Updated recommendations on knee osteoarthritis management: The Hong Kong College of Orthopaedic Surgeons position statement

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ABSTRACT

Introduction: To inform the public and medical practitioners about the effectiveness of various management regimens for knee osteoarthritis (knee OA), the Hong Kong College of Orthopaedic Surgeons (HKCOS) published a position statement in 2022. This study aimed to present the findings from expert consensus surveys conducted in 2022 and 2024, which form the basis of the recommendations in the position statement.

Methods: Fellows of the HKCOS, who were listed in the Specialist Register (Orthopaedics and Traumatology) of the Hong Kong Medical Council, were invited via email to participate in online surveys in 2022 and 2024. The surveys collected opinions on 26 interventions for the treatment of knee OA. Expert panellists were instructed to provide their recommendation for each intervention using one of three options: 'Recommend', 'Do not recommend' or 'Abstain'. A consensus of opinion was defined as a minimum of 70% agreement among the expert panellists.

Results: A total of 106 expert panellists participated in the 2022 survey, and 28 participated in the 2024 survey. Consensus was reached among the expert panellists for 14 interventions in 2022 and 13 interventions in 2024. In both surveys, the expert panel reached consensus in recommending the following treatments for knee OA: patient education, land-based exercise, water-based exercise, self-management programme, weight reduction, use of a cane, oral paracetamol, topical non-steroidal anti-inflammatory drugs, oral non-steroidal anti-inflammatory drugs, high tibial osteotomy, and joint replacement surgery. Conversely, the expert panel reached consensus in recommending against the use of lateral wedge insoles and denervation therapy.

Conclusion: Findings from both the 2022 and 2024 surveys demonstrated consistent expert consensus on key recommended and non-recommended interventions for knee OA. The recommendations provide evidence-based guidance to the public and medical practitioners regarding the effectiveness of various management strategies for knee OA.

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New knowledge added by this study

- The Hong Kong College of Orthopaedic Surgeons (HKCOS) published a position statement on the management of knee osteoarthritis (knee OA).
- Two consecutive surveys conducted in 2022 and 2024 demonstrated consistent expert opinions among orthopaedic specialists in Hong Kong regarding the recommended management for knee OA.

Implications for clinical practice or policy

- The results of these cross-sectional surveys and the recommendations made in the HKCOS position statement on the management of knee OA provide evidence-based guidance to the public and medical practitioners on the effectiveness of different management regimens for knee OA.

Introduction

The Hong Kong College of Orthopaedic Surgeons (HKCOS) is the official professional body responsible for organising the training of orthopaedic surgeons and conducting specialist examinations in orthopaedics in Hong Kong. The College also plays a key role in setting standards of care in orthopaedic surgery, which includes, but is not limited to, the investigation, preservation, and restoration of the form and function of the extremities, spine, and associated structures. The aim is to bring relief to patients of all ages affected by injury or disease of the musculoskeletal system.[1]

Knee osteoarthritis (knee OA) is common among middle-aged and older individuals. Its incidence and severity increase with age.[2] Hong Kong, one of the cities with the highest life expectancy globally,[3] faces a growing demand for

香港骨科醫學院關於膝關節骨關節炎治療的立場聲明

丘偉鵬

引言：為了向公眾及醫護人員提供有關膝關節骨關節炎的有效治療方案，香港骨科醫學院於2022年發表了《香港骨科醫學院膝關節骨關節炎治療立場聲明》。本研究旨在報告2022年及2024年進行的專家共識調查結果，這些結果構成了該立場聲明中建議內容的基礎。

方法：香港骨科醫學院分別於2022年及2024年透過電子郵件，邀請本院院士參與一項為期四週的網上問卷調查。這些院士均具備香港醫務委員會所認可的骨科專科醫生註冊資格。調查涵蓋26項治療膝關節骨關節炎的方案，專家小組就每項方案提供意見，並從三個選項中擇一作答：建議、不建議或棄權。當某一治療方案獲得70%或以上專家一致意見時，該建議即被視為該方案的專家主流意見。

結果：共有106位專家小組成員參與了2022年的問卷調查，另有28位成員參與了2024年的問卷調查。在2022年，有14項治療獲得專家共識；在2024年，則有13項治療達成共識。在兩次調查中，專家小組一致建議以下治療方式用於膝關節骨關節炎：患者教育、陸上運動、水中運動、自我管理計劃、體重控制、使用手杖、口服撲熱息痛、外用非類固醇消炎藥、口服非類固醇消炎藥、高脛骨截骨術以及人工關節置換手術。專家小組亦達成共識，不建議使用外側楔形鞋墊和神經阻斷治療。

結論：2022年和2024年的問卷調查結果顯示，專家小組就膝關節骨關節炎的主要建議及不建議治療方案達成一致共識。相關建議為公眾及醫療專業人員就各種膝關節骨關節炎管理策略的成效，提供實證為本的指引。

knee OA treatment.[4] In the public healthcare sector, patients often experience a long waiting time for medical consultation, physiotherapy, and surgical interventions related to knee OA.[4] With an ageing population, the number of individuals affected by knee OA is expected to further increase over the next two to three decades,[5] highlighting the urgent need for effective management strategies in Hong Kong.

To provide evidence-based guidance for the public and healthcare professionals on the management of knee OA, the HKCOS published a position statement in August 2022 (Table 1).[6] This position statement was developed based on a consensus survey conducted in June 2022, along with a review of high-quality evidence in the literature. A total of 26 treatment recommendations were formulated, reflecting the consensus of expert orthopaedic surgeons in Hong Kong. The methodology used to develop this position statement is available on the College's website.[6]

To gather updated expert opinions on the management of knee OA, the College conducted a second survey in January 2024. This article presents the findings from the 2022 and 2024 surveys.

Methods

This study was conducted under the supervision and ethical oversight of the Council of HKCOS. The requirement to obtain informed consent from participants was waived by the Council. Two cross-sectional surveys were conducted online in June 2022 and January 2024, respectively. The same online questionnaire was used for both study periods to ensure consistency in data collection.

The online questionnaire was developed by the HKCOS Osteoarthritis of the Knee Working Group (HKCOS-OAKWG).[6] A total of 26 interventions for knee OA were selected based on the practices of orthopaedic surgeons in Hong Kong and guidelines from international recognised organisations.[7,8] An independent literature review was conducted, and the quality of evidence was graded according to the Oxford Centre for Evidence-Based Medicine levels of evidence.[9] Available Level 1 and Level 2 evidence up to March 2022 was summarised for each intervention.

Fellows of the HKCOS listed in the Specialist Register (Orthopaedics and Traumatology) of the Hong Kong Medical Council were invited via email to participate in the surveys. Each survey remained open for 4 weeks. The surveys collected opinions on the 26 interventions. For each item, the questionnaire provided: (1) a brief description of the intervention; (2) a concise summary of the supporting Level 1 and Level 2 evidence; and (3) a single question asking whether the expert would recommend the intervention. Expert panellists were instructed to select one of three response options: 'Recommend', 'Do not recommend', or 'Abstain'.

Statistics

Descriptive statistics were reported for the two cross-sectional surveys conducted in 2022 and 2024. These included the number of expert panellists who participated in each survey with their recommendations regarding the 26 interventions for knee OA. The number of panellists who participated in both the 2022 and 2024 surveys was also recorded. The experience of the expert panel was described based on the number of years each panellist had been registered as a specialist with the Hong Kong Medical Council. Consensus was defined as a minimum of 70% agreement among the expert panellists. The resulting recommendations formed the basis of the HKCOS position statement. No analytical statistical tests were performed.

Results

Composition of the expert panels

A total of 106 expert panellists participated in the 2022 survey, while 28 participated in the 2024

TABLE 1. The Hong Kong College of Orthopaedic Surgeons position statement on the management of knee osteoarthritis[6]

1.	**Patient education** We RECOMMEND patients suffering from osteoarthritis of knee to receive education programme for symptoms relief.
2.	**Land-based exercise** We RECOMMEND land-based exercise (both supervised and unsupervised exercise) for pain relief and functional improvement in patients suffering from osteoarthritis of knee.
3.	**Water-based exercise** We RECOMMEND water-based exercise as a treatment for patients suffering from osteoarthritis of knee.
4.	**Self-management programme** We RECOMMEND patients suffering from osteoarthritis of knee to receive self-management programme for pain relief and functional improvement.
5.	**Weight reduction** We RECOMMEND patients with high body mass index to achieve effective and sustainable weight control for pain relief and functional improvement.
6.	**Thermotherapy** We ARE NOT ABLE TO ADVOCATE for or against the use of thermotherapy in the management in knee osteoarthritis.
7.	**Transcutaneous electrical nerve stimulation** We ARE NOT ABLE TO ADVOCATE for or against the use of transcutaneous electrical nerve stimulation as a treatment for patients suffering from osteoarthritis of knee.
8.	**Percutaneous electrical nerve stimulation and pulsed electromagnetic wave therapy** We ARE NOT ABLE TO ADVOCATE for or against the use of percutaneous electrical nerve stimulation and pulsed electromagnetic field therapy in management of osteoarthritis of knee.
9.	**Acupuncture** We ARE NOT ABLE TO ADVOCATE for or against the use of acupuncture in management of osteoarthritis of knee.
10.	**Use of cane** We RECOMMEND the use of cane to improve pain and function of patients suffering from osteoarthritis of knee.
11.	**Valgus off-loading knee brace** We ARE NOT ABLE TO ADVOCATE for or against the use of brace to improve pain, function and quality of life of patients suffering from osteoarthritis of knee.
12.	**Knee sleeve** We ARE NOT ABLE TO ADVOCATE for or against the use of knee sleeve to improve pain and function of patients suffering from osteoarthritis of knee.
13.	**Lateral wedge insole** We DO NOT RECOMMEND the use of lateral wedge insole for patient with knee osteoarthritis.
14.	**Paracetamol** We RECOMMEND the use of paracetamol as a first-line analgesic for patients suffering from osteoarthritis of knee.
15.	**Topical non-steroidal inflammatory drug (topical NSAID)** We RECOMMEND the use of topical NSAIDs as first-line treatment for patients suffering from osteoarthritis of knee.
16.	**Oral non-steroidal inflammatory drug (oral NSAID)** We RECOMMEND the use of oral NSAIDs (in conjunction with a proton-pump inhibitor) as a second-line treatment for patients suffering from osteoarthritis of knee. However, the patients should not have contraindications to this type of medication and have had a poor response to the first-line agents.
17.	**Opioid** We ARE NOT ABLE TO ADVOCATE for or against the use of opioid analgesics in the treatment of pain associated with osteoarthritis of knee.
18.	**Intra-articular steroid injection** We ARE NOT ABLE TO ADVOCATE for or against the use of intra-articular steroid injection in management of osteoarthritis of knee for short-term pain relief of symptomatic osteoarthritis of knee. There is a concern of increased risk of peri-prosthesis infection if the patients are potential candidates of total knee arthroplasty.
19.	**Intra-articular hyaluronic acid injection** We ARE NOT ABLE TO ADVOCATE for or against the use of intra-articular hyaluronic acid injections as a treatment of symptomatic osteoarthritis of knee.
20.	**Intra-articular platelet rich plasma injection** We ARE NOT ABLE TO ADVOCATE for or against the use of intra-articular platelet rich plasma injection in management of osteoarthritis of knee.
21.	**Oral supplements (glucosamine, chondroitin and vitamin D)** We ARE NOT ABLE TO ADVOCATE for or against the use of oral supplements as a treatment for patients suffering from osteoarthritis of knee.
22.	**Denervation therapy** We DO NOT RECOMMEND the use of denervation therapy as a treatment for patients suffering from osteoarthritis of knee.
23.	**Arthroscopic lavage and debridement** We DO NOT RECOMMEND arthroscopic lavage as a treatment for patients suffering from osteoarthritis of knee.
24.	**Partial meniscectomy** We ARE NOT ABLE TO ADVOCATE for or against arthroscopic partial meniscectomy as a standard treatment for patients suffering from osteoarthritis of knee. However, there may be a role in selected patients who present with symptoms of locking, and fail to respond to an initial trial of non-operative treatment.
25.	**High tibial osteotomy** We RECOMMEND performing high tibial osteotomy in selected patients who suffer from symptomatic osteoarthritis of medial compartment of knee.
26.	**Knee arthroplasty** We RECOMMEND performing knee arthroplasty for patients suffering from symptomatic end-stage osteoarthritis of knee after failure of initial attempt of non-operative management.

survey. At the time of survey distribution in June 2022 and January 2024, the College had 528 and 567 fellows, respectively. In June 2022, the numbers of active fellows, overseas fellows, and inactive fellows were 495, 4, and 27, respectively. The corresponding numbers in January 2024 were 526, 7, and 34.[10] The response rates for the surveys were 20% in 2022 and 5% in 2024, respectively. Twenty expert panellists participated in both the 2022 and 2024 surveys. The mean duration of experience as registered orthopaedic specialists with the Hong Kong Medical Council (±standard deviation) was 15.6±9 years for the 2022 cohort and 19.2±7 years for the 2024 cohort (Fig 1). The distribution of expert panellists according to their affiliations is presented in Figure 2.

Recommendations of the expert panels

The results of the expert recommendations from the 2022 and 2024 surveys are summarised in Table 2. Consensus was reached among the expert panellists for 14 interventions in 2022 and 13 interventions in 2024. As consensus had already been achieved for most treatment options in the first-round survey, no changes were made to the HKCOS position statement on the management of knee OA, and the content of the second survey remained unchanged. In both surveys, a supermajority of panellists (≥70%) recommended 11 interventions: patient education; land-based exercise; water-based exercise; self-management programme; weight reduction; use of a cane; oral paracetamol; topical non-steroidal anti-inflammatory drugs (NSAIDs); oral NSAIDs; high tibial osteotomy; and joint replacement surgery. Conversely, at least 70% of respondents in both surveys did not recommend the use of lateral wedge insoles or denervation therapy. Consensus was not achieved for 12 interventions in 2022 and 13 interventions in 2024.

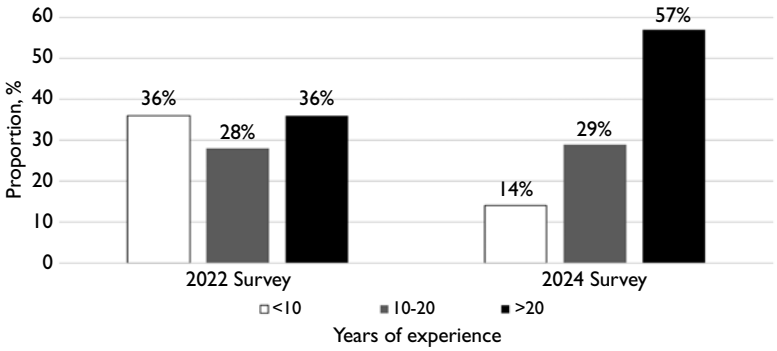

FIG 1. Experience of the expert panellists as orthopaedic specialists registered with the Hong Kong Medical Council

Discussion

A consensus of 70% or greater agreement was reached among the expert panellists for 14 interventions in the 2022 survey and 13 interventions in the 2024 survey. Consensus remained consistent across both cross-sectional surveys for 13 interventions, including: recommendations in favour of patient education, land-based and water-based exercise, self-management programmes, weight reduction, use of a cane, oral paracetamol, topical and oral NSAIDs, high tibial osteotomy and joint replacement surgery, as well as recommendations against the use of lateral wedge insoles and denervation therapy.

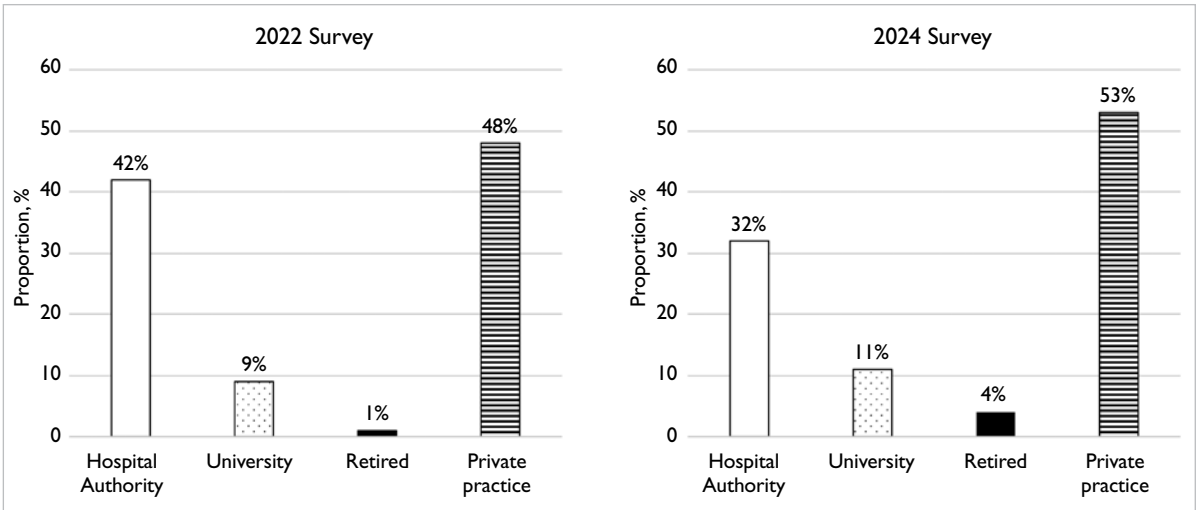

FIG 2. Distribution of expert panellists according to their affiliations

TABLE 2. Results of 2022 survey (n=106) and 2024 survey (n=28)*

	Recommend (%)	Do not recommend (%)	Abstain (%)
Patient education†			
2022 survey	100 (95% CI=100-100)	0	0
2024 survey	100 (95% CI=100-100)	0	0
Land-based exercise†			
2022 survey	99 (95% CI=97-100)	1	0
2024 survey	86 (95% CI=73-99)	7	7
Water-based exercise†			
2022 survey	91 (95% CI=86-97)	3	6
2024 survey	86 (95% CI=73-99)	11	3
Self-management programme†			
2022 survey	83 (95% CI=76-90)	9	8
2024 survey	86 (95% CI=73-99)	3	11
Weight reduction†			
2022 survey	97 (95% CI=94-100)	0	3
2024 survey	100 (95% CI=100-100)	0	0
Thermotherapy			
2022 survey	67 (95% CI=58-80)	17	16
2024 survey	68 (95% CI=51-85)	7	25
Transcutaneous electrical nerve stimulation			
2022 survey	33 (95% CI=24-42)	44	23
2024 survey	32 (95% CI=15-49)	46	22
PENS/PEMF			
2022 survey	43 (95% CI=34-52)	29	28
2024 survey	43 (95% CI=25-61)	18	39
Acupuncture			
2022 survey	26 (95% CI=17-34)	42	32
2024 survey	32 (95% CI=15-49)	21	46
Use of a cane†			
2022 survey	90 (95% CI=84-96)	4	6
2024 survey	96 (95% CI=89-100)	0	4
Valgus off-loading knee brace			
2022 survey	22 (95% CI=14-30)	52	26
2024 survey	7 (95% CI=0-17)	50	43
Knee sleeve			
2022 survey	28 (95% CI=20-37)	43	29
2024 survey	29 (95% CI=12-46)	32	39
Lateral wedge insole‡			
2022 survey	8 (95% CI=3-13)	78	14
2024 survey	0 (95% CI=0-0)	82	18
Paracetamol†			
2022 survey	92 (95% CI=87-97)	4	4
2024 survey	96 (95% CI=89-100)	0	4

Abbreviations: 95% CI = 95% confidence interval; NSAIDs = non-steroidal anti-inflammatory drugs; PEMF = pulsed electromagnetic field therapy; PENS = percutaneous electrical nerve stimulation

* Due to rounding, the percentages may not total 100%

† A minimum of 70% agreement was reached among the expert panellists recommending an intervention in both the 2022 and 2024 surveys

‡ A minimum of 70% agreement was reached among the expert panellists in not recommending an intervention in both the 2022 and 2024 surveys

TABLE 2. (cont'd)

	Recommend (%)	Do not recommend (%)	Abstain (%)
Topical NSAIDs†			
2022 survey	78 (95% CI=70-86)	11	11
2024 survey	86 (95% CI=73-99)	11	3
Oral NSAIDs†			
2022 survey	96 (95% CI=92-100)	2	2
2024 survey	100 (95% CI=100-100)	0	0
Opioids (including tramadol)			
2022 survey	40 (95% CI=31-49)	46	14
2024 survey	32 (95% CI=15-49)	54	14
Intra-articular steroid injections			
2022 survey	31 (95% CI=22-40)	53	16
2024 survey	43 (95% CI=25-61)	39	18
Intra-articular hyaluronic acid injections			
2022 survey	60 (95% CI=51-69)	24	16
2024 survey	54 (95% CI=36-73)	28	18
Intra-articular platelet rich plasma injections			
2022 survey	25 (95% CI=17-33)	48	27
2024 survey	32 (95% CI=15-49)	39	29
Oral supplements			
2022 survey	34 (95% CI=25-43)	49	17
2024 survey	32 (95% CI=15-49)	25	43
Denervation therapy‡			
2022 survey	2 (95% CI=0-5)	77	21
2024 survey	7 (95% CI=0-17)	82	11
Arthroscopic lavage			
2022 survey	13 (95% CI=7-19)	76	11
2024 survey	21 (95% CI=6-36)	64	14
Partial meniscectomy			
2022 survey	33 (95% CI=24-42)	54	13
2024 survey	36 (95% CI=18-54)	50	14
High tibial osteotomy†			
2022 survey	74 (95% CI=66-82)	16	10
2024 survey	75 (95% CI=59-91)	21	4
Joint replacement surgery†			
2022 survey	99 (95% CI=97-100)	0	1
2024 survey	100 (95% CI=100-100)	0	0

There are two primary objectives in the management of knee OA: (1) control of disease progression; and (2) control of symptoms. Regarding disease control, it is rare to reverse the underlying pathological changes, such as joint space narrowing and varus malalignment of the lower limb, through non-operative treatment once the condition is established. The aim of management is to slow the progression of osteoarthritis by promptly identifying and treating 'joint-threatening' pathologies (such as symptomatic loose bodies, full-thickness, full-width root tears of the meniscus, and spontaneous osteonecrosis of the knee)[6,11] and by controlling risk factors associated with disease progression (eg, through weight reduction and prevention of knee injury).[12] Regarding symptom control, most non-

operative treatments focus on pain management[13] and improving quality of life.[14] Pain is the most common presenting symptom in knee OA.[15] However, there is only a weak correlation between radiological abnormalities and patient-reported symptoms.[16] The severity of pain experienced is influenced by sensitisation mechanisms—including both peripheral and central sensitisation—rather than by anatomical changes in the arthritic joint alone.[15] It is increasingly recognised that inflammation plays a prominent role in the pathogenesis and symptoms of OA.[17] Inflammatory cytokines (eg, interleukin 6 and tumour necrosis factor alpha) and inflammatory mediators (eg, prostaglandin and bradykinin) contribute to peripheral sensitisation of nociceptors in the subchondral plate and joint capsule by activating G protein–coupled receptors, ionotropic receptors, and tyrosine kinase receptors located on nerve terminals and cell bodies.[18] Accordingly, most treatments for knee OA aim to control inflammation in order to alleviate symptoms.[7] The cell bodies of nociceptors are located in the dorsal root ganglia of the spinal cord, where nociceptive input is transmitted to the brain and brainstem via the spinothalamic tract, spinoreticular tract, spinomesencephalic tract, and spinohypothalamic tract.[13] Persistent nociceptive stimulation leads to central sensitisation, characterised by hyperactivity and hyperexcitability of neurons in the brain and spinal cord.[19] Inflammation also contributes to central sensitisation by increasing the production of neurotransmitters and neuromodulators, including glutamate and substance P.[18] Furthermore, there is a loss of inhibitory control due to a reduction in inhibitory neurotransmitters, primarily gamma-aminobutyric acid (GABA), resulting in heightened pain sensitivity.[18] The perception of nociceptive stimuli as pain is further influenced by psychological factors (such as depression, anxiety, and poor coping skills) and social factors (such as workers' compensation claims and lack of social support). The interaction among biological, psychological, and social factors is described by the biopsychosocial model, which is considered important in the development of chronic pain.[19] As a result, education, self-management programmes, and cognitive behavioural therapy are also important treatment strategies for knee OA.[7]

Surgical treatments, such as joint replacement surgery and high tibial osteotomy, are typically reserved for patients with end-stage knee arthritis or those with persistent symptoms despite adequate non-operative management.[14]

Patient education

Most patient education programmes provide guidance on: (1) the nature, presenting symptoms, and treatment options for knee OA; (2) the importance of adherence to treatment and the adoption of preventive lifestyle behaviours; and (3) the expected natural disease course and treatment outcomes.[20] Patient education operates through a theory of planned behaviour-based intervention.[20] By modifying patients' attitudes and the subjective norms of family members, both symptoms and quality of life can be improved, even in the absence of changes in physical condition.[20]

Exercise, weight reduction, use of a cane, and self-management programmes

There is high-quality evidence in the literature supporting the effectiveness of exercise—both land-based and water-based—along with weight reduction, use of a cane, and self-management programmes in reducing pain and improving quality of life in patients with knee OA.[21]

Exercise alleviates symptoms of knee OA by increasing lower limb muscle strength and improving overall physical fitness.[21] Improved muscle strength alters joint biomechanics, thereby reducing joint loading and pain. Aerobic exercise increases peak oxygen uptake by muscles and enhances the patient's overall fitness, facilitating the performance of daily activities and enhancing functional ability.[21] Exercise should be performed regularly, with sufficient—but not excessive—intensity.[14] Recommended land-based activities include lower limb strengthening exercises, static cycling, walking programmes, Tai Chi, and Baduanjin,[21] while water-based activities include swimming and pool therapy.[22]

Obesity is a known risk factor for the development of knee OA[12] and the subsequent need for joint replacement surgery.[23] Beyond increased mechanical loading, obesity is associated with metabolic syndrome—a cluster of metabolic disorders including abdominal obesity, hyperlipidaemia, hypertension, and elevated fasting serum glucose.[24] Metabolic syndrome is increasingly recognised as an important risk factor for OA due to its association with systemic inflammation.[25] Among obese individuals with OA, disability may be reduced with weight loss exceeding 5%.[26] Evidence supports the use of intensive low-energy diet programmes for achieving weight loss and reducing pain in this population.[27]

The use of a cane reduces weight-bearing on the arthritic joint, thereby alleviating pain. A randomised controlled trial has demonstrated significant improvements in pain and function among patients who use a cane for walking.[28]

Self-management programmes have been shown to reduce pain and improve function in patients with knee OA.[29-31] In addition to education and exercise, these programmes equip patients with a range of coping and management strategies, including pain coping techniques,[29] joint protection

and injury prevention strategies,[30] and stress management skills.[31]

Topical non-steroidal anti-inflammatory drugs, oral non-steroidal anti-inflammatory drugs, and paracetamol

Pain may arise when nociceptors in the knee joint are stimulated.[13] Although articular cartilage and the meniscus are commonly damaged in knee OA, they are aneural and therefore not direct sources of pain. In contrast, nociceptors are present in the subchondral bone, periosteum, joint capsule, and infrapatellar fat pad.[13] In a healthy joint, these nociceptors are not stimulated during physiological loading, meaning that individuals without OA do not experience pain during daily activities such as walking, squatting, or running. Inflammatory cytokines, including interleukin 6, tumour necrosis factor alpha, and other pro-inflammatory molecules (eg, prostaglandin and bradykinin), increase in response to joint injury or during OA flare-ups. These molecules bind to nociceptors on the cell surface, inducing hypersensitivity and hyperexcitability. Consequently, pain may be experienced even during normal joint loading in previously painless knees—a phenomenon known as peripheral sensitisation.[18] Non-steroidal anti-inflammatory drugs are effective in alleviating pain in knee OA[32] by reducing intra-articular and circulating levels of inflammatory molecules, including prostaglandins.

While oral NSAIDs are effective in relieving OA-related pain, their side-effects warrant caution.[33] Systemic NSAIDs should be used judiciously in older patients and in individuals with peptic ulcer disease, renal impairment, or a history of asthma or ischaemic heart disease.[34] Topical NSAIDs, by contrast, have demonstrated efficacy in reducing knee pain while offering a much safer side-effect profile.[35] As such, topical NSAIDs should be considered before initiating oral formulations.[34]

Paracetamol has been shown to improve pain and function in patients with knee OA.[36] It is considered a safe medication, even in patients at higher risk of complications.[7] However, overdose can result in hepatotoxicity and death, necessitating proper patient education regarding safe dosing practices.[8]

Joint replacement surgery and high tibial osteotomy

Both joint replacement surgery and high tibial osteotomy are salvage operations for symptomatic end-stage knee arthritis following unsuccessful non-operative treatment. Both procedures have demonstrated effectiveness in relieving pain in patients with knee OA.[37,38] Joint replacement surgery has been shown to improve function regardless of the extent of joint involvement.[39] In contrast, high tibial osteotomy is effective for symptom relief only in a selected group of patients whose symptomatic OA is confined to the medial compartment of the knee.[38]

Comparison of our recommendations and international guidelines

The recommendations of the HKCOS position statement on the management of knee OA,[6] alongside those of the National Institute for Health and Care Excellence (NICE) guideline,[14] the American Academy of Orthopaedic Surgeons (AAOS) guideline,[7] and the Osteoarthritis Research Society International (OARSI) guideline,[33] are summarised in Table 3.

All of these guidelines recommend patient education, exercise, self-management programmes, weight reduction, and the use of a cane as appropriate management strategies for patients with knee OA.[6,7,14,33] With respect to knee biomechanical interventions, such as knee braces and sleeves, the AAOS guideline is unique in suggesting that these "may be used" in knee OA.[7] Concerning foot biomechanical interventions, the HKCOS, NICE, and AAOS guidelines advise against the use of lateral wedge insoles.[6,7,14]

For pharmacological treatment, all reviewed guidelines recommend the use of NSAIDs, either in topical or oral formulations.[6,7,14,33] However, owing to the increased risk of adverse effects associated with oral NSAIDs in patients with co-morbidities, both HKCOS and NICE recommend topical NSAIDs as first-line treatment, reserving oral NSAIDs for second-line use.[6,14]

There is variation in guidance concerning the use of oral paracetamol. While HKCOS and AAOS support its use as a first-line treatment in knee OA,[6,7] NICE and OARSI do not recommend its routine use.[14,33] None of these guidelines recommend opioids for the treatment of knee OA.[6,7,14,33] Regarding intra-articular steroid injections, the NICE, AAOS, and OARSI guidelines either recommend or conditionally recommend their use for short-term symptom relief.[7,14,33]

In contrast, intra-articular hyaluronic acid injections are not recommended in the NICE and AAOS guidelines.[7,14] The only reviewed guideline that conditionally supports their use is the OARSI guideline.[33]

Based on the comparison outlined above, substantial differences are observed among the various guidelines (Table 3), despite all having evaluated the same set of treatment options for knee OA and drawing upon similar English-language literature. These differences may reflect variations in cultural context and healthcare systems across different geographical regions. Hong Kong

TABLE 3. Comparison of the Hong Kong College of Orthopaedic Surgeons position statement on management of knee osteoarthritis with other international guidelines

	HKCOS position[6] statement (Knee OA)	NICE Guideline[14] (OA)	AAOS Guideline[7] (Knee OA, non-arthroplasty)	OARSI Guideline[33] (Knee OA, non-surgical)
Year of publication	2022	2022	2021	2019
Patient education	Recommend	Should be offered	Recommend	Recommend
Land-based exercise	Recommend	Should be offered	Recommend	Recommend
Water-based exercise	Recommend	N/A	N/A	Recommend (in patients with no co-morbidities)
Self-management programme	Recommend	Should be offered	Recommend	Recommend (in patients with no co-morbidities)
Weight reduction	Recommend	Advise	Recommend	Recommend
Thermotherapy	Not able to advocate for or against	N/A	N/A	N/A
TENS	Not able to advocate for or against	Do not offer	May be used	N/A
PEMF/PENS	Not able to advocate for or against	Do not offer	May be used	N/A
Acupuncture	Not able to advocate for or against	Do not offer	May be used	N/A
Use of a cane	Recommend	Should consider	Could be used	Recommend (in patients with no co-morbidities)
Knee brace	Not able to advocate for or against	Do not routinely offer	Could be used	N/A
Knee sleeve	Not able to advocate for or against	Do not routinely offer	Could be used	N/A
Insole	Not recommend	Do not routinely offer	Do not recommend	N/A
Paracetamol	Recommend	Do not routinely offer	Recommend (when not contraindicated)	N/A
Topical NSAIDs	Recommend	Should be offered	Should be used (when not contraindicated)	Recommend (in patients with no co-morbidities)
Oral NSAIDs	Recommend (with precautions)	Consider if topical NSAIDs are ineffective	Recommend (when not contraindicated)	Conditionally recommend (in patients with no co-morbidities)
Opioids (including tramadol)	Not able to advocate for or against	Do not routinely offer	Not effective	N/A
Intra-articular steroid injections	Not able to advocate for or against	Consider when other pharmacological treatments are ineffective	Could provide short-term relief	Conditionally recommend
Intra-articular hyaluronic acid injections	Not able to advocate for or against	Do not offer	Do not recommend (for routine use)	Conditionally recommend
Intra-articular platelet rich plasma injections	Not able to advocate for or against	N/A	May reduce pain	N/A
Oral supplements (eg, oral glucosamine)	Not able to advocate for or against	Do not offer	May be helpful	N/A
Denervation therapy	Do not recommend	N/A	May reduce pain	N/A
Arthroscopic lavage	Do not recommend	Do not offer	Do not recommend	N/A
Partial meniscectomy	Not able to advocate for or against	N/A	Can be used	N/A
High tibial osteotomy	Recommend (with conditions)	N/A	May be considered in indicated patients	N/A
Joint replacement surgery	Recommend (with conditions)	Should consider (if non-surgical management is ineffective)	N/A	N/A
Manual therapy	N/A	Only consider (with conditions)	May be used	N/A
Massage	N/A	N/A	May be used	N/A
Ultrasound therapy	N/A	Do not offer	N/A	N/A
Laser therapy	N/A	Do not offer	May be used	N/A
Pulsed short-wave therapy	N/A	Do not offer	May be used	N/A
Interferential therapy	N/A	Do not offer	N/A	N/A
Duloxetine	N/A	N/A	N/A	Conditionally recommend

Abbreviations: AAOS = American Academy of Orthopaedic Surgeons; HKCOS = Hong Kong College of Orthopaedic Surgeons; knee OA = knee osteoarthritis; N/A = not available; NICE = National Institute for Health and Care Excellence; NSAIDs = non-steroidal anti-inflammatory drugs; OARSI = Osteoarthritis Research Society International; PEMF = pulsed electromagnetic field therapy; PENS = percutaneous electrical nerve stimulation; TENS = transcutaneous electrical nerve stimulation

is distinct from North America, Europe, and the United Kingdom due to the considerable influence of traditional Chinese medicine (TCM) within its healthcare system. Many patients in Hong Kong seeking orthopaedic care for knee OA—whether through the Hospital Authority or private healthcare providers—also receive TCM treatment. Some doctors registered with the Medical Council of Hong Kong have received training in TCM, and basic education in TCM is included in the Bachelor of Medicine and Bachelor of Surgery curriculum in Hong Kong. It is thus crucial for the HKCOS to develop a position statement tailored to the local population. The comparison of various guidelines highlights differences between the HKCOS position statement and guidelines issued by other reputable international organisations. The recommendations put forward by HKCOS may be better suited to the needs of patients in Hong Kong. This position statement also serves a valuable reference for healthcare systems in which TCM plays a prominent role, including those in Mainland China, Taiwan, Korea, and Japan.

Limitations

The present study has several limitations. First, its descriptive design precluded the use of analytical statistics; as a result, we were unable to identify whether there were significant shifts in opinion regarding interventions for knee OA within the Hong Kong orthopaedic community between 2022 and 2024. Second, only 19% of the expert panellists who participated in the 2022 survey also took part in the 2024 study. Consequently, we could not assess potential changes in opinion among those who did not respond in 2024. Third, the overall response rate for the 2024 survey was low, which may limit the representativeness of the findings and reduce their generalisability to the wider orthopaedic specialist population in Hong Kong. Lastly, the threshold for consensus, defined as a minimum of 70% agreement among the expert panellists, was arbitrary and may not be universally accepted.

Conclusion

Findings from both the 2022 and 2024 surveys demonstrated consistent expert consensus on key recommended and non-recommended interventions for knee OA. The recommendations provide evidence-based guidance to the public and medical practitioners regarding the effectiveness of various management strategies for knee OA.

Author contributions

The author solely contributed to the concept or design of the study, acquisition of the data, analysis or interpretation of the data, drafting of the manuscript, and critical revision of the manuscript for important intellectual content. The author had full access to the data, contributed to the study, approved the final version for publication, and takes responsibility for its accuracy and integrity.

Conflicts of interest

The author has disclosed no conflicts of interest.

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