

MyKOA-Cope: the development of a culturally relevant integrative group psychological intervention for people with chronic knee osteoarthritis pain

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(Key words: chronic pain, knee osteoarthritis, pain coping, cognitive behavior therapy, psychological interventions)

Abstract

Introduction: Knee osteoarthritis is a highly prevalent musculoskeletal condition that causes chronic pain and psychological distress. The biological aspects of arthritis pain can be effectively managed with medication, physiotherapy and surgical procedures. However, no known psychological interventions to manage the psychological aspects of chronic pain have been developed in Sri Lanka.

Objective: The study aimed to develop a culturally relevant integrative group psychological intervention for patients with chronic knee osteoarthritis pain.

Methods: The first phase involved a literature review of existing psychological interventions on chronic pain management, which was used to develop a culturally relevant group psychological intervention named as “MyKOA-Cope: Psychological intervention for chronic knee osteoarthritis”. In the second phase, a Delphi study and a focus group discussion were conducted to evaluate the feasibility of the newly developed intervention.

Results: The MyKOA-Cope is a six-session, in-person group intervention that lasts 45-50 minutes per session. These sessions include: 1) orientation to the intervention; 2) relaxation training; 3) exercise and pacing; pleasant activity scheduling; 4) identify negative automatic thoughts; 5) cognitive restructuring and calming self-statements and 6) termination and maintenance strategies.

Conclusion: The present study developed a culturally appropriate psychological intervention to enhance pain-coping skills among patients with chronic knee

osteoarthritis. This intervention has the potential to address the psychological aspects of chronic pain and contribute to the biomedical model. Future research can validate and tailor the MyKOA-Cope to suit the needs of patients with different illness conditions, literacy levels, and those who speak in Tamil in Sri Lanka.

Introduction

Osteoarthritis is a highly prevalent chronic musculoskeletal condition, causing pain, psychological and physical dysfunction, and reduced quality of life [1, 2, 3]. Arthritis ranks as the fourth common chronic ailment in Sri Lanka [4]. Knee osteoarthritis often associated heightened pain to psychological challenges like pain catastrophizing [3, 5], inadequate coping [6, 7], anxiety [8, 9], depression [10], and social isolation [11]. Treatment should address both physical and psychological dimensions for optimal outcomes [11, 12, 13].

In Sri Lanka, the health care system addresses the biomedical, not psychological, aspects of osteoarthritis [14]. Cognitive behavior therapy (CBT) is well-studied and standard treatment for chronic pain [2, 15, 16]. Active patient engagement in CBT-based interventions is vital for chronic pain management [17], demanding skill practice between sessions [2, 11, 17, 18]. While recognizing that standard CBT interventions can be translated into patients’ native language, the focus here is on developing a culturally relevant CBT intervention for knee osteoarthritis (KOA) to effectively tackle the distinctive psychosocial and cultural factors shaping individuals’ chronic pain experiences.

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Western-designed interventions might reflect individualistic values and communication styles prevalent in Western societies, potentially leading to incongruities when applied to Asian cultural contexts like Sri Lanka, which embrace distinct collectivistic and communication norms [19]. Thus, standard CBT might require cultural adaptation to enhance efficacy in non-Western contexts such as Sri Lanka [19, 20, 21, 22].

The culture-specific CBT intervention outlined here, while seemingly standard in content, transcends language by addressing cultural intricacies that shape distress, coping mechanisms, and help-seeking behaviors. Mere translation to patients' first language, without considering these cultural diversities, could undermine effectiveness [20]. Acknowledging Sri Lanka's diverse cultural landscape, a comprehensive cultural adaptation process is crucial, spanning linguistic, contextual, and value-related disparities [23]. Despite the global use of psychological interventions for pain management, the exploration of culturally relevant interventions for individuals with chronic knee osteoarthritis in Sri Lanka is largely unexplored. This study aims to develop a culturally relevant group psychological intervention for chronic knee osteoarthritis pain.

Methods

Study design and setting

The Medical Research Council framework for the development and evaluation of complex interventions were followed to develop this pain coping skills group intervention [24]. The Medical Research Council framework is a methodical procedure that emphasizes initial preparation to assist the development of complex interventions.

Procedure

The first phase of this study was the development of the pain coping skills group intervention, based on theory and models published on chronic pain psychological interventions in the worldwide literature. The second phase – the feasibility study – was performed with input from experts (clinicians) and patients with knee osteoarthritis (users of the intervention).

Phase 1: Development of a first draft of the culturally-relevant pain coping skills group intervention

A literature search was done on existing psychological interventions for chronic illnesses, pain, and psychological issues faced by those with chronic pain. Further, literature on topics such as the connection between psychological factors, quality of life, cultural variations in how people experience and express pain, and coping skills of those with chronic knee osteoarthritis pain was conducted to identify the most recent research. The

randomized controlled trials on effectiveness of existing psychological interventions for patients with chronic knee osteoarthritis was examined too.

In addition, a 90-minute web-based seminar entitled '*Putting cognitive behavioral skills into your clinical practice*' was attended by the principal investigator, hosted by the Pain Management Research Institute at the Faculty of Medicine and Health, the University of Sydney. The cognitive behavioral skills learned during the webinar series were applied to develop and adapt the newly created psychological intervention.

The initial draft of the culturally-relevant psychological intervention was formulated by the principal investigator, who is a clinical psychologist, utilizing the principals of CBT and a comprehensive review of literature. The objective of developing this culturally relevant psychological intervention was to enhance patients' ability to utilize both cognitive and behavioral pain coping strategies with a specific focus on reducing psychological distress and improving their quality of life.

Phase 2: Testing the feasibility of the newly developed pain coping skills intervention

The two Delphi rounds

During the second phase of the present study, two Delphi rounds were conducted using a widely accepted technique to generate, measure, and develop consensus in health research known as the Delphi method [25, 26].

The study's expert panel comprised of seven experts: (1) four clinical psychologists, (2) a rheumatologist, (3) a physiotherapist, and (4) an occupational therapist. To evaluate the content and consensual validity of the developed intervention, the panel of experts was invited to review the six sessions of the intervention 1) orientation to the *MyKOA-Cope* intervention; 2) relaxation training; 3) exercise and pacing; pleasant activity scheduling; 4) identify negative automatic thoughts; 5) cognitive restructuring and calming self-statements and 6) termination and maintenance strategies. Further, the experts were invited to provide their comments and feedback on worksheets and homework assignments (given to the patients) of the intervention (e.g., SMART goal setting worksheet, relaxation benefits and tips, deep breathing, guided imagery script).

The Delphi method was employed in this study to assess these areas; (1) usefulness of each session and worksheets to improve pain coping skills, (2) appropriateness of each session and worksheets to be used for patients with chronic knee osteoarthritis, (3) cultural relevance of each session and worksheets to be used in Sri Lanka, and (4) self-explanatory nature of sessions and worksheets when used by physiotherapists/occupational therapists when implementing the intervention. About the agreement, a 9-point Likert scale; where zero denoted complete disagreement and nine denoted complete

agreement was adopted. The threshold for consensus was set at a minimum of 70% of the number of respondents with a level of agreement ≥ 6 (agree or strongly agree). Statements that reached the pre-established cut-off were directly included in the final recommendations. For the statements that had not reached the cut-off, a reevaluation (rephrase) was carried out. Then, the second Delphi round was started. It provided the same rules as the first. Finally, the intervention was revised based on the comments received, and a consensus-based validation was achieved.

Focus group discussion

After establishing content and consensual validity, a focus group discussion was conducted to gather information on the user-friendliness of the intervention for the selected sample. A convenience sample of chronic knee osteoarthritis patients ($n = 8$) was recruited for a focus group to gather feedback on the developed intervention's content, structure, and presentation style. The principal investigator, with the help of a consultant rheumatologist at the rheumatology clinic of the National Hospital of Sri Lanka (NHSL), recruited eligible participants for the focus group during their hospital clinic appointments. The inclusion criteria were: 1) age ≥ 50 years and, 2) having received a knee osteoarthritis diagnosis by a consultant rheumatologist [11]. The exclusion criteria were: 1) knee surgery within the past six months [11], 2) self-reported psychiatric history, 3) neurological conditions such as Parkinson's disease, multiple sclerosis, stroke, and 4) patients with cancer pain.

Participants were recruited by the principal investigator and provided with an information sheet about the focus group. After having sufficient time to review the information and ask any questions, written informed consent was obtained before the group discussion commenced. Participants were informed that they could withdraw from the focus group at any time. The focus group discussion, lasting 40 minutes, was conducted as a structured interview by the principal investigator in the rheumatology clinic at the NHSL, with no compensation provided to participants.

During the focus group discussion, seven open-ended questions were utilized to elicit responses from participants with the objective of gathering their perceptions on the newly developed psychological intervention's utility, appeal, and usability. Examples of such questions include: (1) Would you think this intervention is clear and understandable? (2) Is this intervention easy to use? (3) How socially and culturally applicable is this intervention for coping with chronic pain? and (4) How successful do you think this intervention will be in helping you control and decrease your knee osteoarthritis pain?

The study obtained approval from the Ethics Review Committee, Faculty of Medicine, University of Colombo, Sri Lanka. Institutional ethics clearance was obtained from

the Ethics Review Committee, National Hospital of Sri Lanka, Colombo. Informed written consent was obtained from study participants before enrolling in the focus group discussion.

Results

The study followed a systematic approach to develop a culturally relevant, CBT based group psychological intervention that considered language, culture and context. The findings from the phase 1 and phase 2 are presented below.

Phase 1: MyKOA-Cope: Psychological intervention for chronic knee osteoarthritis

The developed culturally relevant CBT-based intervention is aligned with pain coping approaches from prior knee osteoarthritis studies [11]. Please refer Table 1 for a detailed breakdown of the *session titles, tasks, skills learned, and duration of the intervention*. MyKOA-Cope spans six weeks with 45-50 minute in-person group sessions. Participants are guided through skill rehearsal and encouraged to practice these skills at home to enhance their effectiveness in pain-related situations. Homework practices will be reviewed at each session. Table 2 summarizes the culture-specific adaptations to CBT pain coping.

Phase 2: Results obtained through the Delphi study and the focus group discussion

Delphi study

Two Delphi rounds were conducted from May to September 2021, with a panel of seven experts. The response rate remained at (100%) for both rounds. A consensus threshold of 70% was set for intervention sessions that reached a minimum level of agreement of ≥ 6 (agree or strongly agree). Following the first round of the Delphi, the three sessions; 3) exercise and pacing; pleasant activity scheduling; 5) cognitive restructuring and calming self-statements and 6) termination and maintenance strategies reached the pre-established cut-off and were directly included in the final draft of the MyKOA-Cope intervention.

The three sessions of the MyKOA-Cope intervention; orientation to the intervention; relaxation training; and identifying negative automatic thoughts, required re-evaluation and rephrasing before the second round of the Delphi due to not meeting the cut-off criteria. Feedback from experts indicated that the above mentioned sessions were not met the criteria. The item, "Are all sessions of the intervention self-explanatory for physiotherapists/occupational therapists to implement the intervention?" received a score of ≤ 5 for the sessions. The intervention was revised based on feedback from the experts. In the second round, the consensus ($\geq 70\%$) was achieved for all six sessions.

Table 1. Session titles, tasks, skills learned, and duration of the *MyKOA-Cope* intervention

<i>Session</i>	<i>Session title</i>	<i>Task/s or skills learning</i>	<i>Duration (minutes)</i>
Week 01	Orientation to the <i>MyKOA-Cope</i> intervention	Pre-group planning and orientation to the intervention	15
		Chronic pain education – provide a brief overview of the cognitive behavior chronic pain model	15
		Goal setting and homework	15 to 20
		Obtaining participants feedback and answer their questions (Q & A session)	5 to 10
Week 02	Relaxation training	Discuss week 1 homework	5 to 10
		Pre-preparation instructions for relaxation techniques, discuss benefits of relaxation	10
		Practicing relaxation techniques	30
		Homework, Q & A session	5 to 10
Week 03	Exercise and pacing; pleasant activity scheduling	Discuss week 2 homework	10
		Education on pacing and over activity cycle	10
		Exploring pleasant activities	10
		Learning on benefits of pleasant activities	
		Preparing a pleasant activity schedule	20
		Homework, Q & A session	10
Week 04	Identify negative automatic thoughts	Discuss week 3 homework	10
		Teaching relationship between thoughts, emotions and chronic pain	15
		Training on identifying negative automatic thoughts (provide examples)	20
		Homework, Q & A session	15
Week 05	Cognitive restructuring and calming self-statements	Discuss week 4 homework	10
		Challenging negative automatic thoughts	15
		Learning coping self-statements	15
		Homework, Q & A session	10
		Early preparation for the termination	10
Week 06	Termination and maintenance strategies	Discuss week 5 homework	10
		Review of progress	10
		Education on coping with flare-ups	25
		Termination, Q & A session	15

Table 2. Cultural considerations in CBT-based pain coping intervention

<i>Cultural factors</i>	<i>Modification to newly developed intervention</i>
Collectivism	<ul style="list-style-type: none"> • Collaborative goal setting involving family aspirations and values • Shared coping strategies like family outings, and act of altruism • Role of family and social support
Cultural metaphors and stories	<ul style="list-style-type: none"> • Psychoeducation on chronic pain includes cultural metaphors and stories. • Session 1 illustrating an Asian individual facing chronic pain within their community helps convey challenges related to beliefs
Communication styles	<ul style="list-style-type: none"> • Culturally appropriate methods, such as metaphors and creative mediums, to address sensitive topics indirectly has been adapted
Spirituality and religion	<ul style="list-style-type: none"> • Integrated spiritual and religious beliefs into therapy • Understand the importance of visiting religious places such as temples, churches, mosques and “<i>dewala</i>” We have thoughtfully incorporated visits to these places into pleasant activity schedule in session 3

Focus group discussion

In the focus group discussion, 87.5% of participants were female and they reported being generally unfamiliar with CBT. Participants responded positively to the intervention sessions and found them clear, easy to understand, and useful for coping with chronic pain. Six out of eight participants rated the intervention as “*very clear*”, “*easy to use*”, “*understandable*”, “*clear and understandable for patients like us*”, “*very clear*” and “*useful for patients who have chronic pain*” Participants also found the intervention to be socially and culturally applicable, with some noting that certain cultural references such as “*temple, kovil, church and mosque*” were particularly relevant to Sri Lankan culture.

Discussion

The current study possesses various crucial aspects, including being the first-known study that has developed a culturally relevant CBT-based pain coping skills group intervention aimed at improving pain coping skills in patients with chronic knee osteoarthritis in Sri Lanka. The findings from the Delphi study and the focus group discussion indicated that the newly developed culturally appropriate MyKOA-Cope psychological intervention, would prove to be highly advantageous for Sinhala-conversant patients with chronic knee osteoarthritis pain.

In Sri Lanka, it is challenging for patients with chronic knee osteoarthritis pain to access psychological interventions in the government health sector since psychologists are currently not recruited. However, the implementation of this culturally tailored intervention, delivered by trained physiotherapists and occupational therapists, has the potential to bridge this gap and increase accessibility to evidence-based interventions for chronic knee pain management. By training non-psychology health care professionals, the MyKOA-Cope intervention can be widely disseminated to populations who may otherwise not have access to psychological support for their chronic knee osteoarthritis pain. This approach has the potential to improve the overall quality of care for patients in Sri Lankan health sector.

There are a few limitations to this study. Only Sinhala-conversant patients will be recruited for the study. Another limitation is the participants who are able to read and write, understand and follow the given instructions will be selected. This limits the generalizability of the study findings.

Conclusion

The present study endeavored to develop a culturally appropriate psychological intervention to enhance pain coping skills among patients with chronic knee

osteoarthritis. It is envisaged that future researchers will be able to validate further and tailor the MyKOA-Cope psychological intervention to suit the needs of patients with different illness conditions, literacy levels and to those who speak in Tamil in Sri Lanka. In the next phase of this larger study, a randomized controlled trial will be conducted to assess the effectiveness of the newly developed psychological intervention. Upon confirmation of the effectiveness of the intervention, it has the potential to be implemented in clinical settings, which can result in a significant impact on the management of chronic knee osteoarthritis pain in Sri Lanka.

Declarations

Author contributions

All authors contributed to the study design, conducted the study and interpreted study data. Gunasekara M drafted the manuscript, and all authors reviewed and approved the final version.

Competing interest

Authors declare that there are no competing interests.

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Ethics approval

Ethics approval for the study was obtained from the Ethics Review Committee, Faculty of Medicine, University of Colombo (Ref. EC-20-032). Institutional ethics clearance was obtained from the Ethics Review Committee of the National Hospital of Sri Lanka (Ref. AAJ/ETH/COM/2021/MAR). Written consent was obtained from study participants before enrolling in the focus group discussion.

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Abbreviations

CBT - Cognitive Behavior Therapy

KOA - Knee Osteoarthritis

NHSL - National Hospital of Sri Lanka

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