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## [Intervention Review]

## Psychological interventions for coronary heart disease

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## ABSTRACT

## Background

Coronary heart disease (CHD) is the most common cause of death globally, although mortality rates are falling. Psychological symptoms are prevalent for people with CHD, and many psychological treatments are offered following cardiac events or procedures with the aim of improving health and outcomes. This is an update of a Cochrane systematic review previously published in 2011.

## Objectives

To assess the effectiveness of psychological interventions (alone or with cardiac rehabilitation) compared with usual care (including cardiac rehabilitation where available) for people with CHD on total mortality and cardiac mortality; cardiac morbidity; and participant-reported psychological outcomes of levels of depression, anxiety, and stress; and to explore potential study-level predictors of the effectiveness of psychological interventions in this population.

## Search methods

We updated the previous Cochrane Review searches by searching the following databases on 27 April 2016: CENTRAL in the Cochrane Library, MEDLINE (Ovid), Embase (Ovid), PsycINFO (Ovid), and CINAHL (EBSCO).

#### **Selection criteria**

We included randomised controlled trials (RCTs) of psychological interventions compared to usual care, administered by trained staff, and delivered to adults with a specific diagnosis of CHD. We selected only studies estimating the independent effect of the psychological component, and with a minimum follow-up of six months. The study population comprised of adults after: a myocardial infarction (MI), a revascularisation procedure (coronary artery bypass graft (CABG) or percutaneous coronary intervention (PCI)), and adults with angina or angiographically defined coronary artery disease (CAD). RCTs had to report at least one of the following outcomes: mortality (total- or cardiac-related); cardiac morbidity (MI, revascularisation procedures); or participant-reported levels of depression, anxiety, or stress.



#### Data collection and analysis

Two review authors independently screened titles and abstracts of all references for eligibility. A lead review author extracted study data, which a second review author checked. We contacted study authors to obtain missing information.

#### **Main results**

This review included 35 studies which randomised 10,703 people with CHD (14 trials and 2577 participants added to this update). The population included mainly men (median 77.0%) and people post-MI (mean 65.7%) or after undergoing a revascularisation procedure (mean 27.4%). The mean age of participants within trials ranged from 53 to 67 years. Overall trial reporting was poor, with around a half omitting descriptions of randomisation sequence generation, allocation concealment procedures, or the blinding of outcome assessments. The length of follow-up ranged from six months to 10.7 years (median 12 months). Most studies (23/35) evaluated multifactorial interventions, which included therapies with multiple therapeutic components. Ten studies examined psychological interventions targeted at people with a confirmed psychopathology at baseline and two trials recruited people with a psychopathology or another selecting criterion (or both). Of the remaining 23 trials, nine studies recruited unselected participants from cardiac populations reporting some level of psychopathology (3.8% to 53% with depressive symptoms, 32% to 53% with anxiety), 10 studies did not report these characteristics, and only three studies excluded people with psychopathology.

Moderate quality evidence showed no risk reduction for total mortality (risk ratio (RR) 0.90, 95% confidence interval (CI) 0.77 to 1.05; participants = 7776; studies = 23) or revascularisation procedures (RR 0.94, 95% CI 0.81 to 1.11) with psychological therapies compared to usual care. Low quality evidence found no risk reduction for non-fatal MI (RR 0.82, 95% CI 0.64 to 1.05), although there was a 21% reduction in cardiac mortality (RR 0.79, 95% CI 0.63 to 0.98). There was also low or very low quality evidence that psychological interventions improved participant-reported levels of depressive symptoms (standardised mean difference (SMD) -0.27, 95% CI -0.39 to -0.15; GRADE = low), anxiety (SMD -0.24, 95% CI -0.38 to -0.09; GRADE = low), and stress (SMD -0.56, 95% CI -0.88 to -0.24; GRADE = very low).

There was substantial statistical heterogeneity for all psychological outcomes but not clinical outcomes, and there was evidence of smallstudy bias for one clinical outcome (cardiac mortality: Egger test P = 0.04) and one psychological outcome (anxiety: Egger test P = 0.012). Meta-regression exploring a limited number of intervention characteristics found no significant predictors of intervention effects for total mortality and cardiac mortality. For depression, psychological interventions combined with adjunct pharmacology (where deemed appropriate) for an underlying psychological disorder appeared to be more effective than interventions that did not ( $\beta$  = -0.51, P = 0.003). For anxiety, interventions recruiting participants with an underlying psychological disorder appeared more effective than those delivered to unselected populations ( $\beta$  = -0.28, P = 0.03).

## **Authors' conclusions**

This updated Cochrane Review found that for people with CHD, there was no evidence that psychological treatments had an effect on total mortality, the risk of revascularisation procedures, or on the rate of non-fatal MI, although the rate of cardiac mortality was reduced and psychological symptoms (depression, anxiety, or stress) were alleviated; however, the GRADE assessments suggest considerable uncertainty surrounding these effects. Considerable uncertainty also remains regarding the people who would benefit most from treatment (i.e. people with or without psychological disorders at baseline) and the specific components of successful interventions. Future large-scale trials testing the effectiveness of psychological therapies are required due to the uncertainty within the evidence. Future trials would benefit from testing the impact of specific (rather than multifactorial) psychological interventions for participants with CHD, and testing the targeting of interventions on different populations (i.e. people with CHD, with or without psychopathologies).

## PLAIN LANGUAGE SUMMARY

## Psychological treatments for coronary heart disease

We reviewed the evidence to assess the effects of adding psychological treatments (talking therapies) to usual care for people with coronary heart disease (CHD; narrowing of the arteries supplying the heart) compared with people receiving usual care. We extracted results on the rates of death (any cause or cardiac-related); heart attacks; the need for revascularisation surgery (operation to restore the blood flow around the heart); and levels of depression, anxiety, and stress.

#### Background

Heart attacks and cardiac (heart) surgery may be frightening and traumatic, and may lead some people to experience psychological problems. Some psychological characteristics are linked to the development and progression of cardiac complaints. Psychological treatments for depression, anxiety or stress are sometimes offered, either alone or as part of a rehabilitation programme. We tested whether there are any benefits from providing psychological therapies in addition to usual care for people with CHD. We only selected studies that followed people for at least six months.

#### Searches

This is the third update of this review (previous versions 2004 and 2011). The evidence reported is current to April 2016.



#### **Study characteristics**

We included 35 randomised controlled trials (clinical studies where people are randomly put into one of two or more treatment groups) with 10,703 participants. Most participants were men (77%), and had recently had a heart attack or undergone a surgical revascularisation procedure. Studies followed up participants for between six months and 10.7 years, with 12 months being the most common period. At baseline (start of the trial), 10 trials only recruited participants with CHD and an established psychological condition (mostly depression), 11 trials recruited people with varying levels of psychopathology, three studies excluded people with psychological conditions, and 11 studies did not report psychological status.

#### **Study funding**

Thirteen studies did not report funding sources. Seven studies were funded by government grants, six through charitable foundations, and six through a mix of government and charitable funding. Two studies reported receiving some funding from private companies in addition to funds secured from government and charitable sources, and one study was university funded.

#### **Key results**

Psychological interventions did not reduce mortality (any cause), or the risk cardiac surgery or having another heart attack. Psychological interventions reduced the risk of cardiac deaths and reduced participant-reported symptoms of depression, anxiety, and stress.

#### Quality of the evidence

There is considerable uncertainty regarding the effects observed, as the quality of the evidence was either low (for cardiac mortality, nonfatal heart attack, depression, anxiety) or very low (for stress) for most measures, except deaths (any cause) or cardiac surgery, both of which had moderate quality of evidence.