



CULTURALLY TAILORED PSYCHOLOGICAL INTERVENTION TO ENHANCE PAIN COPING IN SRI LANKAN PATIENTS WITH KNEE OSTEOARTHRITIS: A RANDOMISED CONTROLLED TRIAL

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Knee osteoarthritis is prevalent among the aging population in Sri Lanka, causing persistent pain and functional limitations that significantly impact the quality of life. Effective pain management is crucial, yet many patients struggle due to inadequate coping strategies and psychological support. The trial aims to evaluate the outcome of a culturally relevant psychological intervention designed to enhance pain coping strategies in patients with chronic knee osteoarthritis by examining significant differences in self-reported pain coping strategies within and between groups at baseline, post-intervention, and follow-up. This open-label, parallel-group, randomised controlled trial involved 74 participants (37 per arm) aged over 50 from the rheumatology clinic at the National Hospital of Sri Lanka. Recruitment began after receiving ethics review committee approval from the Faculty of Medicine, University of Colombo, and registering at the Sri Lanka Clinical Trials Registry. Using block randomization, participants were assigned to either a six-week psychological intervention or waitlist control group. The coping strategies questionnaire assessed outcomes at baseline, immediately post-intervention, and three-month post-intervention. Repeated measures analysis of variance was employed to evaluate within-group changes over time and between-group differences. A total of 73 (98%) completed the study, with 86% of the participants being female. The intervention group showed significant improvements in specific coping strategies, including diverting attention, reinterpreting pain sensation, coping with self-statements, ignoring pain sensation, and reducing catastrophizing, compared to the control group. Additionally, the intervention group demonstrated significant increases in pain-related behavioural activities. However, there were no significant differences between the groups in terms of changes related to praying or hoping and increased pain behaviours. This culturally relevant psychological intervention significantly enhanced pain coping strategies in patients with chronic knee osteoarthritis. These findings suggest the intervention's potential for improving well-being and emphasize the need for further research to explore its long-term effectiveness and practical applications in clinical settings.

Keywords: Knee osteoarthritis, Pain coping strategies, Psychological intervention, Randomised controlled trial

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Knee osteoarthritis (KOA) is a degenerative joint disease affecting Sri Lanka's aging population, causing persistent pain, stiffness, and reduced mobility, which significantly impairs the quality of life (Hettihewa et al., 2018; Wojcieszek et al., 2022). Globally, KOA prevalence is increasing due to aging and obesity (Hunter & Bierma-Zeinstra, 2019). In Sri Lanka, treatment focuses on biomedical interventions like medication and surgery, often neglecting the psychological aspects of chronic pain (Gamagedara et al., 2020; Stanos et al., 2016). Psychological interventions, particularly Cognitive Behavior Therapy (CBT), have proven effective in improving pain coping and reducing disability in patients with KOA (Bennell et al., 2012; Broderick et al., 2014; Ismail et al., 2017). Despite extensive global research on pain management, few studies address culturally relevant psychological interventions in Sri Lanka. Given the influence of cultural beliefs on health behaviours, psychological interventions must align with local values (De Silva, 2015; Perera et al., 2014). In this larger study, the first stage focused on developing a culturally tailored CBT-based intervention, followed by a randomised controlled trial in the second stage to evaluate its effectiveness in enhancing pain coping.

Study Objective: The present trial aims to evaluate the outcome of a culturally relevant psychological intervention designed to enhance pain coping strategies in patients with chronic KOA by examining significant differences in self-reported pain coping strategies within and between groups at baseline, post-intervention, and follow-up.

METHODOLOGY

Study Design: This open-label, parallel-group, randomized controlled trial evaluated the effectiveness of a CBT-based culturally tailored psychological intervention compared to a waitlist control group. Assessments were conducted at baseline, post-intervention (6 weeks) and at a three-month follow-up to measure changes in pain coping strategies.

Study Setting: Participants were recruited from the Department of Rheumatology and Rehabilitation, National Hospital of Sri Lanka, Colombo, Sri Lanka.

Inclusion and Exclusion Criteria: Participants eligible for the trial were aged 50 years or older, with a rheumatologist-confirmed diagnosis of knee osteoarthritis, experienced knee pain for at least three months, and had an average knee pain score of 40 or higher on a 100 mm visual analogue scale over the past week. They needed to be conversant in Sinhala, with the ability to read, write, and understand the language. Exclusion criteria included recent knee surgery within the past six months, planned lower limb surgery in the next 12 months, current or recent (within three months) use of oral or intra-articular corticosteroids, and systemic arthritis conditions such as rheumatoid arthritis. Additionally, participants were excluded if they had participated in a pain coping training program within the past two years, had mild cognitive impairment (Montreal Cognitive Assessment-Sinhala score < 26), a confirmed diagnosis of mental illness and experiencing cancer pain.

Sample size: Based on literature indicating an effect size (Cohen's *d*) of 0.5 to 0.6, a sample size of 64 participants was calculated to achieve 80% power. Accounting for a 15% attrition rate, the final required sample size was 74 participants (37 per arm).



Procedure: Following ethics review committee approval from the Faculty of Medicine, University of Colombo and registration at the Sri Lanka Clinical Trials Registry, recruitment began through advertisements, healthcare provider referrals, and clinic records. Detailed information sheets and consent forms were provided to ensure informed participation. Participants were randomly assigned to either the intervention group (psychological intervention and treatment as usual) or the waitlist control group (treatment as usual) using block randomization (1:1 ratio). Participants in the intervention group attended weekly 60-minute sessions for six weeks. Participants in both groups completed outcome measures at baseline, post-intervention, and at a three-month follow-up. The waitlist control group received the intervention after the follow-up. The secondary outcome was assessed using the Coping Strategies Questionnaire (CSQ).

Psychological Intervention Overview: The psychological intervention consisted of six weekly 60-minute sessions delivered by a licensed clinical psychologist. Sessions included cognitive and behavioural pain coping strategies, guided rehearsals, handouts, and audio recordings for relaxation techniques. Participants were asked to practice pain coping strategies at home. Each session began with a review of homework, addressing barriers, and setting goals for skill application.

Statistical Analysis: Repeated measures analysis of variance was employed to analyse the differences within the intervention group over time and between the intervention and waitlist control groups.

RESULTS

The study included 73 participants: 36 in the control and 37 in the intervention groups. The majority were female (86.7%), Sinhalese (80%), and Buddhist (70.7%). Most lived with their spouse and children (57.3%), with 40% reporting knee pain for 3-5 years. Herbal (24%) and native medicines (42.7%) were commonly used for pain management, and 65.3% sought treatment for other ailments.

Table 1 presents the mean scores on the CSQ subscales for both the intervention and control groups at baseline, post-intervention, and follow-up. Repeated measures analysis of variance revealed significant improvements in the intervention group’s pain coping strategies over time, compared to the control group. Post-intervention, the intervention group showed higher scores in diverting attention (95% CI, 16.7 to 19.6, $P < 0.01$), reinterpreting pain sensations (95% CI, 17.7 to 19.7, $P < 0.01$), coping self-statements (95% CI, 20.2 to 23.2, $P < 0.01$), and ignoring pain sensations (95% CI, 18.8 to 21.1, $P < 0.01$). These gains were maintained at the three-month follow-up: diverting attention (95% CI, 14.3 to 16.9, $P < 0.05$), reinterpreting pain sensations (95% CI, 16.0 to 18.4, $P < 0.05$), coping self-statements (95% CI, 21.6 to 25.1, $P < 0.01$), and ignoring pain sensations (95% CI, 20.2 to 23.0, $P < 0.01$). There was a significant reduction in catastrophizing post-intervention (95% CI, 12.4 to 14.5, $P < 0.01$), which further decreased at follow-up (95% CI, 8.5 to 11.6, $P < 0.01$). No significant changes were found in praying or hoping and increased pain behaviour ($P > 0.05$).

Table 1. Mean Scores on Outcome Measures Across Time, by Group*

Outcome CSQ±	Baseline		Post-intervention		Follow-up	
	Intervention (n = 37)	Control (n = 37)	Intervention (n = 37)	Control (n = 36)	Intervention (n = 37)	Control (n = 36)
DA	13.5 (5.3)	12.9 (2.2)	18.1 (4.2)	12.2 (2.4)	15.6 (3.8)	10.2 (1.9)
RPS	14.2 (3.5)	15.1 (2.6)	18.7 (2.9)	14.4 (2.4)	17.2 (3.4)	13.5 (2.1)
CSS	16.3 (4.7)	17.8 (4.1)	21.7 (4.3)	17.0 (4.0)	23.3 (5.0)	16.6 (3.2)



IPS	16.1 (4.0)	16.3 (3.8)	20.0 (3.4)	16.2 (3.7)	21.6 (4.1)	16.2 (3.2)
P/H	22.2 (4.6)	22.2 (2.6)	24.2 (2.2)	21.5 (2.4)	21.9 (2.7)	20.1(2.2)
CAT	20.5 (3.9)	19.8 (4.1)	13.4 (3.0)	20.2 (3.4)	10.1 (4.5)	19.1 (2.8)

CSQ = Coping Strategies Questionnaire; DA = Diverting Attention; RPS = Reinterpretation Pain Sensation; CSS = Coping Self-Statements; IPS = Ignoring Pain Sensation; P/H = Praying or Hoping; CAT = Catastrophizing

*values in parentheses are Standard Deviations ±Higher scores indicate more frequent use of coping skills

DISCUSSION

The results indicate that the culturally tailored CBT-based intervention significantly enhanced pain coping strategies in KOA patients, as seen in improvements in diverting attention, reinterpreting pain, and using coping self-statements (all $P < 0.01$). These findings not only align with but also reinforce global research on CBT's efficacy in chronic pain management, supporting its role as an effective adjunct to biomedical treatment (Bennell et al., 2012; Broderick et al., 2014). The intervention also led to a significant reduction in catastrophizing ($P < 0.01$), which is consistent with literature showing that altering maladaptive pain-related thoughts can reduce pain-related disability (Bennell et al., 2012). The absence of significant changes in praying or hoping and increased pain behavior ($P > 0.05$) may reflect the influence of cultural factors on coping strategies, as noted in previous studies (Perera et al., 2014). These results underscore the importance of integrating culturally tailored psychological interventions into KOA management in Sri Lanka, contributing significantly to a growing body of research on pain management.

CONCLUSION

This study demonstrated that a culturally tailored psychological intervention significantly enhanced pain coping strategies in Sri Lankan patients with chronic knee KOA. Participants in the intervention group showed notable improvements in strategy such as diverting attention, reinterpreting pain sensations, and using coping self-statements. These findings are consistent with previous research on cognitive-behavioral interventions for chronic pain (Bennell et al., 2012; Broderick et al., 2011). The improvements were sustained at the three-month follow-up, suggesting long-term efficacy. Additionally, there was a significant reduction in catastrophizing within the intervention group. However, no significant changes were observed in praying or hoping and pain behaviours increased, highlighting areas for refinement in future interventions. The intervention was designed to align with Sinhala-speaking patients' cultural values, including local beliefs about pain and mindfulness rooted in Buddhist practices. This cultural relevance likely contributed to improved patient engagement and outcomes.

Strengths and Limitations: The study provides robust evidence as a randomized controlled trial, but the open-label design introduces potential bias. Participant awareness of treatment allocation could have influenced self-reported outcomes. Future studies using double-blind designs would reduce this bias. The follow-up period was limited to three months, extending; it could provide insights into the long-term effects. Additionally, adapting the intervention for Tamil-speaking patients and including participants from diverse educational backgrounds would enhance its applicability.



RECOMMENDATIONS:

It is recommended that culturally sensitive psychological interventions be integrated into standard care for KOA in Sri Lanka, supported by previous research on the benefits of culturally relevant treatments (Bennell et al., 2012). Further studies should extend follow-up periods, employ double-blind designs, and adapt the intervention for diverse linguistic and educational groups. The collaboration with healthcare professionals and policymakers is not just crucial, but it is vital to effectively implementing such interventions across broader healthcare settings.

REFERENCES

- Bennell, K. L., Ahamed, Y., Bryant, C., Jull, G., Hunt, M. A., Kenardy, J., ... & Egerton, T. (2012). A physiotherapist-delivered integrated exercise and pain coping skills training intervention for individuals with knee osteoarthritis: a randomised controlled trial protocol. *BMC musculoskeletal disorders*, 13(1), 129.
- Broderick, J. E., Keefe, F. J., Bruckenthal, P., Junghaenel, D. U., Schneider, S., Schwartz, J. E., ... & Gould, E. (2014). Nurse practitioners can effectively deliver pain coping skills training to osteoarthritis patients with chronic pain: A randomized, controlled trial. *Pain*, 155(9), 1743-1754.
- De Silva, M. W. A. (2015). The role of cultural beliefs and practices in chronic pain management in Sri Lanka. *Journal of Pain Research*, 8, 765-772.
- Gamagedara, N., Jayasinghe, S., & Weerasinghe, M. (2020). The management of knee osteoarthritis: Perspectives from Sri Lanka. *Sri Lanka Journal of Medicine*, 29(1), 21-27.
- Hettihewa, A. P., Gunawardena, N. S., Atukorala, I., Hassan, F., Lekamge, I. N., & Hunter, D. J. (2018). Prevalence of knee osteoarthritis in a suburban, Sri Lankan, adult female population: a population-based study. *International journal of rheumatic diseases*, 21(2), 394-401.
- Hunter, D. J., & Bierma-Zeinstra, S. (2019). Osteoarthritis. *The Lancet*, 393(10182), 1745-1759.
- Ismail, F., Hassan, S., & Taib, M. (2017). Cognitive-behavioral therapy for chronic pain management. *Journal of Pain Research*, 10, 2351-2360.
- Perera, H., Wijewardena, K., & Aluthwelage, R. (2014). Cultural factors in health and health care in Sri Lanka. *Ceylon Medical Journal*, 59 (4), 114-117.
- Stanos, S., Brodsky, M., Argoff, C., Clauw, D. J., D'Arcy, Y., Donevan, S., ... & Park, P. W. (2016). Rethinking chronic pain in a primary care setting. *Postgraduate medicine*, 128(5), 502-515.
- Wojcieszek, A., Kurowska, A., Majda, A., Liszka, H., & Gądek, A. (2022). The Impact of Chronic Pain, Stiffness and Difficulties in Performing Daily Activities on the Quality of Life of Older Patients with Knee Osteoarthritis. *International journal of environmental research and public health*, 19(24), 16815.

