

REVIEW

The Effect of Structured Patient Education on Physical Activity in Patients with Peripheral Arterial Disease and Intermittent Claudication: A Systematic Review

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WHAT THIS PAPER ADDS

This article describes the first comprehensive systematic review of patient education interventions for physical activity (PA) improvement for individuals with intermittent claudication (IC). The current evidence is inconclusive regarding the effect of patients' education on PA of individuals with IC. Further research is warranted to establish the effects and optimal design of education interventions.

Objectives: The aim was review the components and effects of patient education interventions to improve physical activity (PA) in patients with peripheral arterial disease (PAD) and intermittent claudication (IC), and patients' experiences of these interventions.

Data sources: CINAHL, Cochrane Library, Ovid, ProQuest, AMED, MEDLINE, PsycINFO, Web of Science Core Collection, and PEDRO, and Trial registers and directory of Open Access repository websites and Web of science conference proceedings were searched. Hand searching of reference lists of identified studies was also performed to identify studies that reported the effect of patient education interventions on daily PA and/or walking capacity in individuals with PAD and IC, or studies investigating patients' experiences of such interventions.

Methods: A systematic search was conducted in June 2016 (updated in March 2017). Primary outcomes were daily step count and self reported PA; the secondary outcome was absolute claudication distance. There was substantial heterogeneity in terms of modalities of patient education in the included studies; hence a narrative synthesis was implemented.

Results: Six studies (1087 participants) were included in the review. Findings from a small number of high quality trials demonstrated potential for PA improvement with structured education interventions. Nevertheless, evidence is currently inconclusive regarding the effect on daily PA and walking capacity of patients with IC. Patients reported that they valued the interventions studied, finding them acceptable and important in improving their PA, motivating and empowering them to self manage their condition.

Conclusions: The evidence from the review is limited and inconclusive regarding the effectiveness of structured education for increasing PA in patients with PAD and IC. More rigorous trials are needed before recommendations can be made. Future interventions should consider the key criteria for a structured patient education programme, and also report patients' experiences and perceptions.

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INTRODUCTION

Peripheral arterial disease (PAD) is a growing public health burden. PAD leads to arterial stenosis and consequently inadequate blood flow to the peripheries.^{1,2} This commonly presents as pain in the lower limb(s) precipitated by exercise and relieved by rest,³ defined as intermittent claudication (IC). Patients with IC experience functional decline and limitation in physical activity (PA),⁴ further raising the risk of a cardiovascular event in a vascular system already

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compromised by the underlying atherosclerosis.^{1,3} Therefore, patients with PAD present with an increased risk of cardiovascular and cerebrovascular events similar to those with coronary heart disease.⁵

Lower daily PA levels have been recognised as a strong predictor of increased morbidity and mortality in this population.⁶ Supervised exercise programmes (SEPs) are recommended as a primary therapy for this population,⁷ and have been shown to improve the treadmill walking distances of patients with IC.^{8,9} However, most studies reporting such improvements did not investigate daily PA, and those that have did not find improvements in daily PA.⁹ Reduced self efficacy, attributed to poor understanding of the disease and uncertainty regarding the importance of walking has been identified as a major barrier to exercise uptake in this population.^{10,11} These findings suggest that a patient centred self management approach to improving PA, including structured patient education, may be beneficial in this population.

Although the current literature supports educating patients with IC about their disease pathology and the importance of walking,^{10,11} neither evidence of effectiveness nor patients' perceptions of interventions have been established. The aim of this review was to examine the effect of patient education on improving PA in individuals with PAD and IC and the experiences and perceptions of patients of these interventions.

METHODS

The protocol for this review was registered with the International Prospective Register of Systematic Reviews (CRD42015027314) and has been published elsewhere.¹²

Eligibility criteria

Studies reporting the effect of patient education interventions on daily PA and/or walking capacity in individuals with PAD and IC, or studies investigating patients' experiences of such interventions were included in this review. Diagnosis of PAD could be objective (e.g., an ankle brachial index (ABI) < 0.9), by questionnaire, or clinical diagnosis. Original English language research manuscripts in peer review journals and conference proceedings were included. Studies were included only if they reported on structured patient education interventions and/or components particularly related to PAD and IC. For the purposes of this review, the key criteria used to define structured education in diabetes were adopted.¹³ To be included, a patient education intervention should (a) aim to empower and inform patients, and to support self management of their PAD/IC by building sufficient knowledge and skills to do so; (b) include topics about the nature of PAD/IC, and day to day living and management of PAD/IC including the importance of physical activity and walking; (c) have embedded quality assurance processes including having a structured curriculum, having trained educators, being quality assured, and being audited.

Outcomes

Daily PA (daily step count and self reported change in daily PA) was the primary outcome. Secondary outcomes included treadmill -measured walking capacity (absolute claudication distance [ACD]), pain intensity, quality of life (QoL), and qualitative data regarding patients' experiences with interventions.

Information sources, search strategy, study records, and data management

A systematic search was conducted in June 2016 (updated in March 2017). Nine databases (CINAHL, Cochrane Library, Ovid, ProQuest, AMED, MEDLINE, PsycINFO, Web of Science Core Collection, and PEDRO), trial registers, and directory of Open Access repository websites were searched by the first author (U.O.A.) using key words: patient education, lifestyle education, behaviour change intervention, peripheral arterial disease, intermittent claudication, physical activity, and home based exercise combined with specific search terms and strategies for each database.¹² Reference lists of identified studies were also searched. Titles, abstracts, and the full text of selected studies were independently screened by two authors from a pool of three (U.O.A., C.A.S., P.M.D.) using previously defined eligibility criteria.¹² Differences of opinion regarding inclusion or exclusion were resolved by discussion between authors and reflection in consultation with the second author (P.M.D.).

Data collection processes

The Cochrane Consumers and Communication Review Group Data Extraction Template¹⁴ and the Supplementary Guidance for Inclusion of Qualitative Research¹⁵ were adapted to extract data from the included studies. The Cochrane Collaboration risk of bias tool was used to determine and summarise the risk of the included studies.¹⁶ Assessment was made in each of the included studies and graded as "high risk" or "low risk" following a well described procedure.¹⁷ Studies were subsequently rated as low quality trials (i.e., having high risk of bias) or high quality trials (i.e., having low to moderate risk of bias) if there were three or more, or fewer than three identifiable sources of bias respectively (see Table 2). Two reviewers (U.O.A., C.S.) performed the data extraction and made judgements regarding the risk of bias independent of each other. Again any disagreement was resolved by discussion between the reviewers and consultation with the second author (P.D.).

RESULTS

Study inclusion

The search initially identified 5707 studies (Fig. 1), of which six studies contributing data on 1087 participants were included in the final analysis. Meta-analysis was not possible due to wide variations in interventions and substantial methodological and clinical heterogeneity in the included studies. The results of this review are reported using narrative synthesis.

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