

# Response to Treatment in Osteoarthritis Clinical Trial: A Narrative Review

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## Abstract:-

### ➤ Background-

The prevalence of knee osteoarthritis is high Comparing Indians to Western individuals, and the prevalence of frequent squatting in daily routines, particularly among women.

In osteoarthritis, Pathological alterations have occurred in all joint structures. Individuals who do not exhibit favourable responses to traditional medical treatments and are either unwilling undergo surgical procedures have a specific requirement for such medications. The objective of this study was to investigate whether homoeopathic medicines can effectively address the management of knee joint pain in individuals with Osteoarthritis.

### ➤ Method-

The eligibility criteria are as follows: Papers were evaluated and chosen based on the homoeopathic medicine used in this study using PICO Criteria., which met the following criteria:-

- Year 2000- 2022
- Sample size, Age group, Male And Female Ratio.
- Method Use For Study
- Outcome Measure
- Published in English
- Homeopathic medicine is used.

Information Source-Relevant literature or research articles were taken from various databases such as PubMed, Google Scholar, Scopus, Hombrex, and Research Gate.

### ➤ Result-

A comprehensive review identified a Total of 33 Experimental and Controlled clinical trials for screening. Thorough screening, the number of eligible papers was determined to be 23. Some articles lacked information on age groups, and there were discrepancies in properly specifying the male-to-female ratio. Additionally, certain studies did not incorporate any outcome measures.

### ➤ Conclusion-

In this study, we clearly understand that homeopathic therapeutic medicine work well on Osteoarthritis. Rhus Toxicodendron medicine is used in 9 articles. Then Calcarea Flour 5, Calcarea carb 4, and Bryonia Alba 4 in Article were used. Individualized homeopathic medicine was ineffective due to a lack of trial reports.

The most commonly used scales are the WOMAC Scale, VAS Scale, and KOOS Score pain measuring movement, duration of rest, stiffness, and incidence of OA.

For Radiological assessment Kellgren and Lawrence systems of classification of knee osteoarthritis severity 5 grade classification and X ray knee used.

**Keywords:-** Osteoarthritis, 'Osteoarthrosis', 'Gonarthrotic', 'Homeopathy', 'Alternative Medicine', 'Complementary Medicine', 'Effective Measure'.

## I. INTRODUCTION

Osteoarthritis is a degenerative, non-inflammatory joint condition marked by the deterioration of articular cartilage and the development of new bone at joint surfaces and margins.<sup>1</sup> The prevalence of knee osteoarthritis is higher in Indians compared to Western populations, possibly attributed to frequent squatting in daily activities, particularly among women. Osteoarthritis causes pathological changes in all components of the joint, including increased thickness and sclerosis of the subchondral bony plate, the formation of osteophytes at the joint margin, stretching of the articular capsule, mild synovitis in many affected joints, and muscle weakness that spans the joint. Meniscal degeneration is a component of the disease in the case of knees.<sup>1</sup>

The disease process usually begins in the anteromedial compartment of the knee joint. In the early stages, fibrillation occurs due to the loss of water in the weight-bearing articular cartilage, eventually leading to complete cartilage loss. This places significant stress on the underlying bone, resulting in sclerosis and later eburnation. Cysts may emerge in the subchondral area due to degenerative microfractures. Subsequently, New bone formation occurs, leading to the development of

Osteophytes.<sup>2</sup>

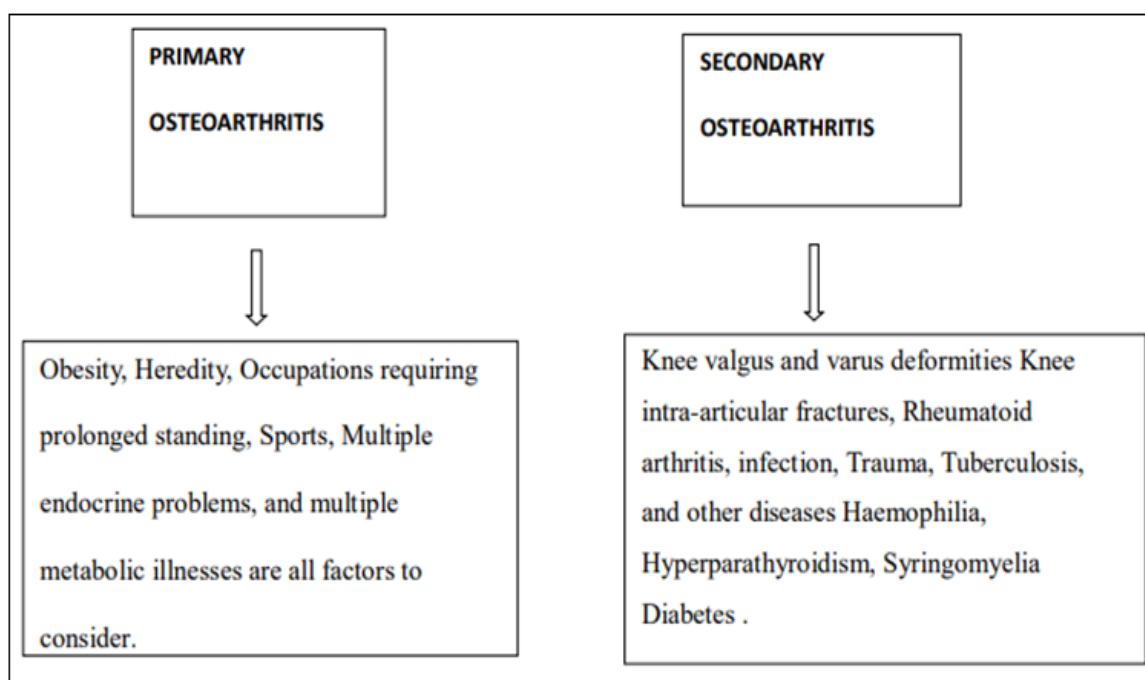


Fig 1 Types of Osteoarthritis

➤ Sources of Pain in OA Knee<sup>2</sup>

- Inflammation of the synovium
- Subchondral bone microfracture
- Periosteum stretching by osteophytes
- Venous congestion in the intraosseous compartment

- Joint distension
- Muscle spasm
- Bursal inflammations
- Joint mechanics
- Mental depression

Table 1 Risk Factors of Osteoarthritis

Content	Description
Age	Common in more than 40 yrs. of age
Sex	Women have greater tendency than men
Hormone	Oestrogen deficiency, play important role in osteoarthritis
Genetic factors	Genes encoding type 2 collagen (the predominant collagen in articular cartilage), extracellular cartilage matrix structural proteins, vitamin D and Estrogen receptor genes, and bone and cartilage development factors.
Obesity	The fundamental mechanism for the influence of obesity on knee osteoarthritis is believed to be increased weight on joint overloading during weight bearing exercises, resulting in cartilage disintegration and injury to ligaments and other support structures. The studies consistently revealed that being overweight was a risk factor for the start of knee OA, while there was significant heterogeneity in the reported results .
Athletics	Athletes who participate in football, tennis, or long-distance running may be more likely to develop knee osteoarthritis.

**II. EPIDEMIOLOGY**

According to WHO, Osteoarthritis is the second most frequent musculoskeletal condition (30%) in the world population, while the Indian Journal of Orthopaedics conducted a study that determined the overall prevalence of knee OA to be 28.7%. Out of 291 conditions, Hip and knee Osteoarthritis was classified as having the eleventh-highest contribution to disability worldwide. As to the Epidemiology of Rheumatic Diseases, between 22% and 39% of Indians have knee osteoarthritis. While Osteoarthritis is more common in women than in males, as

people age, the frequency of cases increases dramatically.

About 45% of women over 65 experience symptoms, while 70% of those individuals have radiological proof. One major contributing reason to decreased mobility is osteoarthritis (OA) of the knee, particularly in women.<sup>3</sup>

Additionally, the ACR clinical criteria estimated that the prevalence of Osteoarthritis in Maharashtra was 10.2%, with women in the 60–79 age range much more likely to have the condition (11%) than men (7%).<sup>4</sup>

### III. MATERIALS AND METHODS

Eligibility Criteria- Papers were examined and chosen using PICO Criteria based on the homeopathic medication employed in this study that met the following criteria:

- Year 2000- 2022
- Sample size, Age group, Male And Female Ratio.
- Method Use For Study
- Outcome Measure
- Published in English
- Homeopathic medicine is used.

Information Source-Relevant literature or research articles were taken from various databases such as PubMed, Google Scholar, Scopus, Hombrex, and Research Gate.

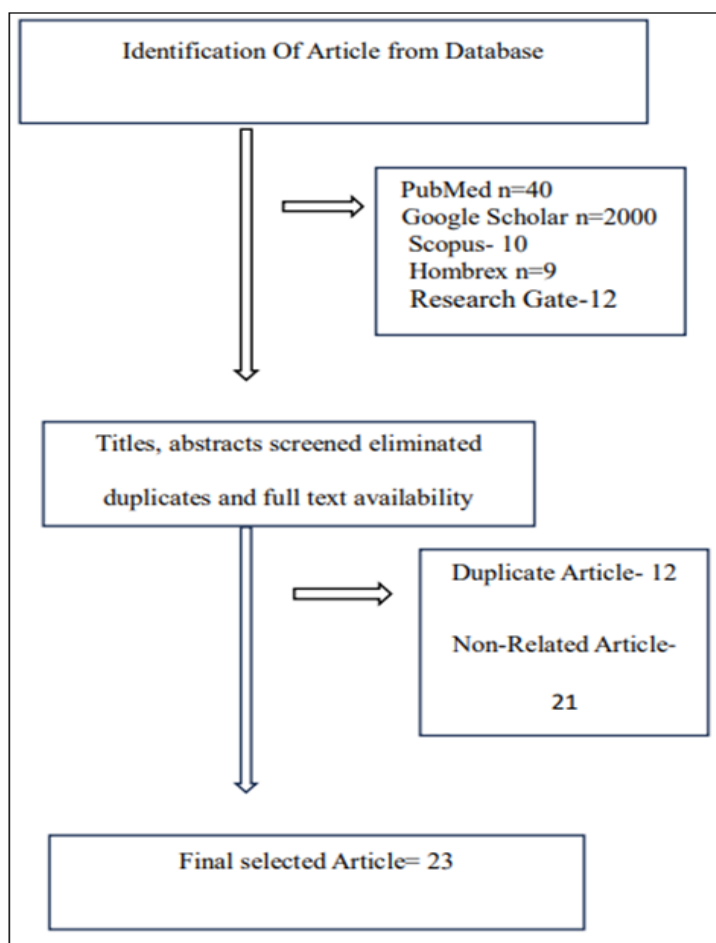


Fig 2 PRISMA Flow Chart of Data Extraction

Table 2 A Summary of Homeopathic Clinical Trials in Osteoarthritis

Year	Author	Sample Size, Age Group, Male: Female Ratio	Method	Outcome Measure	Remedy
2000	Sheku khayltas et.al	30 patients	Double blind, randomized study	MC Gill pain Questionnaire	Vitis vinifera D1
2000	R. A. vanHaselen et.al	184 patients	randomized, double blind controlled trial	VAS scale and single joint Ritchie index	Homeopathic Gel (Homeopathic ingredients are Rhus tox, Symphytum, Ledumpal)
2003	Heinz Birnesser et.al	127 Patient	Prospective cohort study	WOMAC Osteoarthritis Index.	Rhus Toxicodendron, Solanum dulcamara and Sanguinaria canadensis

2014	Mobasher et.al	75 patients age ranged from 44to 57 years (61 females and 14 males)	Comparativestudy group	VAS Scale, HAQ scoreWOMAC Scale	Homoeopathy standard conservative Treatment (ArnicaMontana, Ruta Graveolans and Rhus Toxicodendron).
2015	Munmun Koley et.al	Involving 60 subjects (Mean age 57.3 yrs., Female 81.6%, Male 18.3%)	A Prospective, parallel-arm, double-blind, randomized, placebo- controlled pilotstudy	VAS Scale	Individualised homoeopathic intervention Bryonia alba (23.2% and 22.4%), Rhus Toxicodendron (14.3% and 20.7%), Calcarea carbonica (8.9% and 3.4%), Arnica Montana (7.1% and 3.4%), and Natrum muriaticum (5.4% and 5.2%).
2016	F Motiwalaet.al	131 patients (35 years or above)(107 femalesand 24 males)	A Prospective observational study	WOMAC scale, LK3.1 (IK) survey form, Numerical pain ratingscale	Individualized homoeopathic medicine. Pulsatilla and Lycopodium Calcarea Flour was prescribed in 15 patients as a constitutional similimum; Calcarea Carb and Bryonia were both prescribed on 11 occasions.
2016	Atul B. Rajgurav et.al.	30 Patients (Age group of 45-79years)	RandomizedControl Trial	WOMAC and Kellgren and Lawrence systems of classification of knee osteoarthritisseverity	Rhus Tox Homoeopathic medicine
2018	Pankaj Daveet.al.	100 patients	Randomized, controlled, Prospective, open intervention trial	KOOS scoresystem,	Rhus Tox, Causticum, Cal.flour,Calc.carb
2019	Dr. Amrutha Manoharan,	30 patients (45 – 55 years,) 22 patients were females.	A Single blind, Randomized Control Trial	Vas Scale	Bryonia Alba followed by RhusTox
2020	Dr. Ancy Abraham,	44 patients (Age group was 40 to70)	-	KOOS Score & WomacScale	Rhus Tox 200
2020	Filipa Azevedo et al	5 patients in control group & 5 patients in experimental group.	Pre-experimental, level 4 study,	VAS (VisualAnalog Scale of pain).	Arnica Montana
2020	Dr. Anoop M Nigwekar	278 Patient (age group of 60-65years)	Observationalcohort study	-	Medicine Prescribed Silicea (21.2%), Kali Carb (27.3%), and Calcarea Flour (13.7%)
2020	Dr. Diwanshi Gupta et.al.	60 patients (age group was 45 to65)	Apre- post Study.	Status % = Baseline score - score at the end x 100/ Baseline score	Angustura Vera, Formica Rufa, Arbutus Andrachne, Osteo Arthritic-Nodosa, salicylic Acid, Sycotic Bacillus
2021	Saxena R, Jain	50 patients	Asingle blind randomized controlled trial study	(KOS- ADLS) questionnaire score	osteoarthritic nosode
2021	N Rajeev Kumar andet.al	60 patients	Observational randomized study	Routine Assessment ofPatient Index Data 3	Individualised homoeopathic medicine
2021	Dr. Meenakshi Shriwas et.al	30 patients	observationalstudy	Wong-Baker Pain Rating Scale	Individualized homoeopathic medicine
2021	YogeshwariGupta et.al	-	-	RadiologicalAnalysis	Homoeopathic medication like bryonia, cal flour, causticum, colchicum Autumnale, Colocynth, Formica, Guicum,

					Ledum, O A nosode, Rhus tox, Veratrum Album
2021	G Peat et.al	55 years of age	Observational study	-	-
2021	Syed Farhan Abbas Naqvi et.al	-	Comparative study	-	Allopathy, Homoeopathy, Herbal therapy
2022	Dr. Tanya Rai et.al	60 Patient (Age group 30-60yrs) 28-Female & 32-Male	randomized controlled trial	WOMAC Scale	Calcarea Flour 6x
2022	Ram Kumar	-	-	X Ray Knee	Calcarea carb
2022	Suvojit Dutta	70 Patient	Observational Study	WOMAC Scale & ICOAP (Intermittent and Constant Osteoarthritis Pain Scale)	Bryonia Alba, Rhus Tox and Arnica Montana

#### IV. DISCUSSION

Shekufe Khayltas *et.al*, 2000 In this study Pain questionnaires and measurements of the angles Of the knee joint were taken over four weeks while the pertinent medicine was being taken. The Treatment of pain and stiffness related to Osteoarthritis of the knee joint was significantly improved by Vitis Vinifera D1. It is a low-cost treatment with no side effects that gently drains built-up toxins from the affected area, in this case, the knee joint.<sup>6</sup>

R. A. van Haselen *et.al*, 2000 The homeopathic gel was better tolerated and more effective than the NSAID gel. A clinically relevant difference between treatment groups cannot be completely ruled out. When combined, if necessary, with simple analgesics, the homeopathic gel may prove to be a beneficial Treatment alternative for patients with osteoarthritis. A 5mm on Visual Analog Scale (Vas) pain walking was minimum between (-5mm to +5mm)<sup>7</sup>

Heinz Birnesser *et al*, 2003 The Randomised Control Trial protocol was not followed in the article. The inclusion and exclusion criteria are not stated clearly. During the trial, patients used a validated German version of the WOMAC Osteoarthritis Index to track their development. Overall, the results were encouraging, although statistical significance was not adequately comprehended.<sup>8</sup>

Mobasher *et al*, 2014 Acupuncture and homoeopathy both reduced pain and improved knee function, although acupuncture was much more effective than homoeopathy, according to. Furthermore, acupuncture lowered knee circumference considerably while homoeopathy had no impact.<sup>9</sup>

Munmun Koley *et.al* 2015 They used the Visual Analogue Scale (VAS), and while both groups demonstrated significant reductions in all outcomes, no significant differences between the groups were seen on any occasion ( $P > .05$ , two-tailed). Bryonia alba (23.2% and 22.4%), Rhus toxicodendron (14.3% and 20.7%), Calcarea carbonica (8.9% and 3.4%), Arnica montana (7.1% and 3.4%), and Natrum muriaticum (5.4% and 5.2%) were the most commonly recommended drugs in both the homoeopathy

and placebo groups. The frequencies were comparable between groups ( $P > .05$ , two-tailed), and the potency was not specified (medicine taken orally on a clean tongue, consisting of 4 cane sugar globules of size 30, moistened with a single drop of indicated medicine prepared and preserved with 88% ethanol).<sup>10</sup>

F F Motiwala *et.al*, 2016 Pulsatilla and Lycopodium were given as constitutional similimum to 12 patients, Calcarea Flour to fifteen, and both Calcarea Carb and Bryonia to 11 patients. Eight patients received Rhus tox, Kali Carb, and Natrum Mur, while four received Kali Sulph, Mag Mur, Lachesis, Silicea, Sulphur, and Phosphorus. On nine times, Staphysagria, Ignatia, and Graphitis were administered. Arsenic Album, Tuberculinum, Carcinocin, Calcarea Sulph, Natrum Phos, Sepia, Mag Carb, Ferrum Phos, Kali Bichromicum, Medorrhinum, and Belladonna were all identified as constitutional similimum in one patient each. If there was no improvement within two days of prescribing the constitutional medication, Arnica Montana, Rhus tox, Bryonia alba, Ruta, and Belladonna were recommended. All medications had been prescribed in 6C, 30C, and 200C, with potency increased to 1M based on the susceptibility of the individual patient.<sup>11</sup>

Atul B. Rajgurav *et al* A group of 30 patients participated in a 12-month trial in which symptoms were examined before and after homoeopathic treatment. The results showed that 90% of the cases were cured or responded positively. Sixty percent of the 30 case studies showed a positive response to Rhus tox.<sup>12</sup>

Pankaj Dave *et.al* 2018 When there is micro trauma or overuse injury to an osseous portion, ligament, or menisci, Bryonia is beneficial in treating several symptoms. Causticum works well when popliteal and patellar tendons have been damaged along with a progressive decrease of quadriceps muscular strength. When osteophytes are present, calc. flour is beneficial in preventing recurring synovitis and Calc. Carb. in osteoporosis.<sup>13</sup>

Dr. Amrutha Manoharan, 2019 In this study, Bryonia Alba was the predominant remedy, utilized in 16 cases, constituting 53% of the cases. Following closely was Rhus



Toxicodendron, administered in 11 cases, accounting for 36%. The remaining cases were treated with Pulsatilla, Arnica, and Calcarea Carb each accounted for one instance (3.33%). The presence of a history of dengue and chikungunya increased the risk of knee osteoarthritis. Individuals with a BMI of 25 - 29.2 kg/m<sup>2</sup> were also found to be more vulnerable to the illness.<sup>14</sup>

Dr. Ancy Abraham *et.al*, 2020 The Statistical analysis of the data proves that the drug Rhus Tox is effective in Primary Osteoarthritis. Rhus Tox is acting in Primary Osteoarthritis by making changes in Serum Hyaluronic acid level. Serum Hyaluronic acid is one of the prognostic criteria for Osteoarthritis. The drop in Mean value of Serum Hyaluronic acid from 64.88ng/ml to 33.82ng/ml. It is observed that all 44 patients who were suffering from Primary Osteoarthritis showed improvement after giving Rhus Tox 200 and also could see there is a significant change in the Serum Hyaluronic acid level.<sup>15</sup>

Filipa Azevedo *et.al* 2020 According to these data, there is a difference between the experimental and control groups in terms of final and beginning pain levels. This supports the concept that Arnica Montana oil (3%) could be used as an adjunct therapy for joint discomfort in the elderly.<sup>16</sup>

Dr. Anoop M Nigwekar *et. al* 2020 In the investigation, following the administration of homeopathic medicines, results revealed that 7.32% of patients experienced a 25% reduction in symptoms, 35% reported a 50% relief, 17% showed improvement by 75%, and 14% were completely pain-free with enhanced mobility. Conversely, 16% of patients reported no relief. Among the elderly patients with The most often mentioned homeopathic medicines for musculoskeletal system symptoms were Kali Carb (27.3%), Silicea (21.2%), and Calcarea Flour (13.7%). Furthermore, the centesimal scale (30C - 38% of patients & 200C - 59% of patients) was shown to be the most widely utilised potency scale.<sup>17</sup>

Dr. Diwanshi Gupta *et.al* 2020 Rare Medicines Angostura Vera, Formica Rufa, Arbutus Andrachne, Osteo Arthritic Nodosa, salicylic Acid, Sycotic Bacillus are found effective in the treatment of Knee joint pain in patients between the age 45 to 65 years of age.<sup>18</sup>

Saxena R, Jain *et.al* 2020 In Group A, consisting of individual receiving a placebo and physiotherapy, there was no significant improvement observed in 72% of cases, and 16% experienced aggravation when assessed in terms of symptomatic and functional domains. On the other hand, Group B, which received Osteoarthritic nosode and physiotherapy, Marked improvement in 80% of cases, with 12% showing non-significant to no improvement in symptomatic and functional assessments.<sup>19</sup>

N Rajeev Kumar *et.al*, 2021 Individualised treatments for knee osteoarthritis included Sulphur and Kali. carb. (n = 4, 13.3%), NatMur. and Lycopodium (n = 3, 10%), Ars alb., Graphites, Pulsatilla, Calc. Phos., Phosphorus, and Rhus. tox

(n = 2, 6.7%), Aurum met., Kali Bich., Lachesis, and Calc. carb (n = 1, 3.3%). Lachesis and Ars alb. (n = 5, 16.7%), Sulphur, Calc. carb., Phosphorus, and Nat Mur. (n = 3, 10%), Lycopodium and Pulsatilla (n = 2, 6.7%), and the other drugs (Nux vomica, Causticum, Ignatia, and Aurum met. (n = 1, 3.3%). All drugs were given at the 200th potency, with two doses given at night and two doses given in the morning.<sup>20</sup>

Dr. Meenakshi Shriwas *et.al* 2021 This study has provided clear insights into the effectiveness of homeopathic combination formulas in addressing osteoarthritis (OA). The individualized homeopathic remedy was deemed ineffective due to insufficient trial reports. It is important to note that homeopathic combinations may be associated with some adverse drug reactions. Consequently, there is a need for robust evidence to ascertain the efficacy of individualized homeopathic medicine. Continuous and rigorous trial testing is essential for advancing the field of homeopathy. Nevertheless, further research is required to thoroughly assess and validate the overall effectiveness or limitations of homeopathic therapy for OA.<sup>21</sup>

Yogeshwari Gupta *et.al* Osteoarthritis (OA) is the most common joint condition in this study. Ageing and obesity have been identified as risk factors. Arthritis can cause articular cartilage degradation and the production of osteophytes, resulting in significant joint discomfort. According to previous study, the standard strategy entails the use of medications to relieve pain without treating the underlying structural alterations in the joints. Homeopathy, on the other hand, provides a comprehensive treatment for OA that not only alleviates joint pain but also considerably slows the course of joint degeneration, thereby improving overall quality of life. Within the area of medical research, this article gives a comprehensive investigation of the origins, symptoms, and homeopathic treatment of Osteoarthritis.<sup>22</sup>

G Peat *et.al* 2021 This research looked at Over the course of a year, 25% of people over the age of 55 endure persistent knee discomfort. Within the same span, approximately one in every six people in the UK and the Netherlands seek consultation with their general practitioner. Individuals over the age of 55 have a 10% prevalence of painful and troublesome knee osteoarthritis, with one-quarter reporting severe disability.<sup>23</sup>

Syed Farhan Abbas Naqvi *et.al* 2021 Osteoarthritis stands as the most prevalent form of arthritis globally, with its progression potentially giving rise to secondary complications. The condition involves the deterioration of joint tissues, marked by the effects of injury, a grinding sensation, and inflammation. The treatment of osteoarthritis encompasses three primary systems of medicine: allopathic, homeopathic, and herbal. Traditional medicine, rooted in plant-based remedies, remains widely practiced. This study, conducted in Karachi from January 2019 to January 2020, Aimed to explore complaints and secondary complications in osteoarthritis patients undergoing treatment in allopathic, homeopathic, and herbal systems of medicine. A total of 600

participants were involved, with 200 individuals in each study group. The data was analyzed using the SPSS 22 version. The study findings suggest that, following treatment with allopathic medicines administered by orthopaedicians, family physicians, or rheumatologists/internal medicine specialists, there was no significant difference in reported complaints.<sup>24</sup>

Dr. Tanya Rai et.al 2022 The WOMAC score at the start of this trial demonstrated no significant difference between Individualised Homoeopathic Medicine (IH) and Calcarea Fluorica 6X (CF). Individualised homoeopathic treatment and Calcarea Fluor both exhibited efficacy in lowering pain and increasing functional outcomes in osteoarthritis patients. Notably, individualised homoeopathic treatment outperformed Calcarea Fluor in terms of efficacy.<sup>25</sup>

Ram Kumar et.al 2022 Osteoarthritis is a common and burdensome illness that has a substantial impact on everyday activities and causes limitations. It poses a significant public health risk to the people. Despite its extensive usage in the treatment of osteoarthritis, homoeopathy is frequently thought to produce only placebo effects, with particular therapeutic outcomes judged unlikely. This article discusses osteoarthritis briefly and gives a case that was effectively treated with homoeopathic treatment.<sup>26</sup>

Suvojit Dutta et.al 2022 The purpose of this pilot study, which included seventy outpatient department (OPD) patients, was to analyse the relative efficacy of commonly used homoeopathic drugs chosen exclusively on the similia principle. The data was objectively analysed by the study team, who used accepted pain measuring techniques recommended by "The American College of Rheumatology Criteria," such as "The Western Ontario and McMaster Universities Arthritis Index" (WOMAC). Furthermore, the data were cross-validated using the "Intermittent and Constant Osteoarthritis Pain Scale" (ICOAP) protocols, as well as pertinent statistical analyses. The majority of patients responded favourably to homoeopathic medications, including alleviation from joint pain, inflammation, and stiffness. After five to six consecutive OPD visits with two-week intervals, post-medication data were compared to the pre-medication state. A statistical examination revealed noteworthy increase in the index of daily performance among patient.<sup>27</sup>

## V. RESULT

A comprehensive search initially identified 33 experimental and controlled clinical trials for screening. Following a thorough examination, the appropriate number of eligible papers was determined to be 23. It was noted that some articles did not mention the age group, and there were discrepancies in properly specifying the male-to-female ratio. Additionally, in certain studies, no outcome measures were Used.

## VI. CONCLUSION

We concluded in this study that homoeopathic therapeutic medicine works well on osteoarthritis. In 9 articles, Rhus Toxicodendron medication is mentioned. Then, in Article, Calcarea Flour 5, Calcarea Carb 4, and Bryonia Alba 4 were used. Due to a paucity of trial reports, individualised homoeopathic therapy proved ineffectual.

The WOMAC Scale, VAS Scale, and KOOS Score pain are the most regularly used scales for assessing mobility, duration of rest, stiffness, and the incidence of OA.

Kellgren and Lawrence systems of classification of knee osteoarthritis severity 5 grade classification and X-ray knee were utilised for radiological examination.

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