done once a week for four weeks, however the average effect was just 0.66 points, with a 95 percent confidence interval [CI] of 0.29 to 1.62.⁸

In Garcia's article, two groups that received pulsed ultrasound and short-wave diathermy treatments—the MK group and the control group (CG)—were compared. For five weeks, each group participated in two sessions per week. In the MK group, there was a better difference in pain intensity, one point less.⁶

Mohammad Hosseinfaret contrasted an MK group with a group that underwent stability exercises. For six weeks, both groups engaged in three training sessions each week. Following therapeutic procedures, the pain rating fell for both groups.¹²

In the Pawel Szulc article, 20 individuals were split into three groups, each of which had 10 sessions of MK paired with muscular energy method, regular exercises, or both. The MK technique enhanced with muscular energy approach provided the most effective pain relief.¹³

Motor control exercises and the MK approach were contrasted in the essay by Mark H. Halliday. Over the course of eight weeks, twelve sessions were completed. Pain and function were not significantly different across the groups ($P=0.99$ and $P=0.26$, respectively); the only outcome in favor of the MK group was the feeling of pain.⁷

Another common theme in most publications is disability, which is typically measured using the Roland-Morris Disability Questionnaire.

The MK group demonstrated a statistically significant improvement to 1-month disability in Garcia's study (mean effect=2.37 points, 95 percent CI=0.76-3.99).⁸

According to the Mark H. Halliday article, on a scale of -5 to +5.7, the perceived recovery was marginally higher in the MK group (-0.8; 95 percent CI: -1.5, -0.1).

The paradigm contends that people's dread of experiencing pain exacerbates their discomfort, which eventually results in chronic pain and functional incapacity. Focusing on the TrA and MF muscles' respective directional preferences during McKenzie for low back pain helps reduce pain, which in turn aids patients' physical and psychological recovery. Through overcoming anxiety and patients' consequent avoidance of pain, the exercises alleviate chronic pain and functional incapacity. As a result, following the procedures, patients report having less pain and incapacity. The exercises' specificity aids in controlling pain caused by overworked or wasted back muscles and, as a result, speeds up the recovery process. In other words, the exercises assist patients in facing their discomfort, which promotes healing.

Conclusion

Since those who received MDT after receiving physiotherapeutic evaluations experienced improvements in dysfunction, quality of life, and daily living activities, our review has demonstrated that MDT is advantageous and should be taken into consideration as an alternative to treat chronic low back pain patients.

Conflict of Interest

There is no conflict of interest in this research

Funding sources

There is no funding sources

Acknowledgement

There is no acknowledgment

References

1. Andersson GB. Epidemiological features of chronic low-back pain. *Lancet*. 1999;**354**(91789178):581–585.
2. Crombez G, Vlaeyen JW, Heuts PH, Lysens R, Crombez G. Pain-related fear is more disabling than pain itself: evidence on the role of pain-related fear in chronic back pain disability. *Pain*. 1999;**80**(1-2):329–339.
3. Morone G, Paolucci T, Alcuri MR, et al. Quality of life improved by multidisciplinary back school program in patients with chronic nonspecific low back pain: a single blind randomized controlled trial. *Eur J Phys Rehabil Med*. 2011;**47**(4):533–541.
4. McKenzie R, May S. *The Lumbar Spine Mechanical Diagnosis and Therapy*. Vol 2. 2nd ed. Waikanae, New Zealand: Spinal Publications; 2003.
5. Garcia AN, Costa LDCM, Hancock MJ, Souza FS, Gomes GVFO, Almeida MO, Costa LOP. McKenzie Method of Mechanical Diagnosis and Therapy was slightly more effective than placebo for pain, but not for disability, in patients with chronic non-specific low back pain: a randomised placebo controlled trial with short and longer term follow-up. *Br J Sports Med*. 2018 May;**52**(9):594-600. doi: 10.1136/bjsports-2016-097327. Epub 2017 Jul 12. PMID: 28701365.
6. Halliday MH, Pappas E, Hancock MJ, Clare HA, Pinto RZ, Robertson G, Ferreira PH. A randomized clinical trial comparing the McKenzie method and motor control exercises in people with chronic low back pain and a directional preference: 1-year follow-up. *Physiotherapy*. 2019 Dec;**105**(4):442-445. doi: 10.1016/j.physio.2018.12.004. Epub 2018 Dec 21. PMID: 31204031.
7. Garcia AN, Costa Lda C, da Silva TM, Gondo FL, Cyrillo FN, Costa RA, Costa LO. Effectiveness of back school versus McKenzie exercises in patients with chronic nonspecific low back pain: a randomized controlled trial. *Phys Ther*. 2013 Jun;**93**(6):729-47. doi: 10.2522/ptj.20120414 . Epub 2013 Feb 21. PMID: 23431213.
8. Murtezani A, Govori V, Meka VS, Ibraimi Z, Rrecaj S, Gashi S. A comparison of mckenzie therapy with electrophysical agents for the treatment of work related low back pain: A randomized controlled trial. *J Back Musculoskelet Rehabil*. 2015;**28**(2):247-53. doi: 10.3233/BMR-140511. PMID: 25159291.

9. Waqqar S, Shakil-Ur-Rehman S, Ahmad S. McKenzie treatment versus mulligan sustained natural apophyseal glides for chronic mechanical low back pain. *Pak J Med Sci.* 2016 Mar-Apr;32(2):476-9. doi: 10.12669/pjms.322.9 127. PMID: 27182265; PMCID: PMC4859048.
 10. Al-Obaidi S, Mahmoud F. Immune responses following McKenzie lumbar spine ex-ercise in individuals with acute low back pain: a preliminary study. *Acta Med Acad.* 2014;43(1):19-29.
 11. Donelson R, Aprill C, Medcalf R, Grant W. A prospective study of centralization of lumbar and referred pain. A predictor of symptomatic discs and anular competence. *Spine.* 1997;22(10):1115-22.
-