

Different Components of Interventions to Promote Doctors' Referral for Exercise Professionals: A Protocol for A Systematic Review and Meta-Analysis

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ABSTRACT

Doctors play a crucial role in educating patients about physical activity (PA) and exercise, but they often lack confidence and face various barriers in prescribing PA and exercise. Referring patients to qualified exercise professionals is an effective way to promote PA and exercise to more patients. Our goal is to provide practical advice on establishing and maintaining a successful referral program from doctors to exercise professionals. It is important to identify key factors that can contribute to improving doctors' referrals to exercise professionals. This protocol aims to outline a systematic review that will examine, describe, and evaluate the impact of different interventions designed to encourage doctors to refer patients to exercise professionals. The review will assess doctors' referral adherence and behavior change during the referral process. The protocol follows the PRISMA statement for reporting systematic reviews. The literature search will include Medline, Scopus, Web of Science, CINAHL, HTA, SPORT Discus, PEDro, Eric, and SpringerLink. Studies will be included if they investigate the referral process to exercise professionals, report outcomes related to doctors' referrals for exercise professionals, doctors' adherence referral rates, or doctors' attitudes towards referrals for exercise professionals. Studies will also be included if doctors refer patients to a qualified exercise professional for physical activity counseling, exercise programming, or supervised exercise, regardless of medical diagnosis. At least two independent reviewers will conduct all stages of the review, including screening citations, data extraction, and bias assessment. A third reviewer will resolve any disagreements. Various study designs will be eligible, and the Effective Public Health Practice Project (EPHPP) will be used to evaluate quality and bias. Data will be primarily synthesized narratively, following intervention component analysis. If possible, a meta-analysis or meta-regression will be conducted to explore specific components' influence on effect sizes. This systematic review does not require formal ethics approval. The results will be submitted to a peer-reviewed journal and presented at international conferences. This systematic review was registered in OSF (osf.io/6jhx), DOI 10.17605/OSF.IO/6JHXP.

Keywords: Clinicians; Exercise Referral; Health Care; Physical Activity; Interventions; Behavior Change

Background

PA is a crucial determinant of health and well-being. It has been linked to improved mental health, delayed onset of dementia, and reduced risk of diseases such as heart disease, stroke, and some cancers (Bull, et al. [1]). Despite these benefits, many people do not engage in sufficient PA. A comprehensive global analysis of the impact of physical inactivity on health has revealed that 7.2% of all-cause deaths and 7.6% of cardiovascular disease deaths worldwide can be linked to a lack of PA. The proportions of non-communicable diseases associated with physical inactivity vary, emphasizing the significant impact on premature mortality and major non-communicable diseases. This highlights the urgent need for targeted interventions to address this critical public health issue (Katzmarzyk, et al. [2]). Exercise can complement conventional treatments for non-communicable diseases, and a coordinated interdisciplinary approach with exercise interventions can enhance treatment efficacy (Tao, et al. [3]). Healthcare systems worldwide should establish appropriate infrastructures and environments to enable doctors to advocate supervised exercise (Tao, et al. [3]). However, medical doctors face several barriers that can negatively impact PA promotion efforts. Lack of time, knowledge, or training in PA counselling and perceived success in changing patient behavior were identified as the top three barriers to PA intervention in primary care (Hébert, et al. [4,5]) Limited knowledge of and trust in referral options, reluctance to pressure patients, the belief that promoting PA may not be as beneficial as other therapies, concern that patients may not follow advice, and perception that PA promotion may not be relevant to the needs of patients at the time of consultation (T. G. Pavey, et al., [6-10]).

Physical Activity Referral Schemes (PARS) are programs in which doctors refer patients to a structured physical activity or exercise service, led by an exercise professional who creates a specific plan for the patient to follow independently (Onerup, et al. [11]). These schemes encompass a structured process where the doctors familiarizes an individual with the concept of PA and uses referral or prescription forms to link them to opportunities for PA, such as community fitness programs. Many countries have implemented these programs to increase PA levels in individuals at risk of chronic diseases (T. G. Pavey et al. [12]). Referral processes to exercise professionals are cost-effective and focused on raising PA levels in individuals with chronic diseases through encouragement and recommendation of doctors (Williams, et al. [12,13]). However, adherence to these programs and subsequent behavior change remains a challenge. The effectiveness of PARS is often undermined by low patient uptake, adherence, and maintenance of physical activity O'Brien, et al. [14].

The exploration of PARS is currently receiving considerable attention to find effective strategies to promote doctor referrals for exercise professionals. Understanding the relationship between peer coach PA interventions and the referral process is crucial for enhancing doctors' referrals and supporting long-term PA interventions (Van

De Vijver et al. [15]). This information indicates the need for targeted interventions to encourage doctor referrals to exercise professionals, ultimately enhancing the health and well-being of individuals with or without risk of chronic diseases. To improve the health and well-being of individuals with chronic conditions or those at higher risk of developing these conditions, it is essential to focus on developing interventions that are conducive to doctors' referrals for exercise professionals and get to know the ways of implementation of these interventions for better outcomes on doctors' referral process. A combination of tools and approaches can be utilized to effectively measure contextual influences on behavior change interventions. Habit formation is crucial for sustaining behavior change interventions over the long term. Scientifically specifying and reporting complex behavior change interventions is critical for a clearer understanding of intervention components and mechanisms of change. This academic discussion emphasizes the need for a more thoughtful approach to designing and implementing a doctor referral process for exercise professionals (Michie, et al. [16]).

A Systematic Review is useful for summarizing in a detailed way all the available research to answer the research question. It uses repeatable methods to find, select, and synthesize the available evidence. As the aim is to answer a specific research question, reduce bias, and provide a comprehensive overview of the existing literature, a systematic review is the appropriate choice. Publishing a systematic review protocol before conducting the actual review serves several important purposes in research. First, a protocol outlines the methodological strategies that will be used in the review process, including search strategies, eligibility criteria, data extraction methods, variables of interest, data analysis techniques, and plans for handling heterogeneities (Maia, et al. [17]). By presenting these details upfront, the protocol ensures transparency in the systematic review process, demonstrating a clear and standardized review procedure (Berlanga-Macías, et al. [18]). Moreover, publishing a systematic review protocol is crucial for enhancing its quality and reliability. Following guidelines such as the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement helps authors prepare a robust protocol before commencing the review, thereby improving the overall quality of systematic review protocols (Nagendrababu, et al. [19]). Adhering to PRISMA guidelines in developing the protocol ensures that authors provide a transparent, complete, and accurate account of the review's purpose, methodology, and findings (Page, et al. [20]). Additionally, publishing a systematic review protocol can prevent duplication of research efforts and selective reporting of findings. By prospectively registering the protocol on platforms like the Open Science Framework (OSF), researchers can promote research completeness, transparency, and accuracy, ultimately enhancing the reliability of the review findings (Han, et al. 2022). This proactive approach to protocol registration prevents bias and ensures that the research process is conducted rigorously.

Objectives

1. Provide a comprehensive description of these components.
2. Analyze the various components of interventions to promote doctor referrals for exercise professionals, understanding their structure, implementation strategies, and mechanisms of action.
3. Assess the impact of these components on doctors' adherence to the referral process.
4. Examine how these components can drive behavior change and sustainably motivate doctors to modify their referral practices.

Specifically, the systematic review will address the following questions:

1. How are PA referral promotion program components implemented within the programs, and what are their mechanisms of action?
2. How do these different components impact clinician adherence and behavior change?
3. How do these components influence doctors' referral for exercise professionals, referral process uptake, adherence, or PA behavior change?

Methods and Analysis

This protocol was developed following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) Protocols guidelines and the Cochrane Handbook for Systematic Reviews of Interventions.

Study Eligibility Criteria

The studies that we will consider eligible are the ones that have examined the components of PARS and have reported quantitative outcomes related to doctors' referral to exercise professionals, uptake, or adherence and behavior change in doctors' knowledge, attitude, and beliefs toward referring patients to engage in physical activity. We will include all interventions to promote physical activity referral, labelled as PARS, exercise referral schemes, exercise on prescription, or any similar intervention that involves some documentation, such as a prescription or referral form, and includes PA counselling (Mino, et al. [21]). We will also include studies where the patients were referred from health care (e.g., primary care provider, primary care clinic, etc.) to exercise professionals for physical activity counselling (e.g., behavioral counselling), exercise programming, or supervised exercise. Individuals with or without a medical diagnosis will be included.

To be included, studies had to report

- I) Any intervention that describes its components to promote doctors' referral process and

- II) Any theory-based RCT, CT, or trials designed to influence doctors' behavior toward PA referral, including behavior change techniques.

Observational and non-intervention studies, studies with no original data, dissertations/thesis, protocols, qualitative and pilot studies, and studies not published in peer-reviewed journals were excluded. Studies with pharmacological or surgical interventions targeting diet and PA were also excluded.

Information Sources

We will conduct a systematic search in Medline (via Pubmed interface), Scopus, Web of Science, CINAHL, SPORTDiscus, PEDro, Eric and SpringerLink, EMBASE, PsycINFO, ScienceDirect, HTA, Wiley Online Library, SAGE Journals, Taylor & Francis, Google Scholar, Open Grey, and CORE for articles in English, published until September 2024 combined with search methods such as citation and hand searching. Two reviewers will be responsible for evaluating titles and abstracts, while a third individual will be designated to resolve any discrepancies.

Search Strategy

We will conduct a comprehensive search of peer-reviewed articles using both MeSH and non-MeSH terms. The search will focus on three main areas:

- a) Different components of physical activity referral programs in healthcare;
- b) Effectiveness of these components;
- c) Reported PA uptake or adherence outcomes.

For MeSH terms, we will include 'Exercise Therapy,' 'Referral and Consultation,' 'Patient Compliance,' 'Health Promotion,' 'Physicians,' 'Health Personnel,' 'Health Knowledge, Attitudes, Practice,' 'Health Care Sector,' 'Behavior Control,' 'Program Evaluation,' 'Program Development,' 'Treatment Outcome,' and 'Patient Acceptance of Health Care.' For non-MeSH terms, we will use keywords such as 'physical activity referral programs,' 'adherence to exercise,' 'behavior change,' 'PARS components,' 'ERS components,' 'effectiveness of PA referral,' 'PA uptake,' 'adherence outcomes,' 'doctors,' 'practitioners,' 'medical advice,' 'health care,' 'referral,' 'prescription,' and 'impact.'

Our search strings will include terms concerning the population of interest (e.g., 'Physicians'[MeSH] or 'doctors,' 'Health Personnel'[MeSH] or 'practitioners,' 'Health Knowledge, Attitudes, Practice'[MeSH] or 'medical advice,' 'Health Care Sector'[MeSH] or 'health care'); terms concerning the intervention (e.g., 'Exercise Therapy'[MeSH] or 'physical activity referral programs,' 'Patient Compliance'[MeSH] or 'adherence to exercise,' 'Behavior Control'[MeSH] or 'behavior change'); and terms concerning the outcomes of interest (e.g., 'Program Evaluation'[MeSH] or 'PARS components,' 'Program Development'[MeSH] or 'ERS components,' 'Treatment Out-

come'[MeSH] or 'effectiveness of PA referral,' 'Patient Acceptance of Health Care'[MeSH] or 'PA uptake,' 'Patient Compliance'[MeSH] or 'adherence outcomes'). This comprehensive search strategy aims to capture all relevant studies concerning the different components of physical activity referral programs in healthcare, their effectiveness, and reported PA uptake or adherence outcomes. Using MeSH and non-MeSH terms will ensure a thorough literature search.

Data Management

Two researchers from the team will screen titles and abstracts for potential eligibility. These authors will retrieve and screen the full text of potentially relevant articles. Decisions to include/exclude studies will be made by consensus. When consensus is not achieved, disagreements will be solved with a third author. Established methods for gauging concordance between reviewers encompass Cohen's Kappa and percentage agreement. Full texts of potentially eligible studies will be retrieved and independently assessed for inclusion by two reviewers. The study selection procedure will be conducted using the CADIMA software.

Data Collection Process

Two reviewers will independently extract data using a standardized data extraction form. According to the PRISMA statement, a data extraction form will be developed to report systematic reviews.

Data Items

Data items to be extracted will include study characteristics, demographics of the study population, PARS content (characteristics and components), and healthcare effectiveness outcomes (PA, uptake, and adherence).

Outcomes and Prioritization

The primary outcome measure will be the change in adherence and behavior of doctors' referral to exercise professionals due to the different components of physical activity referral programs and a better understanding of what components work better in PARS, leading to increased scheme optimization.

Risk of Bias in Individual Studies

The study's quality will be assessed utilizing an updated version of the Quality Assessment Tool for Quantitative Studies, initially developed by the Effective Public Health Practice Project (Thomas, et al. [22]) (Armijo-Olivo et al. [23]). The tool comprises 19 items categorized into eight vital methodological domains: study design, blinding, selection bias, withdrawals/dropouts, confounders, data collection, data analysis, and reporting. Each domain is rated as Strong, Moderate, or Weak according to specific criteria. A global rating is then determined based on the scores of each component. Two researchers will conduct the quality assessment independently, and consensus will resolve disagreements. A third author will be consulted for further discussion if an agreement cannot be reached.

Data Analysis

The study's main characteristics, including sample size, average age, percentage of female and ethnicity, and publication year, will be presented in a summary table for descriptive purposes. The study-level effect size, such as odds ratio (OR) for dichotomous outcomes and standardized mean differences (SMD) or Pearson correlation coefficient (r) for continuous outcomes, will be calculated and reported. The OR and SMD effect sizes will be converted to Pearson correlation coefficients to aid interpretation and allow for study comparison.

Synthesis of Results

If the studies are sufficiently homogeneous, a meta-analysis will be performed using the R tool. If a meta-analysis cannot be calculated, a narrative synthesis of the results will be provided. The characteristics of the included studies will be qualitatively synthesized and presented in tabular form, organized by outcome, type, and number of theories used in each intervention. The extensiveness of theory use will also be reported by outcome.

Patient and Public Involvement

It is not required.

Ethics and Dissemination Plan and Implications

This systematic review does not require formal ethics approval because it will be based on published studies. The results will be submitted to a peer-reviewed journal and international conferences to reach the scientific community. The findings will also be disseminated to interested stakeholders involved in developing PARS.

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