Systematic review of the traditional medicine-based clinical trials for osteoarthritis

De Silva R.H.S.K.[1], Perera P.K.[2] and Jayasinghe S.[3]

Abstract

There are uprising trends to use traditional medicinal interventions in treating chronic diseases such as osteoarthritis. Therefore, this study aimed to systematically review the scientific literature on different Traditional Medicine interventions for osteoarthritis. This systematic review was conducted by searching PubMed, Scopus and Science for published studies reporting the Traditional Medicine treatment methods for osteoarthritis from January 1, 2010 to December 31, 2020. The following keywords were searched: "Traditional Medicine Treatment" and "Osteoarthritis". The study followed the standard PRISMA method to systematically review the selected literature and adhere to the PICO format. Data were analyzed for the Traditional Medicine and country with trial registration, details of trials: randomization and blinding, phases, testing hypothesis and placebo control, trial design, number of arms, and trial outcomes. Traditional Chinese medicine interventions were recorded as the highest, 84% of research studies have clinical trial registration. 42% of research studies followed simple randomization methods and 42% of research studies followed the doubled-blind method. 32% of research studies were placebo–controlled and 60% of research studies were recorded as two-arm studies. In 26% of research studies sample size calculations were not available and 72% of the studies calculated the sample size based on previous studies of 30 to 80 years old participants. 64% of research studies used the American College of Rheumatology Criteria and 64% of research studies outcome measures were done by the WOMAC scale. 92% of research studies showed evaluation as a single intervention. 34% of clinical trials were conducted for non-pharmacological therapies. However, limited Traditional Medicine treatment clinical trials were conducted to support its application for osteoarthritis. Therefore, it is recommended to conduct research in the future by adopting modern parameters with standard designs intervening in treatment protocol trials considering various aspects of prevention and treatment of osteoarthritis.

Keywords: Osteoarthritis, Traditional, Medicine, Clinical trial, Treatment

Introduction

According to the World Health Organization (WHO) Global Report on Traditional and Complementary Medicine (T&CM), Traditional medicine (TM) is the total of the knowledge, skills, and practices based on the theories, beliefs, and experiences indigenous to different cultures, whether explicable or not, used in the maintenance of health as well as in the prevention, diagnosis, improvement, treatment of physical and mental illness. It is an important health resource that is often underestimated with many applications, especially in the prevention and management of lifestyle-related chronic diseases to meet the health needs of aging populations. Increasingly, countries are recognizing the role of T&CM in their national health systems. T&CM is used by at least 80% of the

[1]Department of Kayachikitsa and Deshiya Chikitsa, Faculty of Indigenous Medicine, University of Colombo, Sri Lanka.
[2]Department of Ayurveda Pharmacology, Pharmaceutics and Community Medicine, Faculty of Indigenous Medicine, University of Colombo, Sri Lanka.
[3]Faculty of Medicine, University of Colombo, Colombo, Sri Lanka.

*Correspondence: De Silva R.H.S.K., Department of Kayachikitsa and Deshiya Chikitsa, Faculty of Indigenous Medicine, University of Colombo, Sri Lanka. Email: dr.himalee@fim.cmb.ac.lk

Member States across all WHO regions, with more than 90% of the Member States in the Eastern Mediterranean, South-East Asia, and Western Pacific regions reporting the use of T&CM. Acupuncture was the most common form of practice (reported by 113 Member States), closely followed by herbal medicines (110) and indigenous TM (109). Homeopathy and traditional Chinese medicine came in next, each used by 100 Member States, while more than 90 Member States reported use of naturopathy, chiropractic, osteopathy, and Ayurvedic medicine, in that order. The use of Unani medicine was reported by 82 Member States. Other forms of practices were reported by 71 Member States; these practices included prayer, spiritualism, traditional midwives, therapeutic massage, hypnotherapy, reiki, reflexology, hands-on healing, hydrotherapy, Feldenkrais, biofeedback, Rolfing, Bach flower remedies, anthroposophic medicine, neural therapy, gSoba Rig-pa (traditional Bhutanese medicine), Siddha medicine, Iranian TM, cupping, and ozone therapy [WHO 2019]. Osteoarthritis (OA), or degenerative joint disease, is the most common form of arthritis and a leading cause of disability and work limitation among adults resulting in enormous costs to society and Knee OA is recorded as among highest prevalence types which leads to disability and create a burden on healthcare resources (ACR 2017). Presently recommended and available treatment options are non-pharmacological, pharmacological, and surgical treatment interventions, are often in combination (WHO 2021; The U.S. food and Drug Administration 2014; Mat S. *et al*. 2019; Pal C.P.S. *et al.* 2016; Vinotha S. *et.al*..2017). Presently curative measures were unavailable for OA, but symptomatic long term treatment lines were available, however, their efficacy and adverse effect profiles often limit their use (The Royal Australian College of General Practitioners 2018) TM treatment regimens have provided solutions for long-term management of OA and are generally it have been widely used to treat OA. But a smaller number of clinical trials evaluated TM treatment regimens for OA to discuss their safety and efficacy in the management of OA. This study aims to systematically review TM treatments on the

effectiveness in the management of OA and deliver a comprehensive summary of the different TM treatments used for the management of OA. Furthermore, the primary objective is to explore the traditional treatment methods used for osteoarthritis. The secondary objectives are to explain the Traditional treatment interventions following Preferred Reporting Items for Systemic Reviews and Meta-Analysis (PRISMA) and PICO (P: Population, I: Intervention/Exposure, C: Comparison, O: Outcome) and compare them with the other non-pharmacological and combined treatment methods.

Methodology

This systematic review was conducted by searching the following databases; PubMed and Scopus for published work reporting the TM treatment methods for OA from 1st January 2010 to 31 st December 2020. It was undertaken by the (PRISMA) statement guidelines with the keywords: "Traditional Medicine Treatment" and "Osteoarthritis". In the second phase, the studies obtained from aforesaid databases adhering to the above criteria were collected and replicate studies were removed. Results were limited to studies of experimental studies in English and the name of the author, and type of article were not considered when selecting the article while conference proceedings and commentaries were excluded. Initial screening was carried out in the next step for selected articles by reading the "title" and thereafter the "abstracts" and parallelly in above phases exclusion was done for studies not fulfilling the inclusion criteria. In the final stage the remaining articles were screened by reading the full text. Thereafter, studies that were not satisfied with the inclusion criteria were excluded. Further, additional data was obtained by further search by using the reference list of included articles. Data related to design, sample and size, diagnosis criteria, treatment regimen and duration, interventions, and outcomes measurements were extracted and tabulated.

Results

The obtained results of this study have been categorized and discussed under following sections.

Literature search

The literature search using above mentioned criteria recognized the following number of articles in the respective databases: PubMed (n=65) and Scopus (n=67). Additional seven studies were identified by manually searching the reference lists and forward citations of included papers. After eliminating duplicated the final count of articles included in the current study is 50. The search strategy is summarized in Figure 1.
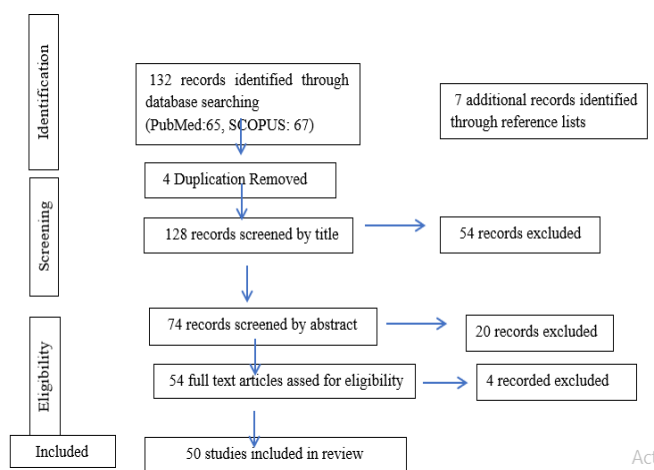

Fig 1: Search strategy

Traditional Medicine Treatments for Osteoarthritis

Table 1 shows the Traditional Medicine Treatments for Knee Osteoarthritis

Traditional medicine (TM) for knee osteoarthritis (OA) has been studied across diverse cultural practices and countries, with the highest focus on Traditional Chinese Medicine (TCM), acupuncture, and Iranian medicine. Of the 50 studies reviewed, 40% examined TCM, 18% acupuncture, 16% Iranian medicine, and smaller percentages for other systems like Thai, East Asian, Ayurvedic, and Bhutan medicine. Practices such as yoga, Bhutanese medicine, and cupping accounted for only 2% of studies each, while no recent trials were reported for herbal medicine, homeopathy, chiropractic, or osteopathy. Many popular TM systems, including Ayurveda, Siddha, and Unani, had few or no clinical trials published, partly due to methodological challenges in aligning these systems with modern scientific standards. TM trials often lack strong evidence for effectiveness due to complex, individualized treatment principles and subjective outcome measures. This review noted that while some countries, such as China and Iran, have integrated TM into healthcare policies, others face challenges with research standards and trial methodology.

The review highlights that only 84% of studies were registered as clinical trials, with the remainder approved solely by ethical committees. Different regulatory and ethical standards worldwide complicate the publication of TM trials in high-impact journals. Country-wise, China led in TM studies, followed by Iran, Korea, Thailand, and Germany, which implemented respective national policies supporting TM research. Surprisingly, India—despite its established AYUSH council for Ayurveda, Yoga, Unani, Siddha, and Homeopathy—was underrepresented in the reviewed publications, likely due to database limitations. The review suggests that standardizing TM study designs and expanding trials to incorporate multimodal treatments and long-term follow-up could enhance the evidence base for TM in OA management. Additionally, it recommends using both modern scientific methodologies and culturally relevant frameworks to improve the integration and reliability of TM in treating OA.

Trial performance

Clinical trials (CTs) are considered the gold standard for evaluating interventions and are widely used in traditional medicine (TM) studies. This review categorized different types of CTs, including randomized, non-randomized, cross-over, and factorial designs, with randomized trials being most common. However, issues with randomization were noted, as 14% of trials did not clearly report methods, and none employed cross-over or factorial designs. Randomization was challenging for TM studies, as

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Table 1: Traditional Medicine Treatments for Knee Osteoarthritis

Traditional Medicine Treatment Tested	Authors and Country	Clinical Trail Registry Number
Traditional Chinese Medicine (TCM)	L. Lin et al (China) (2020)	ISRCTN68475405 ISRCTN26065334
	J. Zhou et al (China) (2013)	NCT02769572.
	L. Zhu et al (China) (2017)	NCT02772055
	X. Ren et al (China) (2020)	ChiCTR-TRC-11001408
	H. Xu et al (China) (2014)	AMCTR-IOR-16000007
	L. Chen., et al (China) (2020)	ISRCTN21174552)
	C.R. Kütter et al (Brazil) (2018)	CAAE-19826413.8.0000.5259
	J. Liu et al (China) (2013)	ChiCTR-TRC-13003418
	B. Xu et al (China) (2017)	NCT03309501
	D. Guo et al (China) (2015)	ChiCTR-TRC-14004727
	L. Laoa et al (China) (2015)	NCT00755326
	S. Yuhao et al (China)(2018)	Approved by ERC
	X. Cao et al (Chaina) (2016)	ChiCTR-IPR-15006194
	D. Lee et al (Korea) (2020)	KCT0004925
	Z. Qingguang et al (China) (2016)	ChiCTRTRC-1300396
	X. Wang et al (China) (2015)	ChiCTR-TRC10000963
	H.Yan et al (China) (2013)	ChiCTR-TRC-12002538
	C. Yuelong et al (China) (2011)	ChiCTRCTET2008-9.
	J. Liu et al (China) (2019)	ChiCTR-IOR-16009308
	X. Wang et al (China) (2012)	ChiCTR1800018028
Acupuncture	M. Li et al (China) (2012)	ChiCTR-IIR-16008972
	R.S. Hinman et al (Australia) (2012)	ACTRN12609001001280
	R. Grac et al (Brazil) (2015)	Approved by ERC
	L. Wang et al (China) (2018)	Approved by ERC
	N. Wu et al (China) (2020)	ChiCTR2000029291
	J. Fu et al (China) (2017)	ChiCTR-INR-16008032
	Z. Lv et al (China) (2019)	ChiECRCT-20140035 ChiCTR-ICR-14005411
	G. Shi et al (China) (2020)	NCT032274713
	L. Shen et al (China) (2015)	ChiCTR-ICR-14005411
Iranian Traditional Medicine (Persian)	A. Askaria et al (Iran) (2021)	IRCT2017081711341N8
	M. Dehghan et al (Iran) (2020)	IRCT2016112231025N1
	M. Jabbari et al (Iran) (2020)	IRCT 2014080318494N1
	Z. Abolhassanzadeh et al (Iran) (2019)	IRCT201205029622N1
	M. Mokhtari et al (Iran) (2014)	IRCT2016121131355N1
	M. Abbasifarda et al (Iran) (2021)	IRCT20181030041500N1
	A. Salimzadeh et al (Iran) (2019)	IRCT2013111515408N1
	N. Ahmadia et al (Iran) (2014)	IRCT20150825023753N12
Thai Medicine	N. Chiranthanut. et al (Thailand) (2014)	Approved by ERC
	P. Rachawat et al (Thailand) (2021)	NCT02286453
	D. Pinkaew et al (Thailand) (2019)	Approved by ERC
	P. Pinsornsak et al (Thailand) (2015)	Approved by ERC
East Asian medicine	M.K. Kim et al (Korea) (2020)	KCT0003024
	A.A. Kadir et al (Malaysia) (2014)	Approved by ERC
	J. Sul et al (Korea) (2019)	KCT0003024
	S.H. Chang et al (Korea) (2018)	Approved by ERC
Ayurvedic Medicine	C. S Kessler., et al (Germany) (2018)	NCT01225133
	C. M Witt1 et al (Germany) (2013)	NCT01225133
Yoga	A. B. Kuntz., et al (Canada) (2018)	NCT02370667
Traditional Bhutan Medicine	D. Nidup et al (Bhutan) (2021)	TCTR2019062300
Cupping and ozone therapy	M. Teut et al (Germany) (2019)	NCT01057043

Herbal medicines	Not Recorded
Homeopathy	
Naturopathy	
Chiropractic	
Osteopathy	
Unani medicine	

Others - Not Recorded
Prayer, spiritualism, traditional midwives, therapeutic massage, hypnotherapy, reiki, reflexology, hands-on healing, hydrotherapy, Feldenkrais, biofeedback, Rolfing, Bach flower remedies, anthroposophic medicine, neural therapy and Siddha medicine.

many participants have strong preconceptions about TM treatments. Despite these challenges, 42% of studies used simple randomization, and others employed block or stratified block randomization to reduce selection bias and improve the accuracy of results.

Blinding methods varied, with 42% using double-blinding, 18% single-blinding, and 2% triple-blinding. Blinding helps reduce bias by ensuring outcome evaluators and participants remain unaware of the treatment allocation, though 28% of studies lacked detail on blinding procedures. Blinding in TM trials can be complex due to the unique nature of treatments, especially non-pharmacological ones, where placebo control is difficult. This study found that 32% of trials included a placebo, although finding a suitable placebo for TM interventions, such as acupuncture or massage, presents challenges. The review suggests that sham procedures and well-specified blinding methods, as recommended by guidelines like ORASI, can improve reliability in TM CTs.

Most TM trials reviewed had a parallel design, typically used for comparative effectiveness studies. Two-arm trials were most common (60%), while other studies used three-arm (16%), four-arm (8%), or six-arm (2%) designs to increase comparison depth. Few studies used cross-over or cluster designs, but one trial followed Zelen's design, which helps address participant preference biases by allowing randomized treatment assignment before consent. Additionally, multicenter trials, which accounted for 32% of studies, were highlighted as advantageous for generating generalizable findings due to larger sample sizes and varied participant demographics. These design choices reflect the complexity and unique considerations in conducting CTs for TM treatments, where adherence to rigorous methodologies can enhance study quality and validity (Table 2).

Table 2: Design choices reflect the complexity and unique considerations in conducting CTs for TM treatments

Ref; No:	Total Sample size & Calculation Mean Age (MA)	Inclusion/Exclusion criteria & Diagnosis	Primary and Secondary outcome
[9]	N=140, Calculation= NG, MA-42–80 yrs	Criteria given & ARA, KL scales	WOMAC SF-36 endpoints
[10]	N= 722 participants Calculation= Formula MA-40 - 75 yrs	Criteria given & Chinse Medical Association Publication Guide Diagnosis of Bone Arthritis (2007)	Primary outcomes - range of motion, girth measurement, VAS, manual muscle, six - minute walking and stair -climbing tests Secondary outcomes – average consumption of pain medication per day and ability to perform daily task, assessment of health related QoL

[11]	N= 60 , Calculation- Details MA- ≥ 50yrs	Criteria given & ACR scale	Primary outcomes – KOOS and sub scales of KOOS, ICOAP – LEFS, Mobility performance measures recommended by OARSI Secondary outcomes – Muscle strength
[12]	N= 500, Calculations - published data, MA-38 and 75 years	Criteria given & ACR scale	Primary outcome – WOMAC Secondary outcome- PGA and IGA assessment of response to treatment and condition of OA, WOMAC subscales for pain, stiffness, physical function, SF-36, TCM syndrome questionnaire
[13]	N=140, Calculation-NG MA-40 -70yrs	Criteria given & ACR, KL, BDI scales	Primary outcome - KOOS, functional and structural MRI, and blood biomarkers were measured at the beginning and end. Secondary outcomes - KOOS subscale scores
[14]	N= 100, Calculation – Previous study, MA- ≥40 yrs	Criteria given & ACR, VAS, KL scales	Primary outcomes – VAS, WOMAC Secondary outcomes – PGA, WOMAC stiffness subscale score
[15]	N=148, Calculation- Details Given, MA-40 - 70 yrs	Criteria given & ACR, KL, VAS, MRI Recht grading score Scales	Primary outcome - WOMAC Secondary outcome – WOMAC, VAS, SF-36
[16]	N=128 Calculation – Details given, MA- 40 -70 yrs	Criteria given & ACR, KL, VAS, MRI Recht grading score scales	Primary outcome – WOMAC Index German version Secondary outcomes - WOMAC subscales
[17]	N=301, Calculation – Details given, MA- ≥ 50yrs	Criteria given & ACR scale	Primary outcome - VAS, CPM value, and Chinese translations of the WOMAC Secondary outcomes – NPRS, ES, PPI
[18]	N=168, Calculation – Previous study, MA- 50 - 80 yrs	Criteria given & ACR, KL, VAS scales	Primary outcome -VAS, Secondary outcome – WOMAC, use of rescue medicines, alteration of micro perfusion in patellar fat pad, femur and tibial subchondral bone
[19]	N=60, Calculation –NG, MA-45 to 75yrs	Criteria given & VAS, KL scales	Primary outcome -WOMAC Secondary outcomes - WOMAC pain subscale, VAS
[20]	N=132, Calculation – NG 45 and 70 yrs	Criteria given & ACR, KL scales	Primary outcome - WOMAC Secondary outcome - SF-36
[21]	N= 450, Calculation – Details given, MA-≥ 50yr	Criteria given & ACR scale	Primary outcomes - VAS, WOMAC. Secondary outcome - NPRS, ES, PPI, ROM
[22]	N= 88, Calculation= Formula MA-30–70 yrs	Criteria given & ACR scale	Primary outcome - VAS Secondary outcome - KOOS subscales
[23]	N=30, Calculation – Details given, MA-50 - 80 yrs	Criteria given & ACR, KL scale	VAS, Biodex Multi-Joint System, Isokinetic muscle strength measurements
[24]	N=282, Calculation – Details given, MA- ≥ 50yr	Criteria given & NG	Primary outcomes – NRS, WOMAC subscale Secondary outcomes -QoL, global rating of change scores and other NRS and WOMAC subscale, Additional parameters include a range of psychosocial measures in order to evaluate potential relationships with acupuncture treatment outcomes
[25]	N= 320, Calculation= Formula MA-45-79 yrs	Criteria given & VAS scale	Primary outcomes – VAS, SF-36 Secondary outcome - SF-36
[26]	N=150, Calculation – Details given, MA-40-70yrs	Criteria given & ACR, KL, VAS scales	Primary outcome - WOMAC Secondary outcome - WOMAC subscales, Using an adapted PRECIS scale
[27]	N= 144, Calculation=NG MA-40 and 75 yrs	Criteria given & ACR, KL, VAS scales	Primary outcome- WOMAC Secondary outcome - WOMAC subscales, VAS and PGA
[28]	N= 138, Calculation – Previous study, MA-40 and 75 yrs	Criteria given & ACR, VAS scales	Primary outcome - WOMAC Secondary outcomes – VAS, PGA

[29]	N=100, Calculation - Previously study, MA- 35 and 70 yrs	Criteria given & VAS, KL scales	Primary outcome- K-WOMAC) Secondary outcome- VAS, Korean-SF - 36, Subject's ESR and C-reactive protein
[30]	N=40, Calculation -NG, MA- 40 and 80 years	Criteria given & KL, VAS scales	WOMAC, VAS, and SF-36
[31]	N= 276, Calculation = Previously study, MA- 40 to 70 years old	Criteria given & ACR, VAS, KL scales	Primary outcome- WOMAC Secondary outcome – VAS score and rescue medication use assessed
[32]	N= 60, Calculation – Details given, MA-≥ 45 years	Criteria given & ACR, VAS scales	VAS assessing pain Lequesne's functional index assessing
[33]	N= 62, Calculation – Details given, MA- 45 – 75 yrs	Criteria given & ACR, VAS scales	KOOS, VAS and goniometer
[34]	N= 104, Calculation – NG, MA-30–70 yrs	Criteria given & ACR, KL scales	Primary outcome - WOMAC Secondary outcome – WOMAC, VAS knee flexion angle (by using of standard goniometer) 8-meter walk test, measuring the required time for walking on a standard flat surface of 8 m, and celecoxib consumption rate were the other secondary outcome measures
[35]	N= 84, Calculation= Formula MA- 45 and 80 yrs	Criteria given & ACR, VAS scales	VAS, the 100-meter walking times, and the modified Thai WOMAC index score
[36]	N=306, Calculation= Formula MA- 40 - 75 yrs	Criteria given & KL scale	Primary outcome- WOMAC Secondary outcome – WOMAC, Lysholm knee score, JOA knee score, VAS, and SF-36
[37]	N=120, Calculation – NG MA-45-75 yrs	Criteria given & NG	VAS, WOMAC
[38]	N=140, Calculation = Previously study, 50 - 70 yrs	Criteria given & ACR, VAS scales	VAS, WOMAC
[39]	N= 150, Calculation – NG, MA-40 -78 yrs	Criteria given & ACR scale	Chinese version SF-36
[40]	N= 21, Calculation = NG, MA- ≥ 40 yrs	Criteria given & NG	Hematological parameters before and after the correspondent protocol.
[41]	N=120, Calculation – Details given, MA-≥40 yrs	Criteria given & NG	The evaluations of ATF of the IKDC and SPPB
[42]	N= 80 Calculation – Previously study, MA- ≥40 yrs	Criteria given & VAS, KL scales	Primary Outcome – VAS, K-WOMAC, EQ-5D, PGIC
[43]	N= 80, Calculation – Details given, MA- 30–60 yrs	Criteria given & KL scale	VAS, WOMAC
[44]	N= 88, Calculation – Details given, MA- ≥40 yrs	Criteria given & ACR, KL scales	KOOS, ADL and QOL
[45]	N= 350, Calculation – Formula MA-50–80 yrs	Criteria given & ACR, KL, WOMAC scales	Primary outcome – WOMAC Secondary outcome – WOMAC, VAS, PGA
[46]	N= 52, Calculation – Previously study, MA- 50 - 75 yrs	Criteria given & ACR, KL scales	Chinese version WOMAC
[47]	N= 30, Calculation – Previously study, MA- ≥ 50yr	Criteria given & VAS scale	Primary Outcome - VAS Secondary Outcomes - Biomakers
[48]	N= 54, Calculation – Previously study, MA- 42 - 70 yrs	Criteria given & ACR, VAS, KL scales	VAS, Persian version of WOMAC

[50]	N= 2000, Calculation – Formula MA- ≥ 40 years	Criteria given & ACR, VAS, TCM scales for disease and syndrome diagnosis	Primary outcome - WOMAC Secondary outcome – TCM disease and syndrome diagnosis quantitative score, duration of pain onset and relief after taking medicine
[51]	N= 80 , Calculation – Previously study , MA- ≥ 40 years	Criteria given & VAS, KL scales	Primary Outcome- VAS Secondary outcomes - VAS WOMAC validated Korean version and PGIC
[52]	N=102, Calculation = NG, MA-40–70 yrs	Criteria given & ACR scale	Primary outcome - KOOS Secondary outcomes - included the occurrence of unwanted side effects (using a daily diary), WHOQOL-BREF and VAS
[53]	N= 80, Calculation – Details given, MA- 50–80 yrs	Criteria given & ACR, VAS scale	WOMAC scale and VAS
[54]	N=108, Calculation – Previously study, MA- 45 to 75 yrs	Criteria given & ACR, KL, VAS scales	Primary outcome - WOMAC Secondary outcomes – WOMAC, KOOS, AIMS2-SF, emotional monitoring and expectation scale, VAS and C-MMASS will be used to evaluate the deqi sensation after each acupuncture treatment. At the same time, adverse events occurred in the whole process will be recorded and analyzed
[55]	N= 146, Calculation – Details given, MA- ≥ 40 yrs	Criteria given & ACR, KL scales	Primary outcomes - WOMAC Secondary outcomes - WOMAC, pain, function, and stiffness subscale score, the patient and PGA, and adverse drug reactions and adherence as measured by medication count and diary.
[56]	N= 66, Calculation = NG, MA- 45 – 80 yrs	Criteria given & ACR, VAS, KL scales	WOMAC, VAS and the 100-meter walk time test clinical examinations, blood tests
[57]	N= 150, Calculation – Previously study, MA- 40 - 70 yrs	Criteria given & VAS, COA scales	Primary Outcome - VAS Secondary Outcome - WOMAC
[58]	N= 66 , Calculation – Details given, 38 - 80 yrs	Criteria given & VAS, KL Chinese Medical Association Rheumatology Branch scales	Primary outcomes- Postural stability during dual-task stair negotiation Secondary outcomes - Balance and proprioception, foot clearances, self-reported symptoms and function.

Analysis of the interventions

Main interventions in the reviewed articles are shown in Figure 1.
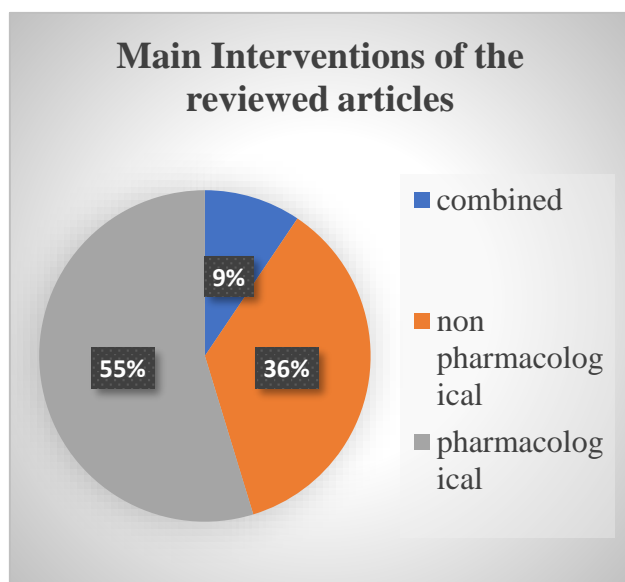

Fig.1: Main interventions in the reviewed articles

Managing knee osteoarthritis (OA) effectively requires a comprehensive approach, as the condition's chronic and progressive nature often necessitates a combination of treatments. Commonly used interventions for OA include both pharmacological and non-pharmacological therapies (Figure 2), which are often supplemented by psychological support to help patients manage symptoms. The World Health Organization's 2019 report on Traditional and Complementary Medicine (T&CM) highlights those traditional practices, such as acupuncture, Ayurvedic medicine, herbal therapies, and traditional Chinese medicine, are popular globally for OA management. These treatments often involve multiple methods, including both internal and external applications, dietary modifications, and lifestyle adjustments aimed at improving overall health and alleviating OA symptoms.
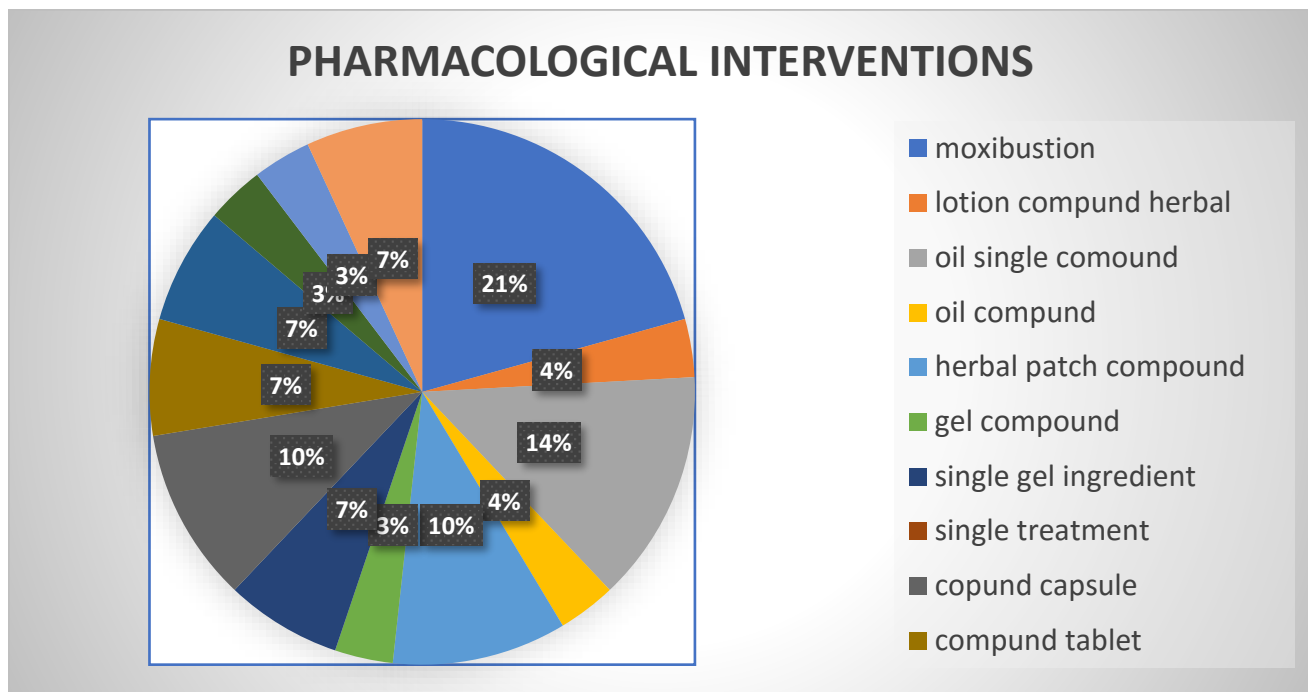
Fig.1: Non Pharmacological and Pharmacological Interventions

Acupuncture, a key non-pharmacological intervention, accounted for 34% of the clinical trials reviewed, with 16% specifically focused on OA treatment. In these trials, acupuncture sessions generally lasted about 30 minutes, with treatments administered three to five times weekly over a period of two to twelve weeks. Only one trial utilized sham laser acupuncture as a placebo, highlighting the difficulty in creating placebo controls for this type of therapy. Minor adverse effects, such as mild pain and hematoma, were observed in a few cases. Acupuncture's potential benefits in pain reduction have led organizations like the American College of Rheumatology (ACR) to conditionally recommend it for patients with OA of the knee, hip, and hands. However, the evidence remains mixed, and the field continues to debate the efficacy of acupuncture, especially when evaluated in long-term outcomes.

Another prominent non-pharmacological treatment in OA management is Chinese massage, which was investigated in about 6% of the reviewed clinical trials. In these studies, sessions typically lasted 60 minutes and were conducted two to five times weekly, with a treatment duration ranging from two to twelve weeks. No adverse effects were reported

in these studies, nor was there a requirement for additional medications during the treatment period. The absence of side effects and the straightforward protocol make Chinese massage a promising option for OA management, particularly for patients seeking alternative treatments that do not involve medication. Auriculotherapy, an ear-based therapy derived from traditional Chinese medicine, was included in around 4% of the studies, typically involving once or twice weekly sessions over a five-week period. None of these studies reported adverse effects, nor did they use washout periods or require concomitant medications, suggesting auriculotherapy may be a well-tolerated and low-risk option for OA symptom relief. However, more extensive research may be needed to establish its effectiveness and to determine its role within the broader landscape of OA treatments.

Other non-pharmacological treatments explored in clinical trials included traditional food therapy, yoga, and cupping. Traditional food therapy aimed to reduce OA symptoms through dietary adjustments, with one study providing direct preparation instructions to participants and another utilizing a placebo-controlled setup. Minor side effects such as

bloating were noted, and rescue medications like acetaminophen and ibuprofen were provided when needed. Yoga and cupping therapies each showed positive results in their respective studies, with cupping therapy incorporating NICE guidelines for pain management by allowing paracetamol as a rescue medication. Both therapies reported no adverse effects, adding to their appeal as safe and potentially effective options for OA management. Together, these findings emphasize the diversity of non-pharmacological approaches available for OA, with each therapy offering unique benefits and considerations for patients.

Conclusion

Osteoarthritis is a common disease casing lot of challenges in life. Therefore, many treatment modalities have been used to find a reliable best solution. Traditional medicine has great potential in treating OA. Therefore, PubMed, Scopus and Science Direct and searched and review according to PRISMA method aiming to explore the traditional treatment modalities for OA, and compare them according to PICO. Among the papers reviewed, most of them dealt with very few TM treatments with fewer modalities of treatment used for knee OA: there are deficits in randomization and blinding, phases, testing hypothesis and placebo control, trial design, number of arms, and trial outcomes in the reviewed studies. Policy making and standardization methods strictly adhering to different administrative processes can be claimed as the most difficult challenge in TM systems and therefore planning and designing a research study on TM for OA limited to single treatment intervention, mostly with single treatment modality rather than the complete classical line of treatment. Therefore, multimodality treatment with long-term follow-up covering various aspects of prevention and cure has to be conducted in and timely needed. As there are limited studies on Sri Lankan Traditional Medicine for OA, in future it is our plan to conduct a clinical trial for OA with multimodality.

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