Perspectives on the management strategies of osteoarthritis knee among various care-takers: A delphi study

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Abstract

Introduction: To achieve a consensual perception from various care-takers involved in the management of osteoarthritis (OA) knee in routine clinical practice.

Methods: A two-round Delphi method was used to achieve consensus. Ayurveda/yoga/naturopathy physicians, general practitioners, orthopedicians and rheumatologists and physiotherapists - 4 specialist groups involved in management of OA patients were invited to participate. Questionnaire was developed based on expert opinion and a coherent perception was derived from two Delphi rounds. Response was analyzed using pre-established criteria. Consensual perception with overall final average ≥60% agreement was accepted in each Delphi round for defining the management strategy.

Results: Sixteen out of 25 statements were accepted. Three statements were accepted in the first round and one was rejected as it had ≤20% agreement. Thirteen were accepted in second round and no agreement could be reached for 8 questions. The response rate in first round was 20.48% and in second round was 44.66%. All statements on grading and treatment approach and surgical intervention reached coherence in perception between 60-80%. Forty-three percent of the statements regarding drug therapy and 80% of the statements in allied management strategies were accepted. But no concurrent perception could be reached on diagnostic procedures.

Conclusion: In the first ever Delphi exercise, consensus on perception of care-takers was noted in many of the focus areas in management of OA knee. Discussions and recommendations are needed on advice of analgesics, steroids and pharmacotherapy for management of severe pain. The implementation of the operational definition in diagnosis of osteoarthritis requires further research/guidelines.

Keywords: Osteoarthritis knee, Treatment and management strategies, Delphi process, Consensus.

Introduction

Management of osteoarthritis involves multiple care-takers in India, as patients tend to utilize different treatment options available. There is a need for integrated management of OA, as it is a chronic degenerative joint disease.[1-3] Delay in treatment could increase the severity with consequent debilitating condition. Some of the areas that require focus are diagnostic methods, grading and treatment approach, drug therapy, surgical intervention and allied management strategies such as lifestyle modification, ayurveda and yoga.

OA is a degenerative disease process of the cartilage and synovial joints. It is diagnosed by symptoms of pain, reduced movement, stiffness and/or deformity of the joints. Age, obesity, family history, occupational use, trauma and surgery and sedentary lifestyle are the risk factors of OA.[4-6] Guidelines and recommendations are available for diagnostic and treatment of OA.[6-8] Imaging findings by X-ray and MRI scan are commonly used to confirm the disease.[9] Blood investigations are used to rule out other diseases. The diagnostic techniques are important in confirming the disease. They also assist in assessing the progression and complications in the clinical outcome. Grading of the disease progression is useful in discriminating the patient for deciding the treatment option.[10,11] Medications for pain relief are commonly prescribed drug therapy.[12-14] In case of disease progression beyond pharmacotherapeutic management, surgical interventions involving joint replacement are suggested.[12,15] Non-pharmacologic therapies such as weight reduction,[16,17] physiotherapy exercises,[18,19] and other lifestyle changes[20] are also recommended to patients to prevent further progression and improve the treatment benefit. These are often prescribed in conjunction with pharmacotherapy and other forms of therapy. As OA is a chronic disease, patients often seek out other forms of treatment options such as ayurveda[20,21] and yoga[22,23,24] as an adjunct to conventional clinical medicine or as alternate therapy.

As there are diverse care-takers in our country involved in the management strategies of OA, a dialogue among them would be helpful to provide quality patient care. Delphi is a consensus building task that involves quantitative assimilation of opinions[25,26] of a panel of experts. The exercise is performed in two or more rounds. A set of questions are prepared based on expert opinion and views of the panelist was elicited. The responses are collated and presented and anonymously discussed by a facilitator in the open session. The reasons for the opinions are summarized and panelists are allowed to revise the response so as to arrive at a

convergence in further rounds. The consensus is assessed through a pre-defined criterion, usually a scoring system.[27] In the present study, the Delphi was used to obtain a coherence in perception of different care-takers involved in the management of OA in routine clinical practice. This first ever Delphi exercise, conducted on the management of OA knee, was also aimed at establishing an inter-disciplinary approach and decreasing the knowledge gap.

As there is no cure for OA, the management of OA is mainly focused on limiting the disease progression and to reduce the pain and deformity. Hence, it is important to choose the appropriate diagnostic and treatment strategies. There is a need to assess the prescribing pattern for patients indicating scenarios of its use, preferred alternatives in case of complexities, and medication risks involved in using NSAIDs. Groups of panelists from diverse field related to OA knee management were invited to attend the Delphi exercise with a purpose to improve the patient care by deriving a consensual perception on various management strategies and other allied approaches.

Material and Methods

The panelists for the current Delphi exercise were selected to represent the spectrum of care-takers involved in management of OA. All the panelists were invited for voluntary participation through both e-mail and telephone for a one-day Delphi session. A brochure with details about objectives for conducting the session and the Delphi procedure was mailed to all the invitees. On the day of Delphi session, the participants were briefed about the general OA management strategies followed in routine clinical practice and were provided with questionnaire at the start of the session (Fig.1). Questions or statements were broadly related to five focus areas in the management of OA knee. These were related to diagnosis, grading and treatment approach, drug therapy, surgical intervention, and allied management strategies such as lifestyle modification, ayurveda and yoga. In the round one, the questionnaire included multiple choices along with an option to add a choice for the given question. The panelist had an increased participatory role in the first round. Feedbacks were collated and discussed in an open session with all the participants. The answers in the first round were statistically tabulated and questions with ≥60% agreement were accepted and the one with ≤20% agreement was rejected. At the end of first round, the summarized percent agreement and responses were anonymously discussed with the panelists. The remaining questions were again taken up in second round and participants were allowed to revise previous responses. The questionnaire of the second round was prepared based on the answers given in the round 1 and the number of multiple choices was limited to frequent choices made in round 1.This was done to improve the rate of consensual perception among the participants. The criteria previously used in first round were adapted for the second round as well, followed by discussion. An epidemiologist facilitated the Delphi rounds and finally the consensual perception was framed and disseminated. Statements with definitions were orally approved in the meeting.

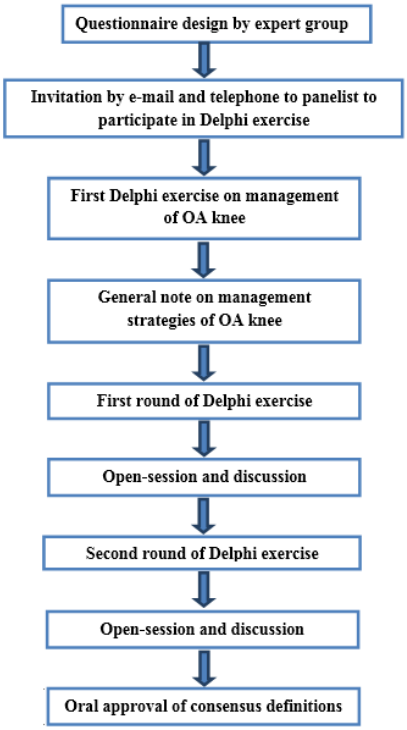

Fig.1: Flow chart of Delphi exercise on management of OA knee

Statistical Analysis

Statistical analysis was performed based on pre-established criteria. Percentage of agreement to each of the multiple choices given for a question/statement was calculated using Microsoft Excel for 4 groups of panelists separately. Overall, average final percentage agreement was calculated and reported for each Delphi round. The multiple choices having average overall ≥60% agreement was accepted. Options with ≤20% agreement were rejected. The responses, which could not reach ≥60% agreement in first round, were reviewed in the second round with the same criteria for agreement.

Results

Three epidemiologists and one orthopedician participated in the preparation of questionnaire with multiple choices for each statement/question. A total of n=123 panelists volunteered to participate in round 1 and were from 4 streams: ayurveda/yoga/naturopathy physicians (n=54), general practitioners (n=29), orthopedicians and rheumatologists (n=26) and physiotherapists (n=14). In round one, perception of panelists was obtained by providing a questionnaire with 25 questions (supplementary table).

The second round had questionnaire with 21 questions and the number of panelist was as follows: ayurveda/yoga/naturopathy physicians (n=49), general practitioners (n=26), orthopedicians and rheumatologists (n=23) and physiotherapists (n=13). The total number was n=111.

A total of 64% statements (16 out of 25) were accepted with ≥60% agreement (Table.1). In the first round, 12% (3 out of 25) and in second round 61.09% (13 out of 21) statements had agreement. The response rate in first round was 20.48% and in second round was 44.66%. One question had ≤20% agreement in the first round and it was rejected. No agreement was reached for 8 questions in the second round; 2 had 20-40% agreement and 6 had 40-60% agreement.

Table 1: Details of statements, focus areas and overall final average percentages of Delphi exercise for management of OA knee

S. No	Question*	Answer options	Overall percentage
1	How do you grade the severity of Osteoarthritis in knee?[b]	based on X-ray	>60
2	What is your treatment in patients with mild Osteoarthritis?[b]	Reassurance, Physiotherapy exercises	>60
3	What is your treatment in patient with moderate Osteoarthritis?[b]	Medications - Analgesics only, Physiotherapy exercises	>60
4	What is your treatment in patient with severe Osteoarthritis?[b]	Joint replacement surgery	>60
5	Do you recommend local analgesic gel application?[c]	Occasionally for patient satisfaction	40-60
6	Do you recommend Yoga therapy?[e]	For all as an additional treatment	>60
7	Do you recommend Physiotherapy exercises?[e]	For all as an additional treatment	>60
8	Do you recommend weight reduction?[e]	For all as an additional treatment	>60
9	Do you recommend life style modification?[e]	For all as an additional treatment	>60
10	Do you recommend Ayurveda treatment?[e]	Only if there is no relief with other modes of treatment	<20
11	Do you recommend intra-articular steroid injections?[c]	Never	40-60
12	Do you recommend intra-articular hyaluronic acid injections?[c]	Never	>60
13	Do you recommend peripheral nerve injections?[c]	Never	>60
14	Do you recommend joint replacement surgery?[d]	Only if there is no relief with other modes of treatment	>60
15	What factors do you consider for joint replacement?[d]	Severely restricted daily activities due to pain and disability, No relief with all other treatment modes	>60
16	When do you think surgery is not indicated?[d]	Patient medically unfit for surgery	>60
17	How do you rate the outcome of surgery?[d]	Patient has resumed his daily activity	>60
18	When do you refer your patients for another specialty care?[b]	Persistent or increase in pain / deformity / movement restriction	>60
19	Do you advise X-rays?[a]	Occasionally for pain following injury	20-40
20	Do you order weight bearing X-ray of the knee for OA knee?[a]	For all	40-60
21	Do you advise blood investigations?[a]	Occasionally for knee pain with joint swelling	40-60
22	Do you advise MRI of the knee?[a]	Occasionally for pain following injury	40-60
23	Do you advise pharmacological analgesic drugs along with your treatment?[c]	For all with intolerable pain only	40-60
24	What is your drug of choice for mild to moderate OA knee pain?[c]	NSAIDs	>60
25	What is your drug of choice for severe OA knee pain?[c]	Paracetamol + Tramadol	20-40

* Questions are from 5 focus areas- a:diagnosis, b:grading and treatment approach, c:drug therapy, d:surgical intervention and e:allied management strategies.

Various facets of OA management strategies were accepted by the panelists. All the questions pertaining to grading and treatment approach reached consensus between 60-80%. Panelists agreed to grade the severity of OA knee using radiography and also the modalities on the treatment of mild, moderate and severe OA. The participants agreed on physiotherapy exercises and

patient reassurance for mild OA, both physiotherapy exercises and analgesic medication for moderate OA and joint replacement surgery for severe OA. They also agreed on referring the patients to another specialty care if the patient does not get relief from persistent pain, movement restriction or deformity.

Forty-three percent of the statements (3 out of 7) regarding drug therapy were accepted. Panelists agreed 70% on NSAIDs as drug of choice for mild to moderate OA knee pain and not to recommend intra-hyaluronic acid and peripheral nerve injections for management of OA knee. Application of topical analgesic gel (20-40%) and intra-articular steroid injection and concomitant use of analgesic drugs along with clinician recommended therapy (40-60%) could not achieve agreement. While none of the groups agreed on local analgesic gel application, advice of oral analgesics for all patients with intolerable pain was agreeable for orthopedicians and rheumatologists (65.22%). Similarly, ayurveda, yoga and naturopathy practitioners were against use of steroids (61.22%) whereas orthopedicians and rheumatologists (60.87%) supported the use if there was no relief from other modes of treatments. However, no overall consensual perception could be reached. There was low level of agreement on single or combination drug of choice for severe OA knee pain among the panelists (10-40%).

Statements on surgical intervention were clearly defined by the panelists. Panelists agreed that joint replacement surgery would be recommended only if the patient got no relief with all other treatment modalities (77.47%). The other factor that would decide the recommendation was severely restricted daily activities due to pain and disability (67.71%). Surgery was not recommended if the patient was medically unfit (85.42%) to undergo the procedure. Resumption of daily activities was considered as indication for rating the outcome of surgery (87.35%).

Agreement in perception was noted for eighty percent of the statements in allied management strategies. In the first round of Delphi, panelists agreed to recommend yoga (60.77%), physiotherapy exercises (79.11%), and life-style modifications (78.15%). Recommendation of ayurvedic treatment received only <20% agreement by the panelist, hence this statement was rejected and removed from the second round of questions. Around 85% of the agreement was reached in second round of Delphi for recommendation of weight reduction.

No agreement was reached on statements related to diagnosis. Advice on radiography for occasional pain/movement restriction/injury/deformity and for weight bearing X-ray of knee had agreement in the range of 20-40% and advice on blood investigations and MRI had 40-60% agreement. Orthopedicians and rheumatologists agreed on advice on X-ray (60.87%) and weight bearing X-ray (73.91%) for diagnosis of all OA patients, whereas no consent was obtained from other groups. Similarly, advise of blood investigations for knee pain with joint swelling was agreed by general practitioners (61.54%) and physiotherapists (69.23%), but not by other groups. MRI of the knee for pain following injury was given consent only by general practitioners (69.23%).

Discussion

The aim of the OA conference (OACON 2015)- first ever Delphi exercise in India was to gather consensual perception on various management modalities of OA knee. The delegates agreed on the use of radiography in grading of the OA knee patients rather than the pain and movement based evaluation. The modalities of treatment for mild, moderate and severe OA and consideration of surgical intervention and its outcome also reached agreement. Use of drug therapy and allied management strategies in OA patients was also broadly agreed upon. This indicates that a general agreement exists among the care-takers regarding these aspects of patient care. However, no agreement was reached on diagnostic procedures to be followed in management of OA. Agreement rate for the questions were higher in second round than the first round. Feedback and appraisals on the various aspects of statements from the first round could have helped the panelists in revising their responses and improved the rate of consensual perception.

Radiography reveals the areas of degeneration of the bones and is useful in confirming the diagnosis,[28] prescribing orthoses such as knee sleeves, braces, elastic non-adhesive devices, insoles and walking aids and in consideration of surgery.[7] Patient reassurance, physiotherapy exercises, analgesic medication and joint replacement surgery were the primary treatment choices. Further, there was a clear coherence among delegates on the option to refer for other specialty care if the treatment recommended did not bring relief to patient. Deyle et al. have found that exercise therapy reduces pain and stiffness, improves knee function in both clinic and home based manual therapy in OA patients.[19] Even after a year of clinical intervention, the patients showed improvements over baseline measurements. A questionnaire based survey undertaken in New Zealand, showed that 80% patients with OA of the hip or knee stated the benefits of physiotherapy in management of OA and its utility even after the conclusion of treatment.[29]

A desirable level of agreement among delegates was reached on drug therapy also, but not on the use of topical and oral analgesics, steroid injectables, and on drug of choice for severe pain such as single or combinations of steroids, paracetamol, NSAIDs and tramadol. The high level agreement in one group but no agreement in other groups on these statements reflects differences in clinical backgrounds due to lack of clarity. Guidelines are required to improve prescriptions of the clinicians from different clinical settings. Once

awareness is brought about, different therapeutic modules can be prioritized. Acetaminophen, NSAIDs, both oral and topical applications, and opioids are prescribed for OA pain relief with due consideration of the potential risks.[3,13,14] For patients with an increased risk of gastrointestinal, cardiovascular and renal adverse effects, a cyclo-oxygenase (COX)-2 inhibitor or nonselective NSAID is included with a proton pump inhibitor.[8] Opioids are used in patients who cannot tolerate NSAIDs and with moderate to severe pain.[14] Possible reasons for lack of consensus among all groups of panelists on topical analgesic might be no uniform guidelines for use of topical NSAIDs and lack of studies on long-term trials on the efficacy of all preparations of topical NSAIDS and on comparison of topical versus oral NSAIDs to assess the risk benefit ratio.[30] A meta-analysis of RCTs found that topical NSAIDs were superior to placebo for initial two weeks.[31] Zhen-han Deng et al have concluded that topical diclofenac was effective in pain relief in a meta-analysis of RCTs.[32]

Intra-articular injections of steroids and hyaluronate therapy are prescribed as short-term therapy if the patient does not get relief by conservative treatment. Majority of the panelists did not support the use of hyaluronic acid injections. Meta-analysis studies have also suggested them to be minimally effective.[33] There was no uniformity among the panelists on the use of intra-articular corticosteroids in OA patients. A systematic review of randomised or quasi-randomised controlled trials found moderate improvement in pain and small improvement in function of OA knee. The quality of evidence had low reliability as results were highly discordant across studies and long-term efficacy were not assessed.[34] Another systemic review concluded low doses and durations of intra-articular corticosteroids were beneficial and high doses and durations had detrimental effects.[35]

There was also a coherence in perception on the surgical intervention procedures used for the management of OA knee. Factors that were considered in recommending joint replacement surgery were pain and disability with severely restricted daily activities, when there was no relief with all other modes of treatment and patients were medically fit to undergo surgery. Surgery outcome was assessed by resumption of daily activities by the patient. Unlike RA, there is no therapy to modify the disease process in OA. Hence surgery is recommended in patients with OA resulting from the destruction of inflammatory arthritides, when conservative treatment fails to provide relief.[12,36]

Obesity is a major risk factor of OA and weight reduction has been included in guidelines for the management of OA. Many studies have shown that weight reduction is one of the most effective factor in management of OA.[7,8,16,17] Panelists agreed on the importance of allied management strategies that included physiotherapy exercises, lifestyle modifications, weight reduction and yoga as additional treatment options. However, recommendation of ayurveda as an additional treatment was not agreed upon. This could be attributed to existence of inter-practice differences among the care-takers. There is limited data to verify the feasibility of narrowing the differences with regard to OA patient care. Chopra et al. have evaluated two ayurvedic formulations that reduced knee pain and improved knee function and were found to be good alternatives for glucosamine and celecoxib.[37] In another study, combined orthopedic and ayurvedic OA management therapy in elderly patients with moderate and severe osteoarthritis of the knee joint improved pain and patient satisfaction index.[38] Employing and integrating novel analytical methodology and sharing experimental and clinical results performed on Ayurvedic compounds has been suggested for developing an integrated approach.[39]

There was reduced level of agreement among delegates on the diagnostic procedures to be followed for assessment of OA knee. The physical examination of patients along with radiography/laboratory investigation is the standard method of OA diagnosis. The combined method is reported to have a sensitivity and specificity of 91% and 86%, respectively.[40] Hunter et al, in an article on the scope of development of disease-modifying drugs for osteoarthritis, have suggested that radiographs capture later stage disease and interventions for structure modification in such patients may not be helpful.[41] A Delphi study to develop an MRI definition of structural OA has concluded that MRI identify early, pre-radiographic OA disease where structure modification therapeutics may be feasible.[40] The discordance on diagnostic procedure statements among the groups of panelists highlights the necessity for a structure-based guidelines to enable care-takers from different clinical settings in effective decision-making. Importantly, these areas provide further scope for discussion and recommendations in management of OA knee.

A limitation of the present Delphi procedure was lack of assessment of variability in definitions among participant groups for questions. In case of statements with low agreement, variability assessment could have helped in modifications of statements or definitions to reach coherence in perceptions among different participants. The strengths of the current Delphi exercise include participation of a multi-disciplinary panel, as a wider range of choices could be selected when compared to a panel with one or two specialist groups. The whole procedure was conducted in a structured way to maintain anonymity of individual responses, to eliminate dominant opinions and negative interactions. To increase the reliability of the perceptions, all participants were allowed to suggest new choices for all statements in round one.

Conclusion

Integrated approach is being advocated for management of chronic diseases. In pursuit to this strategy, the first ever Delphi exercise could gather the consensual perceptions of various panelists on many of the focus areas in management of OA knee. There was agreement in grading and treatment approaches of OA knee including surgical intervention procedures. Use of drug therapy and allied management strategies were also broadly agreed upon. However, further discussions are needed on the use of analgesics as well as in recommending medications for severe pain. Additional research is needed for establishment of procedures for diagnosis of OA knee.

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