ORIGINAL RESEARCH ARTICLE

Health management dilemmas in patients with osteoarthritis of the knee: An integrative review

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Keywords: Knee Osteoarthritis; Health management; Dilemma; Nursing;

ABSTRACT

Background: Knee Osteoarthritis (KOA) was estimated to affect about 250 million people worldwide, with symptomatic KOA affecting about 10 to 16 percent of people over the age of 60. The epidemiological study of KOA in the Chinese population showed that the prevalence of KOA in China was about 18%, with 11% in men and 19% in women, and the prevalence of KOA in women was significantly higher than that in men.

Objectives: Systematic search of PubMed, Web of Science, The Cochrane Library, Embase, and CINAHL for studies on health management dilemmas in KOA patients. The search was conducted from the time the library was constructed until January 2024.

Methods: Employing CiteSpace 6.2.R1, this study analyzed 1,914 relevant publications from 1999 to 2024 in the Web of Science and CNKI databases. Keyword analysis, clustering, and visualization were performed using CiteSpace software to identify key themes and trends.

Results: A total of 496 documents were retrieved, with 441 remaining after deletion of duplicates. After reviewing the titles and abstracts of 441 documents, 390 documents were excluded. The remaining 51 literatures were read in full text and 40 literatures were excluded. 11 literatures were finally included.

Conclusions: Although a few scholars have achieved some success in the exploration of KOA health management, due to the large randomness of their research, lack of systematic and rigour, and the KOA health management model suitable for different regions has not been established. More research is still needed in the future to explore the shortcomings of KOA health management and to establish a complete KOA health management programme and system to promote patients' disease control.

Main Contribution to Evidence-Based Practice: The article helps to make healthcare professionals aware of the current dilemmas in the health management of KOA patients. It helps healthcare professionals to develop a scientific discharge plan and apply it in the clinic to promote health management outcomes for KOA patients.

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What do we already know about this topic?
Knee Osteoarthritis is one of the common diseases in the Department of Orthopedics, which is commonly seen in middle-aged and elderly people. It will lead to stiffness and deformation of the affected joints, which will seriously affect the joint function and the quality of life of the patients.

What is the main contribution to Evidence-Based Practice from this article?
We summarised the current dilemmas in the health management of patients with osteoarthritis of the knee, which can inform healthcare professionals and in turn give better treatment and care to patients.

What are this research's implications towards health policy?
The study can further contribute to the research of theories related to health management. In particular, programmes and systems for health management of patients with osteoarthritis of the knee can be established, and management strategies can be provided to patients in a more comprehensive manner.

Authors' Contributions Statement:
Hong JI: conceptualized the study and wrote the Original draft manuscript;, Wenzhong ZHANG: developed and applied the methodology; Simeng YOU developed and applied the methodology; Jordan Tovera Salvador: supervision and validation;

Introduction

Knee Osteoarthritis (KOA) is one of the common diseases in the Department of Orthopedics, which is commonly seen in middle-aged and elderly people. It will lead to stiffness and deformation of the affected joints, which will seriously affect the joint function and the quality of life of the patients.

KOA was estimated to affect about 250 million people worldwide, with symptomatic KOA affecting about 10 to 16 percent of people over the age of 60(Chen and Wu et al., 2021). The epidemiological study of KOA in the Chinese population showed that the prevalence of KOA in China was about 18%, with 11% in men and 19% in women, and the prevalence of KOA in women was significantly higher than that in men(Chen and Wu et al., 2021). The prevalence of KOA in different regions was 11% in the northern region, 17% in the northeastern region, 21% in the eastern region, 21% in the northwestern region, 22% in the southwestern region, and 18% in the central and southern regions, respectively(Tang and Wang et al., 2016). Shandong Province in China is located in the eastern region and has a higher prevalence of KOA than the national average(Wang Bin, 2018). In addition, based on the results of the large scale survey, the number of new KOA cases in China increased from 3,683,900 to 8,425,800, the number of disease cases increased from 42,570,800 to 108,120,100, and the disability-adjusted life years increased from 1,365,200 to 3,464,800. The standardized incidence, prevalence, and disability-adjusted life year rates showed an increasing trend, with growth rates of 6.65%, 6.85%, and 7.18%, respectively. In addition, the average standardized disability-adjusted life year rate for KOA in China was higher than that in the United States and globally(Feng Xiaoqing, 2022).

KOA not only has a serious impact on the quality of life of patients but also brings huge economic burdens and pressure to families and society. Arthritis of the hip and knee was the 11th leading cause of disability and was on the rise, according to the World Health Organization's (WHO) 2010 Global Burden of Disease study(Ondresik and Azevedo et al., 2017). Chang investigated the medical expenses of patients with KOA in Beijing, the direct cost was 8858±5120 RMB, and the average annual number of visits was 11.8± 4.1(Chang Jinghui, 2020). Therefore, relieving the symptoms of KOA patients and delaying the disease progression would improve their quality of life and reduce the economic pressure on the family and society.

For the treatment of osteoarthritis, both traditional Chinese and Western medicine focused on alleviating pain and symptoms, delaying disease progression, but the final effect was not optimal. Through the interpretation of the "Guidelines for the Diagnosis and Treatment of Osteoarthritis (2021 Edition)"(Fan ZJ, 2022) and the literature review, it is known that the current treatment of KOA focuses on reducing or eliminating pain, correcting deformities, improving or restoring joint function, and improving patients' quality of life, including basic treatment, drug therapy, surgical treatment, and traditional Chinese medicine conservative treatment. However, there are many issues with surgery including high cost, surgery related risk and complications. Most patients' osteoarthritis are mild. For patients with mild-to-moderate disease, the main treatment is conservative, such as drugs, acupuncture, massage, physiotherapy, etc. For this population, it is of vital importance to slow down the progression of their disease. According to the "healthy China 2030" plan outline(Qiu Xi, 2021), the state should "promote the national action on healthy lifestyle, strengthen the guidance and intervention on healthy lifestyle of families and high-risk individuals, and carry out special action on healthy bones". We can implement early intervention on patients through health management, delay disease progression, improve joint function and improve patients' quality of life.

Methods

2.1 Search strategy

Systematic search of PubMed, Web of Science, The Cochrane Library, Embase, and CINAHL for studies on health management dilemmas in KOA patients. The search was conducted from the time the library was constructed until January 2024. The initial search terms were developed for PubMed. The search strategy used a combination of subject terms and free words. Three groups of keywords were combined in the search strategy: (1) Osteoarthritis, Knee; (2)Health management; (3) Dilemma. The specific search strategy is shown in Table 1.

Table 1 PubMed search strategy

Steps	Search strategy
#1	Search: (((Dilemma[Title/Abstract]) OR (Difficulty[Title/Abstract])) OR (obstacle[Title/Abstract])) OR (impediment[Title/Abstract])
#2	(("Health Information Management"[Mesh]) OR (Health management[Title/Abstract])) OR (health care[Title/Abstract])
#3	((("Osteoarthritis, Knee"[Mesh]) OR (Knee Osteoarthritis[Title/Abstract])) OR (Osteoarthritis of Knee[Title/Abstract])) OR (Osteoarthritis of the Knee[Title/Abstract])
#4	#1 AND #2 AND #3

2.2 Study selection

The search results were imported into and managed by NoteExpress software with the aim of removing duplicate records and completing the process of study selection. Inclusion criteria for the literature were 1) participants were patients with KOA, 2) the topic of the article was relevant to the dilemma of health management, 3) regardless of the study's research type, and 4) published in English. Exclusion criteria were 1) duplication of published literature and 2) unavailability of full text.

2.3 Data extraction

Data extraction from the included studies was independently conducted by two researchers. In case of disagreements, a third researcher was involved to resolve them through discussion. Key descriptive characteristics of the included studies were extracted using a pre-designed table, which included information such as authors, publication year, country, research question, subject characteristics, setting, data analysis methods, and main findings.

Results

3.1 Search results

A total of 496 documents were retrieved, with 441 remaining after deletion of duplicates. After reviewing the titles and abstracts of 441 documents, 390 documents were excluded. The remaining 51 literatures were read in full text and 40 literatures were excluded. 11 literatures were finally included. See table 2.

3.2 Main results

The first article(Ackerman and Livingston et al., 2016) reported that the main barriers to accessing OA care included medical opinion on preserving surgery for later use and the appropriate age for joint replacement. Other common barriers included difficulty in obtaining referrals or appointments, long waiting times, work-related problems, and limited availability of primary and specialist care in some areas. Some participants perceived a lack of effective treatments for osteoarthritis.

The second article(Alami and Boutron et al., 2011) reported identified two main areas of patient perspective: one about the doctor-patient relationship and the other about treatment. Patients felt that their complaints were not taken seriously. They also felt that practitioners acted as technicians, focusing more on the knee than the individual, and they felt that not enough time was spent on information and counselling. They had negative perceptions of medication and there was medical uncertainty about OA, which led to reduced adherence to treatment and a shift to alternative medicine. Patients perceive osteoarthritis of the knee as an age-related and inevitable disease for which there is not much that can be done to change its evolution, for which treatment is not helpful and for which there is not much advice from practitioners.

The third piece of literature(Miller and Osman et al., 2020) showed that many patients expressed little knowledge of osteoarthritis and available treatment options, and that much of the information was obtained from sources outside the healthcare team. They express a fear of joint pain and often change activities to avoid all pain. Many developed complex, time-intensive treatment programmes that were not always evidence-based. Doctors expressed difficulties in treating osteoarthritis due to time constraints and competing agenda items at appointments.

After analysing the participants' interviews in the fourth article(Özcan and Yurten, 2023), the following three main themes emerged: lack of information about conservative treatment, frequent changes of doctor and non-compliance with lifestyle changes. Two sub-themes were identified within the theme of frequent doctor changes: distrust of health personnel and inability to make appointments. In addition, most patients lacked sufficient information about the definition of the disease or the treatment process. These patients stated that they were confused because they had to change doctors frequently; therefore, they did not trust their doctors because each doctor they visited had a different plan for the treatment process.

The fifth article(Tanimura and Morimoto et al., 2011) shows that the dilemmas of KOA health management include the three areas of "suffering in social life," "difficulties in activities of daily living," and "worries about the future of life." The following are some of the areas of concern. Pain, loss of balance, muscle weakness, stiffness and swelling had a significant impact on the difficulties in daily living scores.

The sixth article(Farrokhi and Chen et al., 2016) showed that the most common type of knee pain was tibiofemoral pain only (62 per cent), followed by patellofemoral pain only (23 per cent) and mixed pain (15 per cent). After adjusting for demographics and radiological disease severity, combined pain patterns were associated with a greater likelihood of reporting pain, symptoms, limitations in sports or recreational activities, and lower knee-related quality of life compared to either individual knee pain pattern.

The seventh paper(Uritani and Ikeda et al., 2021) showed that two core categories were extracted from the data: "negative experiences" and "coping difficulties". "Negative experiences" consisted of three main categories: "Self-analysis of the causes of osteoarthritis of the knee", "Difficulties in daily life due to knee symptoms", "Psychological disorders". "Coping difficulties" included three main categories: "How to cope with knee pain and mobility difficulties", "Information considered useful in coping with osteoarthritis of the knee", and "Importance of contact with others". "Importance of connecting with others".

Article 8(Nelligan and Hinman et al., 2020) shows five themes: technology is easy to use and follow (website is easy to use, text messages are easy to use), facilitators of exercise participation (credible OA and exercise information, website functionality, prescribed exercises are simple and easy to follow, unsupervised, freedom to adapt exercises to suit needs, influence of other healthcare experiences), sense of support and accountability (text messages good reminders and prompts, being accountable, tone of voice of text messages and automation may trigger negative emotions [e.g. guilt or shame], inability to contact someone when needed), positive outcomes (knee symptom improvement, confidence in self-management, encouragement to live an active life), practical application of advice (preferably from a health professional, should be available where subsidised) or lower out-of-pocket costs).

The ninth paper(Loew and Brosseau et al., 2016) used logistic regression modelling to explore influences on adherence. Results tended to show that the odds of adhering to an evidence-based walking programme were higher (more than 11 times) if participants were supervised (more than 2.9 times), supported by family/friends (more than 3.7 times), and unaffected by emotional involvement. The odds of adherence were 3.6 times lower for participants who indicated a change in medication intake, and 3.1 times lower (95% confidence interval (CI)) for participants who perceived themselves as exercising less.

The tenth paper(Uritani and Koda et al., 2021) evaluated the inclusion of seven randomised controlled trials from five countries. They assessed various aspects of self-efficacy, including pain, physical functioning, arthritis symptoms (excluding pain), weight management, mobility, and self-regulation. Total scores on the Arthritis Self-Efficacy Scale were also measured. Several studies have reported beneficial effects of group-based and face-to-face self-management education programmes on pain and other symptom management as well as self-regulation, and self-efficacy in knee osteoarthritis.

The eleventh paper(Axford and Heron et al., 2008) reported a gradual decline in mental health in all patients over the study period. Greater pain was associated with reduced coping, increased depression and reduced physical ability. Women were more likely to experience disability. Disability was associated with reduced coping ability, increased depression and experiencing more pain. Subjects from White backgrounds were significantly more likely to have OA knowledge compared to other racial groups. Those with the lowest levels of knowledge experienced more pain; those with the highest levels of knowledge coped better and were less depressed.

Discussion

Recent studies(Driban and Harkey et al., 2020) have shown that KOA is not a purely passive degenerative or wear-and-tear disease, but a variety of reasons that lead to an imbalance between the destruction and repair of joint tissue, resulting in active and dynamic changes in the joint. Effectively controlling the external damage of joint tissue can help to reduce the incidence of KOA or delay the progression of the disease. Studies(Liu Zhaohui, 2020) have shown that the main risk factors that increase joint burden and cause joint tissue damage include occupation, obesity, trauma, joint overuse, muscle weakness, etc., and most of these risk factors are related to daily life and work styles. Therefore, the 2018 edition of the

"Guidelines for the Diagnosis and Treatment of Osteoarthritis" further emphasized the importance of changing work and lifestyle for the treatment of osteoarthritis. At the same time, in accordance with the plan requirements of the "Healthy China 2030 " Plan for Healthy Bones. From the perspective of promoting healthy lifestyles, Nursing staff can help KOA patients avoid disease risk factors, reduce pain, prevent or delay joint degeneration, and improve joint function. From my personal experience, I also suffer from osteoarthritis of the knee. The pain associated with osteoarthritis of the knee and the difficulty in walking limits my movement, which undoubtedly has an impact on my life and work. I think it would be a good momentum for me personally, and for many older people with osteoarthritis of the knee, to have a targeted health education early intervention for osteoarthritis of the knee to prevent further progression of the disease, or even improve it. Because, I am committed to developing and constructing a health education program for the benefit of the people. Although a few scholars have achieved some success in the exploration of KOA health management, due to the large randomness of their research, lack of systematic and rigorous, so the health management system that is really suitable for China's national conditions has not been formed, and the KOA health management model suitable for different regions has not been established. Therefore, a new health education program for KOA patients needs to be constructed to provide guidance for clinical nurses and community nurses to carry out health education.

At present, most studies on KOA health management in China only focus on simple health education. A few scholars have conducted preliminary discussions on the KOA health management model and achieved some achievements. Professor Gao Tao summarized the clinical external treatment of traditional Chinese medicine based on the theory of meridian tendons, providing more scientific and effective ideas and methods for the clinical treatment of KOA(Gao Tao, 2023). Scholar Ma Jun(Ma Jun, 2022) applied community comprehensive treatment and management to improve the joint function of patients with KOA, improve their balance and walking ability, and thus improve their quality of life. Chinese Wang Qing(Q, 2022) Scholar developed a KOA self-management program APP based on mobile medical treatment, named "Guardian joint", and designed the APP icon. The app is currently in the development stage and has taken shape. This further reflects the effectiveness of community nurses in health management.

Conclusion

This study summarises the dilemmas of health management for KOA patients and aims to provide a reference for healthcare professionals to provide better care for this population. Although a few scholars have achieved some success in the exploration of KOA health management, due to the large randomness of their research, lack of systematic and rigour, and the KOA health management model suitable for different regions has not been established. More research is still needed in the future to explore the shortcomings of KOA health management and to establish a complete KOA health management programme and system to promote patients' disease control.

Table 2 Characteristics of the included studies.

Study	Country	Study design	Participants	Sample	Aims or purpose of the study	Main results
Ackerman 2016	Australian	Qualitative study	patients with arthritis of the hip or knee	33	To explore perceived barriers and enablers to receiving conservative and surgical treatment for hip and knee OA	Other common barriers included difficulty obtaining referrals or appointments, long waiting times, work-related issues, and limited availability of primary and specialist care in some areas
Alami 2011	Germany	Qualitative study	KOA patients and practitioners	81	To identify the views of patients and care providers regarding the management of knee osteoarthritis and to reveal potential obstacles to improving health care strategies	Two main domains of patient views were identified: one about the patient – physician relationship and the other about treatments
Miller 2020	US	Qualitative study	KOA patients	11	Understanding patient and physician perceptions of barriers and facilitators to treatment based on KHOA guidelines	Many patients expressed little knowledge about osteoarthritis and available treatment options, and received most of their information from sources outside of their healthcare team. They expressed a fear of joint pain and often changed activities to avoid all pain
Özcan 2023	Turkey	Qualitative study	KOA patients	21	This study aimed to investigate the difficulties faced by patients with knee osteoarthritis during the conservative treatment process	After analysis of the interviews held with the participants, the following three main themes emerged: lack of information about conservative treatment, frequent change of physicians, and non-compliance with lifestyle changes
Tanimura 2011	Japan	scale development and descriptive study	KOA patients	362	The aim of this study was to develop an instrument to assess difficulties in daily life experienced by patients with osteoarthritis of the knee and to investigate factors influencing	The exploratory factor analysis included three domains: 'suffering in social life', 'hardship in activities in daily life' and 'apprehension about the future life'

					difficulties in daily life	
Farrokhi 2016	US	retrospective analysis	KOA patients	2959	To evaluate whether knee pain location can influence symptoms, functional status, and knee-related quality of life in older adults with chronic knee pain	After adjusting for demographics and radiological disease severity, the combined pain pattern was associated with a greater likelihood of reporting pain, symptoms, limitations in sports or recreational activities, and lower knee-related quality of life compared with either individual knee pain pattern
Uritani 2021	Japan	Qualitative study	KOA patients	9	To clarify how Japanese patients with knee OA experience and perceivetheir symptoms and disabilities, and how they face them during conservative care	Two core categories were extracted from the data: ‘Negative experiences’ and ‘Coping with difficulties’
Nelligan 2020	Australian	Qualitative study	KOA patients	16	This study aimed to explore the attitudes and experiences of people with knee OA who accessed the self-directed eHealth intervention and the features perceived as useful to facilitate self-directed exercise	Five themes emerged: (1) techniques were easy to use and follow, (2) exercise participation facilitators, (3) sense of support and accountability, (4) positive outcomes, and (5) practical application of recommendations or lower out-of-pocket costs
Loew 2016	Canada	Cross-sectional study	KOA patients	69	To identify potential factors that could affect adherence and influence the implementation of an evidence-based structured walking program, among older adults diagnosed with knee osteoarthritis	The chances of adhering to an evidence-based walking programme are higher if participants are supervised, supported by family/friends and are not influenced by emotional involvement
Uritani 2021	Japan	Systematic review	KOA patients	--	to evaluate the effects of group-based and face-to-face self-management education programmes	The studies we retrieved included various types of self-management education programs such as cognitive-behavioural counselling, pain

					conducted by health professionals targeting self-efficacy for KOA exclusively.	management education, physical education, weight management education, arthritis self-efficacy management education, and control arms
Axford 2008	UK	Cross-sectional study	KOA patients	170	The goal of the study was to determine the correlation between patients' depression, pain, knowledge of illness, and physical abilities and their response to patient education through	Greater pain was associated with reduced coping, increased depression and reduced physical ability. Women were more likely to experience disability. Disability is associated with reduced coping ability, increased depression and experiencing more pain

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