Review article

Efficacy of psychosocial interventions on psychological outcomes among people with cardiovascular diseases: a systematic review and meta-analysis

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ABSTRACT

Objectives: This systematic review aimed to examine empirical evidence concerning the efficacy of psychosocial interventions in ameliorating the psychosocial problems of people with cardiovascular diseases (CVDs).
Methods: A comprehensive literature search was undertaken to identify both published and non-published English randomised controlled trials (RCTs) from 2000 to 2015. Two reviewers independently screened, assessed risks for bias, and extracted data. Comprehensive meta-analysis software was used to analyse the extracted data. Hedges's *g* effect size was used to determine the effects of psychosocial interventions.
Results: Thirty studies were included in the review but only 18 studies reported significant short-term effects of psychosocial interventions in CVD patients. Most studies did not report long-term effects. Average effect sizes for stress, anxiety, depression, and combined depression/anxiety were 0.34, 1.04, 0.42 and 0.67 respectively at post-tests. Those numbers became 0.09, 0.65, 0.22 and 0.09 at follow-up assessments. Psychosocial programmes with psychoeducation and stress management helped reduce patients' stress and anxiety levels. Programmes including psychotherapy, counselling, mindfulness-based intervention (MBI), and stress management helped mitigate depression and anxiety.
Conclusions: The findings support the efficacy of some psychosocial interventions in people with CVDs.
Practice implications: Healthcare providers should monitor patients' psychological problems and may integrate psychosocial interventions as part of treatment plans.

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1. Introduction

Cardiovascular diseases (CVDs) are debilitating, chronic and life-threatening health problems caused by abnormalities of the heart and blood vessels [1]. Examples of CVDs include coronary heart disease (problems of blood vessels supplying the heart), cerebrovascular disease (problems of blood vessels supplying the brain), and peripheral arterial disease (problems of blood vessels supplying the extremity) [1]. CVDs have been the top cause of death worldwide for the past decade, with 17 million people dying from CVDs in 2011. Research demonstrates that CVDs are associated with psychological outcomes such as stress, anxiety and depression [2]. Stress increases the risk for CVDs [3], and may enhance patients' vulnerability to the course of CVDs [4]. Further, depression is prevalent in people with CVDs, and poor health behaviours associated with depression (such as cigarette smoking) increase the risk for CVDs [5]. Finally, anxiety heightens the incidence of CVDs [6]. People with CVDs are at risk of anxiety, as they fear having another episode of CVD [7]. There is a need to help patients with CVDs manage their stress, depression and anxiety to prevent the aggravation of the cardiovascular problems. As such, psychosocial interventions could be offered to such patients.

Psychosocial interventions are defined as programmes that include any of the following components: behavioural, educational, psychological and social interventions [8]. Psychosocial interventions for patients with CVDs aim to manage psychosocial risk factors (such stress, anxiety and depression and anxiety) without using pharmacological treatments [9]. The common psychosocial interventions adopted for patients with CVDs include education, stress management, relaxation therapy (such as breathing exercises and music therapy) and counselling [10].

A previous systematic review has been conducted to examine the effectiveness of psychological interventions on people with CVDs [10]. However, this review excluded studies using interventions based on psychological theories such as cognitive-behavioural therapy (CBT), social learning, and motivational interviewing. It is of crucial importance to understand all evidence relating to effective psychosocial interventions for patients. As such, this systematic review aimed to evaluate the available evidence concerning the efficacy of psychosocial interventions on adults with CVDs. Results from this review will assist in raising the awareness of healthcare providers about the available psychosocial interventions to improve the health outcomes of CVD patients.

2. Methods

2.1. Search strategy

The preferred reporting items for systematic reviews and meta-analyses (PRISMA) guideline provided the framework for this systematic review [11]. A literature search was conducted to identify published and non-published studies. Published articles were searched by using the following databases: Cochrane, CINHAL, PubMed, SCOPUS, PsycINFO, ScienceDirect and Web of Science. Unpublished studies (such as theses, research reports and conference proceedings) were searched through ProQuest and Google Scholar. Keywords included 'psychological intervention'; 'psychosocial intervention'; 'psychoeducation'; 'relaxation'; 'stress management'; 'counselling'; 'coronary heart disease'; 'cardiovascular diseases'; 'stress'; 'anxiety' and 'depression'. The search was limited to studies in English conducted from 2000 to 2015. Reference lists of the studies found were also examined to identify additional studies. Inclusion criteria were studies that: (1) used randomised controlled trials (RCTs); (2) involved adult patients with CVDs (defined as disorders concerning heart and blood vessels such as coronary heart disease and cerebrovascular diseases) aged 18–60 years; (3) used stress; anxiety or depression as outcome variables; (4) examined the effectiveness of psychosocial interventions (defined as non-pharmacological interventions such as education; counselling and stress management aimed at helping patients manage psychological risk factors) [9,10]. This review excluded studies that involved overlapping samples (such as adolescents and older adults) without separate findings reported for adult groups.

2.2. Risk of bias assessment

Two reviewers (PDMS and NS) independently screened abstracts and full-text articles for eligibility. The full texts of potentially relevant studies were then retrieved and reviewed. Subsequently, two reviewers (PDMS and PKY) independently assessed risks of bias of the included studies using the Cochrane Collaboration tool for assessing risk of bias [12]. Any arising disagreements were resolved through ongoing discussion among the reviewers (PKY, NS, and PDMS).

2.3. Data extraction and analyses

Information of included studies was independently extracted by three reviewers (PDMS, NS and PKY). The extracted information included study characteristics (such as research design, participants and measurements) and statistical parameters (such as mean, standard deviation and sample size). Subsequently, two reviewers (PKY and PDMS) had meetings and worked collaboratively to cross-check the extracted data. If there was any disagreement, both reviewers discussed the matter until agreement was reached.

Meta-analyses were used to analyse the findings of each study and to combine results across included studies [12]. Meta-analyses were performed using Comprehensive Meta-Analysis Software version 2.0. Effects of psychosocial interventions were determined by Hedges's g effect size [13], which could be interpreted as small ($g < 0.3$), medium ($g > 0.5$), and large ($g > 0.8$) [14]. If effect sizes across studies appeared heterogeneous, as determined by significant Q-statistics and $I^2 > 50\%$ [15], the random-effect model was used. The fixed-effect model was used for homogeneous pooled effect sizes. For studies whose effect sizes could not be calculated, a narrative review was presented. Additionally, funnel plots were run to test the presence of publication bias.