

## Original Research Article

# A cross-sectional survey of orthopaedicians to understand the prescribing pattern of disease modifying osteoarthritis drugs in osteoarthritis

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## ABSTRACT

**Background:** Numerous dietary supplements with disease-modifying action are available in Indian market. However, doctor's preferences for these disease modifying osteoarthritis drugs (DMOADs) to prevent progression of OA are not known. The objective of this study was to quantify doctor preferences for potential DMOADs.

**Methods:** The survey instrument (online survey questionnaire at survey monkey) was developed by researchers upon review of existing literature and detailed discussion with practicing clinicians. Face and content validity and reliability (test-retest method) was assessed through a focused panel of clinicians to determine if content was adequate to obtain the necessary data. This was a cross-sectional digital survey of 207 orthopaedicians during Indian Orthopaedic Association Conference-2018 organized at Coimbatore.

**Results:** NSAIDs + DMOAD combinations were the most preferred treatment option for newly diagnosed OA patients. 44% orthopaedicians prefer to start the treatment with combination of NSAID and DMOAD as compared to 10% with paracetamol monotherapy. Glucosamine/chondroitin combinations are the most commonly preferred DMOAD by the orthopaedicians; followed by undenatured type II collagen. 66% of the doctors surveyed opined that the efficacy of undenatured type-II collagen is better as compared to other DMOADs.

**Conclusions:** The findings from the survey suggest that majority of orthopaedicians prefer to prescribe NSAID with DMOAD combinations for newly diagnosed osteoarthritis patients.

**Keywords:** Osteoarthritis, DMOADs, Survey, Undenatured type II collagen, India

## INTRODUCTION

The global burden of arthritis is enormous. The centers for disease control and prevention estimated that 54.4 million adults (22.7%) in the United States are affected with arthritis.<sup>1</sup> The two most common forms of arthritis are rheumatoid arthritis (RA) and osteoarthritis (OA). OA of large joints (e.g. knee, hip) is the most common form of arthritis. It is a common cause of pain and disability

among many patients.<sup>2</sup> Other symptoms of osteoarthritis include stiffness and reduced movements. Overall the disease results in impaired quality of life.<sup>3</sup> Their presence in Indian subcontinent is also substantial.<sup>4</sup>

In India, the reported prevalence of OA is 28.7% in >40 years age group. Further, in adults aged ≥65 years, it is estimated that nearly 45% of the women have symptoms and 70% have radiological evidence of OA. The

disabling pain is associated with loss of daily activities in nearly 25% of them. Being overweight or obese, lack of physical activity or sedentary lifestyle, and female sex are important risk factors of OA. Pain and disease activity in OA can vary from mild to severe forms. Pain is the most troubling symptom and affects the quality of life of patients with OA.<sup>5</sup>

Current treatment of OA includes exercise, heat/cold therapy, joint protection, weight loss, physiotherapy/occupational therapy and medications. The most common medications used for pain relief include NSAIDs. Although these drugs are effective for reducing pain associated with OA, they do not reverse the disease. In addition, there are considerable side effects associated with the use of these drugs. As a result, OA sufferers have turned to nutraceuticals to ease their pain and discomfort. These products are commonly used because they are well tolerated and considered safe.<sup>6</sup>

The understanding of pathogenesis of OA has shifted from merely a degeneration of articular cartilage to pan-joint disease involving subchondral bone and synovium.<sup>7</sup> Recent evidence suggests that persistent low-grade systemic inflammation is an important risk factor for OA.<sup>8</sup> Current treatments available do not inhibit the structural deterioration of the OA joint therefore the unmet need for such a treatment is the problem.

Various dietary supplements with disease-modifying action are available in the Indian market. However, doctor's preferences for these disease modifying osteoarthritis drugs (DMOADs) to prevent progression of OA are not known. The objective of this study was to quantify doctor preferences for potential DMOADs.

## METHODS

First of all, questionnaires were prepared for the survey. The survey consisted of 10 questions and was tested and validated by doctors before being put online at [www.surveymonkey.com](http://www.surveymonkey.com). The survey was conducted with 207 orthopaedic doctors during Indian Orthopaedic Association Conference-2018 organized at Coimbatore. The objective of the survey was to understand the usage pattern of DMOADs in the management of OA and to gather their opinion on the efficacy & safety of undenatured type-II collagen as compared to other DMOADs. The graphs presented here were prepared using Microsoft Excel 2010.

### Questionnaire content

- As per your clinical practice, which is the most preferred treatment for newly diagnosed osteoarthritis (OA) patient?
- Which is the most commonly preferred DMOAD by you in your clinical practice?
- Generally, once started, for how long do you continue this DMOAD?

- As per your clinical practice, are these DMOADs as effective as NSAIDs in relieving pain and stiffness?
- If yes, then how long do they take to produce clinically significant reduction in pain & stiffness?
- Do these DMOADs slow the progression of disease in OA?
- In a patient not responding to first DMOAD, do you prefer to switch the patient on other DMOAD?
- As per your practice, how many patients are satisfied with medical management of OA?
- How will you rate efficacy of undenatured type-II collagen as compared to other DMOADs?
- How will you rate safety of undenatured type-II collagen as compared to other DMOADs?

## RESULTS

NSAIDs + DMOADs are considered as the most preferred treatment for newly diagnosed OA patient.

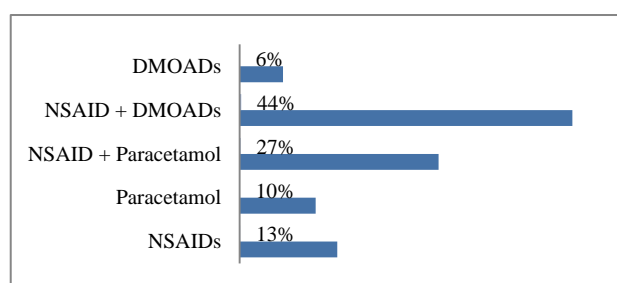


Figure 1: The most preferred treatment for newly diagnosed osteoarthritis (OA) patient.

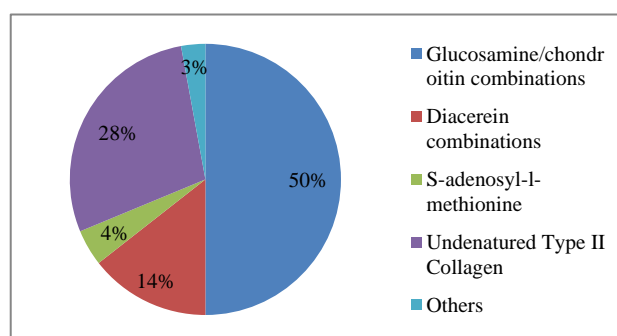
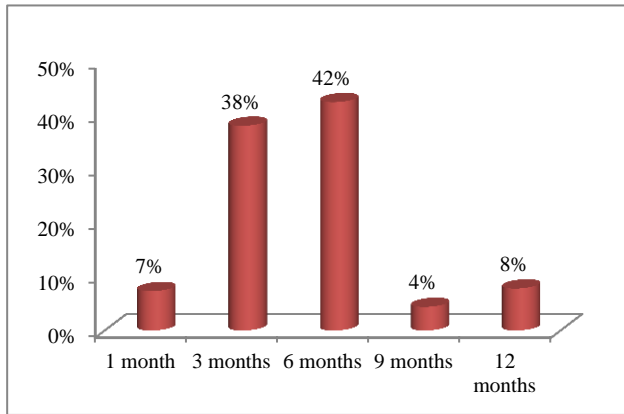


Figure 2: The most preferred DMOAD.

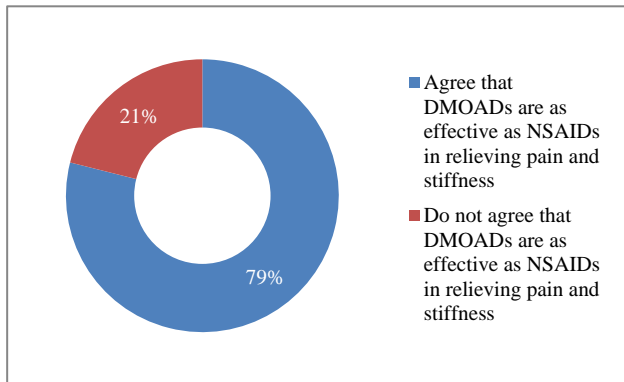
Glucosamine/chondroitin combinations are the most commonly preferred DMOAD by the doctors; followed by undenatured type II collagen.

DMOAD therapy is recommended majorly for duration of 6 months. However, there are also many doctors who recommend it for 3 months. 79% of the doctors surveyed agree that DMOADs are as effective as NSAIDs in relieving pain and stiffness. 71% of the doctors who agreed believe that it would take 15-30 days for DMOADs to produce clinically significant reduction in pain & stiffness. 83% of the doctors surveyed are of the

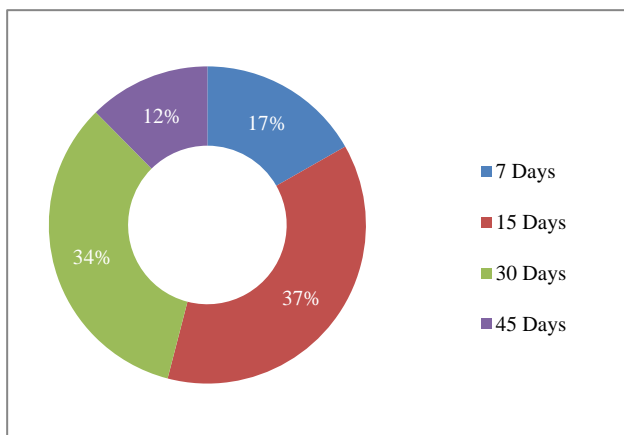
opinion that DMOADs slow the progression of disease in OA patients.



**Figure 3: Duration of treatment of DMOAD.**

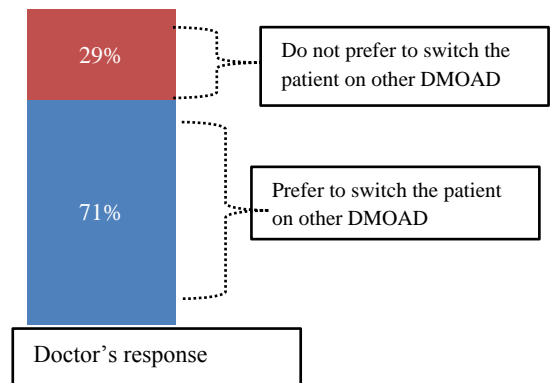


**Figure 4: DMOAD in relieving pain and stiffness.**



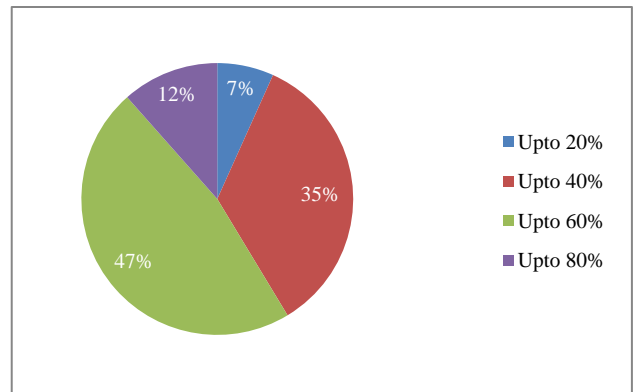
**Figure 5: Time taken by DMOADs in relieving pain and stiffness.**

Regarding the opinion on switching the patient on other DMOAD when the patient does not respond to the first DMOAD, 71% of the doctors prefer to switch the patient on other DMOAD, whereas 29% of the doctors do not prefer to switch the patient.



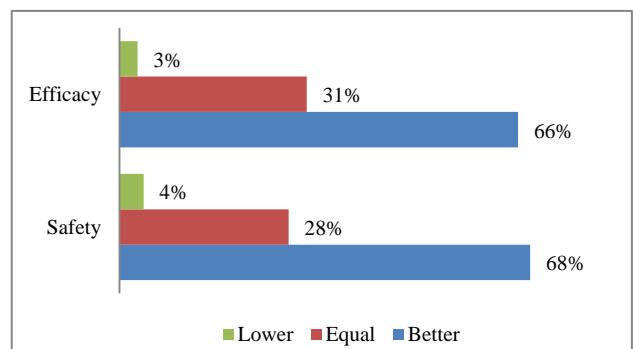
**Figure 6: Preference to switch the patient on other DMOAD.**

Also 47% of the doctors believed that upto 60% of OA patients are satisfied with the medical management.



**Figure 7: % of OA patients satisfied with medical management.**

66% of the doctors surveyed are of the opinion that the efficacy of undenatured type-II collagen is better as compared to other DMOADs. 68% of the doctors surveyed are of the opinion that the safety of undenatured type-II collagen is better as compared to other DMOADs.



**Figure 8: Efficacy and safety comparison of undenatured type II collagen vs other DMOADs.**

## DISCUSSION

OA is a major musculoskeletal disease affecting adults and elderly. The pain, restriction of joint movements and limitation of physical movements affects the quality of life of patients with OA. Despite various treatments being available to manage pain and joint stiffness, none of these have any effect on joint pathogenesis. Chronic low-grade systemic inflammation has been identified as pathogenic factor in OA. Thus, targeting immune modulation seems effective approach to affect the OA disease course. Undenatured type II collagen (UC-II) has been found to affect the disease pathogenesis by inducing the immune tolerance. Oral use of UC II with all epitopes is presented to the gut-associated lymphoid tissues and causes antigen desensitization and therefore minimizes the T-cell induced articular damage.<sup>9</sup> Modulation of immune system in such way can reduce the joint damage and thereby provide symptomatic relief.

These findings from the survey suggest that orthopaedic doctors prefer to use NSAID with DMOADs for newly diagnosed osteoarthritis patient. Also Glucosamine/chondroitin combinations are the most commonly preferred DMOAD by the doctors; Followed by Undenatured Type II Collagen. Regarding efficacy and safety of undenatured type II collagen as compared with other DMOADs, majority of doctors (>65%) opined them as better. More than 70% doctors opined that it would take 15-30 days for DMOADs to produce clinically significant reduction in pain & stiffness and also they prefer to switch on other DMOAD if not responding to the first one. More than 80% doctors were of the opinion that DMOADs slow the progression of disease in OA patients. Also around 47% of the doctors believed that upto 60% of OA patients are satisfied with the medical management.

A study by Crowley et al observed similar significant reductions in WOMAC index total (at days 30, 60 & 90) and VAS score (at days 60 & 90) in patients with knee OA.<sup>10</sup> A study by Lugo JP compared UC II with placebo in OA and found that WOMAC index total were significantly lower in UC II group at days 60, 90, 120, 150 and 180.<sup>11</sup> In another study, Lugo et al., found that even in absence of OA, healthy individuals who had joint discomfort after physical activity, UC II improved joint movements and increased the time for pain free strenuous exercise.<sup>12</sup> Thus, UC II not only diminishes pain and joint stiffness but also seems to enhance functional mobility in patients with OA. Hence indicating that its use even in patients with mild to moderate form of OA that usually is associated with no or less pain can also be helpful. This is important factor as early use of UC II can possibly stall the disease pathogenesis of OA in a safe and effective way, converse to current approach of symptomatic treatment till joint condition worsens.

## CONCLUSION

The aim of this survey was to explore the usage pattern of DMOADs in the management of OA. In this survey it was found that majority of the doctors find undenatured type II collagen as better and safer as compared to other DMOADs. This survey also reflects the preferred treatment for newly diagnosed osteoarthritis (OA) patient, preferred DMOAD and its duration of treatment. Given the disadvantages with long-term use of NSAIDs, DMOADs have potential to bridge the therapeutic gap in management of OA by providing safer therapeutic option that potentially stalls the disease pathogenesis.

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