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Title	Non-pharmacological interventions for managing pain in community-dwelling older adults
Type	Article
URL	https://clok.uclan.ac.uk/id/eprint/40404/
DOI	10.12968/bjcn.2022.27.1.28
Date	2022
Citation	Hill, James Edward and Harrison, Joanna (2022) Non-pharmacological interventions for managing pain in community-dwelling older adults. British Journal of Community Nursing, 27 (1). ISSN 1462-4753
Creators	Hill, James Edward and Harrison, Joanna

It is advisable to refer to the publisher's version if you intend to cite from the work.
10.12968/bjcn.2022.27.1.28

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Non-pharmacological interventions for managing pain in community-dwelling older adults

Commentary on: Tang SK, Tse MMY, Leung SF, Fotis T. 2019. The effectiveness, suitability, and sustainability of non-pharmacological methods of managing pain in community-dwelling older adults: A systematic review. BMC Public Health. 19(1):1488.

Key Points
- Non-pharmacological interventions may reduce pain in community dwelling older adults.
- There is substantial variation in the intervention types which makes specific estimations of effect difficult.
- Further high-quality multi-arm non-pharmacological interventions are requi.

Introduction

Pain in the elderly is a common problem with a prevalence of 28% to 60% Chung and Wong 2007). This group has many aspects to be taken into consideration for treatments of pain conditions both acute and chronic (Ali et al. 2018). Specifically, comorbidities can restrict the use of many of the common pain medications (Ali et al. 2018). The changes in the pharmacokinetics and pharmacodynamics make it difficult to achieve a balance between the appropriate dosage for effective pain relief and the side effects (Chung and Wong 2007). The effective control of pain in the elderly needs more than just pharmacological management (Noroozian et al. 2018). Non-pharmacological interventions have been shown to have potential when combined with pain medication (Shropshire et al. 2019). However previous reviews in this area included methodologically weak studies and are becoming out of date (Tang et al. 2019). The systematic review by Tang et al. (2019) aims to assess the effectiveness, suitability and sustainability of non-pharmacological interventions for the management of pain in community dwelling elderly people.

Aim of commentary

This commentary aims to critically appraise the methods used in the review Tang et al, (2019) and expand upon the findings in the context of clinical practice.

Methods

A comprehensive multi-database search was undertaken from date of inception to March 2019. Only randomised controlled trials (RCTs) published in English from 1 January 2005 to 28 February 2019 where included. Trials that were included assessed the effectiveness of non-pharmacological interventions for non-malignant chronic pain management in older adults (over 65 years of age) in the community, but not in a care home. Screening, data extraction and assessment of bias (Jadad Scale) were carried out by three independent reviewers. The primary outcome for the review was reduction in the mean intensity of pain. Pain intensity levels were converted to a numerical rating scale ranging from zero to ten, irrespective of which assessment tool was used. Individual study improvement was then assessed by comparing the pre-intervention mean pain intensity to the post-intervention mean pain.

Results

Out of the 662 articles, ten randomised controlled trials were identified comparing acupressure, acupuncture, guided imagery, qigong, periosteal stimulation, and Tai Chi. A wide range of pain assessment scales were used, these were visual analogue scale, numeric rating scales, and the Western Ontario and McMaster University Osteoarthritis Index. Using the Jadad Scale, only two studies scored five out of five with the remaining studies scoring between two and three. The main methodological issue was regarding the lack of double blinding. The systematic review reports that all included RCTs demonstrated a decrease in pain intensity from pre- to post-intervention. Based on the undefined conversion of multiple pain scales to a 10-point pain scale, reductions ranged from − 3.13 to − 0.65 in the intervention group from pre- to post-intervention. Six out of ten studies reported an undefined statistically significant improvement. Additionally, seven studies found an undefined statistically significant decrease in pain intensity in the follow-up assessment.

Commentary

Using the Amstar2 tool for critical appraisal of systematic reviews, 7 out of the 16 criteria were judged to be satisfactory for this review. The main areas of concern were the methods of synthesis. This review used an unclear method of conversion for pain assessment tools to a 10-point scale and presented a range of effects. However, due to the ordinal data used in the pain assessment tools, this type of rough conversion should not be carried out. Alternatively, the more appropriate method of a meta-analysis using standardized mean difference could have been used (Higgins 2021). Furthermore, when presenting the range estimation of effect, only the pre-and post-test intervention group were presented which could be substantially misleading as there is no comparator. There were also concerns regarding the primary studies included in this systematic review with the majority of studies not blinding participants, potentially effecting the subjective estimates of pain. Based on this and the other methodological issues in both the review and the included studies, substantial caution should be used when applying these findings to practice.

Nevertheless, there were six out of ten RCTs which found a statistically significant difference between intervention and control. These interventions were acupuncture (2 RCTs), Tai Chi (2 RCTs), Periosteal stimulation (1 RCT) and Qi-therapy (1 RCT). Previous reviews have demonstrated that acupuncture

and Tai Chi has potential in reducing pain in the immediate term for adults with low back pain (Kong et al. 2016; Mu et al. 2020). However, in both reviews the primary research was judged to be weak and there were limited long-term benefits demonstrated. Based on this review, there is insufficient evidence for clinical recommendations on the use of non-pharmacological interventions for pain management in community dwelling older adults. However, pain management for older adults in the community still presents a unique challenge due to the complexity of both polypharmacy (Dagli et al. 2014) and multimorbidity factors (Salive 2013) which result in the need for effective non-pharmacological interventions.

Thus, further high-quality, multi-centre randomised controlled trials are still required in this area and wherever possible both patients and assessors should be blinded to the intervention. Core outcome sets should also be used, and adverse events and attrition rates should be reported. Due to the substantial methodological weakness of this review, there is a need for this review to be updated and appropriate methods of synthesis applied. Furthermore, as it is unlikely that any accurate estimation of effect will be established (due to the wide range of intervention types and very specific population), it may be required that this review is re-scoped.

CPD reflective questions

1. What are the main limitations of the primary studies included in this review?
2. What future research is required in this area?
3. If applying a Non-pharmacological intervention to practice what concerns would you have?

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