

## Academic/Research Article

# Depression in patients with coronary artery disease: The need for a multidisciplinary approach

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*This paper critically appraises a stepwise psychosocial approach to integrating treatment for depression with coronary artery disease. Albus et al. (2011) sought to encourage health behaviours by offering two types of depression treatment (cognitive behavioural therapy or antidepressant medication) followed by group therapy for patients with persistent depression*

## Introduction

Coronary artery disease (CAD) is strongly linked to psychological distress and chronic psychological disorders such as anxiety and depression (Goldston & Baillie, 2007; Jabakhanji et al., 2022). Moreover, adverse psychological symptoms can contribute to a higher risk of cardiac events and other

forms of symptom exacerbation in patients with CAD (Herrman-Lingen et al., 2016).

This paper critically appraises an intervention designed to address depressive symptoms in CAD patients to improve their psychological profile while also reducing the physiological risks associated with CAD. The paper

begins with an overview and evaluation of the study design and proceeds to appraise the challenges associated with changing health behaviours and the related limitations of the randomised controlled trial (RCT) study design for capturing real-world behavioural change.

Albus et al. (2011) present a rationale, design, and study protocol for a psychotherapy intervention developed to reduce risks associated with CAD. More precisely, the intervention is designed primarily to reduce depressive symptoms in patients with CAD, in light of evidence that depressive symptoms can contribute to an adverse quality of life in patients with chronic illness (Goldston & Baillie, 2007; Rafanelli et al., 2020). To fill gaps in knowledge from previous research – which shows only moderate effects of psychotherapy trials on depression in CAD patients – the proposed protocols use a stepwise approach and treat the symptoms of depression along with the Type D pattern of personality, which is characterised by social inhibition and negative affectivity. The Type D pattern has been linked with adverse cardiac events in patients with CAD (Razzini et al., 2008; Albus et al., 2011; Burkauskas et al., 2016).

## Health behaviours and depression

Albus et al. (2011) do well to establish the importance of

health psychology interventions for CAD and for chronic disease more generally. Citing the most recent meta-analyses at the time, the authors highlight a strong association, supported by ample evidence, between depressive symptoms and cardiac events in patients with CAD. At the time of this research, the relationship between depression, personality type, and CAD severity was a relatively new consideration in health interventions. Razzini et al. (2007), published only four years prior, was one of the first research efforts to draw a connection between Type D personalities and severe CAD. These authors note that, before their research, type A personalities were the primary focus of CAD research. Type A personalities are typically described as competitive, assertive, or impatient. It was believed that the high stress levels associated with Type A qualities predisposed someone to severe CAD. Meta-analyses conducted by Razzini et al. (2007) and their contemporaries, Goldston and Baillie (2007), both indicated that depressive personality types were more likely than Type A personalities to experience severe CAD.

Albus et al. (2011) took direction from these previous studies in designing their research. They extrapolate from findings like those of Razzini et al. (2007) and Goldston and Ballie (2007) that the increased risk of cardiac events is mediated by the pathophysiology of depression and its impact on adherence to recommended health behaviours. The focus of Albus et al. (2011) on health behaviours as the primary link between depression and CAD is also influenced by trends in the literature at the time of their study (e.g. Whooley et al., 2008). A health behaviour is defined as “any activity people perform to maintain or improve their health, regardless

of their perceived health status or whether the behaviour actually achieves the goal” (Sarafino et al., 2017, p.126). With this definition in mind, it is plausible that the simultaneous impact of depressive symptoms and poor health behaviours would contribute to the heightened risk of cardiac events in CAD patients. Depression has been shown to interfere with patients’ willingness and/or ability to follow the health management recommendations of healthcare providers, including basic health promotion behaviours such as a healthy diet and regular exercise (Barros et al., 2017; Gold et al., 2020). This relationship further underscores the evidence-based approach of the intervention by Albus et al. (2011).

#### **Incorporating treatments for depression and CAD**

Albus et al. (2011) make a strong case for the need to develop more specific knowledge about the efficacy and impacts of depression treatment on CAD, health-related quality of life, and overall well-being. They cite several meta-analyses showing a variable spectrum of modest improvements in depression from cognitive behavioural therapy (CBT) and antidepressant medications. Thombs et al. (2008), for example, found CBT to be moderately effective at reducing depressive symptoms among CAD patients but saw no impact from this treatment on cardiac health. Dowlati et al. (2010) found similar results for antidepressant medications, with the RCTs reviewed showing antidepressants to be effective at reducing depression among CAD patients; however, the benefits of this treatment for cardiac health were unclear.

Albus et al. (2011) interpreted these modest findings to indicate that depression treatment could be an effective addition to CAD

treatment, but further study was necessary.

#### **The research protocol**

To add to this body of experimental literature and to lend more clarity to the knowledge around psychotherapy as a way to reduce depression in all forms of CAD (excluding patients with certain classifications of severe heart failure), the researchers developed an experimental intervention that would primarily study psychological outcomes and secondarily measure the risk of cardiac events and other outcomes such as hospital admissions, risk profile, and cardiac events. The intervention design described in the article is an RCT in which 569 patients were randomised into intervention and control groups. The main inclusion criteria were: age between 18 and 75 years, any type of CAD, and depression scores equal to or greater than 8 on the Hospital Anxiety Depression Scale (HADS). Exclusion criteria were: life-threatening acute conditions, chronic inflammatory disease, severe mental illness such as severe depressive episodes, and severe heart failure (Albus et al., 2011).

Perhaps the most notable element of the study protocol is its stepwise approach to treating depression. While this design element enables a tailored, responsive approach to each patient as their efficacy variables change over time, the technique may also raise questions about longer-term variance in the efficacy of the psychotherapy intervention. According to the protocol, patients in the treatment group receive three supportive-expressive psychotherapy sessions (Albus et al., 2011). For patients with HADS scores lower than 8 after 4-8 weeks of the commencement of the intervention, the psychotherapeutic intervention is discontinued; for patients with

persistent depression, 25 more sessions of group psychotherapy are administered over 10 months (Albus et al., 2011).

At the time of its publication, Albus et al. (2011) was a unique study in its combination of the stepwise approach and psychosocial treatment for depression. Before this, Karlsson et al. (2007) was the only study on the use of psychosocial therapy for CAD patients and these researchers chose not to use the stepwise approach. A short time after the publication of Albus et al. (2011), another study (Herrmann-Lingen et al., 2016) employed the proposed stepwise, psychosocial intervention in a large-scale study. Throughout their publication, these researchers explicitly state their full confidence in the methodology of Albus et al. (2011) and frequently refer to it in their methodology section. This later study is a direct actualisation of the proposed research design in Albus et al. (2011) and represents one of the largest studies of its type to date.

### **Shortcomings of the short-term stepwise approach**

Albus et al. (2011) cite an RCT by Karlsson et al. (2007) that supports the efficacy of group therapy in CAD populations. In both studies, psychosocial treatment was concluded for participants when their HADS score dropped below an 8 and no follow up was performed to assess the long-term impacts of psychosocial intervention. An alternative design might continue the therapy for patients who have improved in depressive symptoms and continue to monitor their progress. Another option would be to randomly exclude a sub-cohort of patients who met the criteria for cessation of psychosocial treatment to compare the impacts of continued group therapy against the long-term outcomes of patients

who were removed from the study after improvement. In its current form, the study protocol may leave unanswered key questions about the resiliency of mental health improvements among patients who responded to the initial psychotherapeutic intervention.

These design recommendations are rooted in evidence that suggests changing health behaviours can be difficult. As Albus et al. (2011) note, health behaviours are a potential mediator in the relationship between depressive symptoms and adverse CAD outcomes. This mediation likely arises from the fact that health behaviours are particularly difficult to change once they become firmly established or habitual (Sarafino et al., 2017). Given the presumed role of health behaviours in the authors' interpretation of the current, mixed evidence on psychotherapeutic interventions for depression and CAD, it seems especially important to monitor the resiliency of the positive effects of the intervention over time.

Additionally, other changes to the study's design elements might further strengthen its ability to measure the long-term psychological and quality-of-life outcomes associated with the intervention. RCT designs are strong because they have the unique ability to demonstrate a causal relationship between independent variables (i.e., interventions) and dependent variables (i.e., outcomes of interest) (Sarafino et al., 2017). Nonetheless, experimental studies remain susceptible to the confounding influence of environmental conditions that may not match the conditions of everyday life. This challenge becomes especially pronounced when studies are measuring health behaviours, as the environmental conditions of an experimental study may have subtle or impossible-to-detect influences on participants' behaviours (Sarafino et al., 2017).

One way to overcome this challenge is to incorporate experimental and non-experimental elements into the study design to understand how patients' perceptions and self-reported psychosocial changes (e.g., self-efficacy, motivation, health literacy) may have been impacted by the intervention.

One example of this approach can be found in a more recent study, which, like Albus et al. (2011), linked psychosocial determinants to physical health outcomes in CAD patients. In a study by van Monfort et al. (2018), the researchers conducted a person-centred analysis of the psychological traits that led to differences in CAD outcomes. The study found that patients with a "high distress" profile were more likely to have more pronounced symptoms of chronic depression, which in turn correlated with worse patient-reported CAD outcomes. These findings were made possible by the use of subjective, self-reported data to establish patient profiles and subsequently to measure correlations between those profiles and CAD outcomes. While van Monfort et al. (2018) did not conduct an experimental intervention with a control group, their study exemplifies how non-experimental data can complement experimental data by shedding light on the influence of real-world behaviours, outside of experimental conditions, that can shape the interactions between psychological and physiological outcomes.

### **Long-term influence of stepwise, psychosocial treatments**

The realisation of the research design proposed by Albus et al. (2011) and used by Herrmann-Lingen et al. (2016) did not result in particularly impactful results. Echoing previous efforts focused on depression and CAD (e.g., Thombs et al., 2008), Herrmann-Lingen

et al. (2016) found a moderate improvement in depression levels among CAD patients after depression treatment and no impact on cardiac health. These results were further complicated by varying factors between the depression treatments offered. Antidepressant medications were only found to be effective for CAD patients who entered the study with high levels of depression. In contrast, CBT sessions were only found to be effective for CAD patients with moderate levels of depression. No conclusions could be drawn about the psychosocial element (group therapy) because the majority of patients qualifying for group therapy ultimately chose not to attend (Herrmann-Lingen et al., 2016).

Based on their disappointing results, Herrmann-Lingen et al. (2016) conclude that the stepwise approach to depression treatment described in Albus et al. (2011) offered few fruitful additions to existing CAD treatment. These authors also made the unique observation that the generalisability of their results was greatly constrained by the fact that their study took place in Germany. In their limitations section, Herrmann-Lingen et al. (2016) noted that psychiatric care was exceptionally accessible in the German healthcare system, whereas this was rarely the case for other nations. They state that, even if the stepwise psychosocial approach to depression treatment had been a success, it was unlikely to be reproducible outside of Germany.

Though the stepwise psychosocial approach proposed by Albus et al. (2011) no longer appears to be relevant in the literature, efforts to find an effective way of combining treatments for depression and CAD continue. Rafanelli et al. (2020), for example, is a recent RCT that employed CBT in sequence with the psychotherapeutic approach, well-being therapy, to reduce

depression and facilitate better health behaviours. This research was more successful than that of Herrmann-Lingen et al. (2016), with patients noting substantial relief from depression symptoms after the intervention. Despite this, Rafanelli et al. (2020) still note that the impact of this treatment on cardiac health was negligible. Raykh et al. (2020) is another recent study that continues to explore synergies between depression and CAD treatment. These authors make direct reference to Albus et al. (2011); however, their interest is primarily in the focus on the type D personality. In a year-long study of CAD patients with varying personality types, they observed that type D personalities are indeed more likely to develop CAD but note the caveat that the progression of CAD varies significantly between people with type D personalities. Based on this, Raykh et al. (2020) conclude that personality type may be a less fruitful avenue for CAD research than previously thought.

### **Implications and the need for a multidisciplinary approach**

The research challenges demonstrated by Albus et al. (2011) call attention to the need for a multidisciplinary approach to health psychology interventions. In other recent literature on depression and CAD, mixed results have been reported for nurse-led mental health interventions. According to Luo et al. (2018), a nurse-led psychological intervention had no significant impact on psychological measures in the treatment population. By contrast, Chang et al. (2020) reported that nurse-led psychological counselling led to improvements in psychological outcomes in patients who had undergone percutaneous coronary intervention (PCI), one of the most common treatments for CAD. However, this particular intervention

did not yield significant changes in physical health events related to CAD.

The study protocol developed by Albus et al. (2011) is all the more important in this light, particularly its focus on the secondary outcomes of cardiac events and cardiac risk profile. The two nurse-led studies reveal that multiple disciplines should be involved in developing and implementing psychological interventions for patients living with chronic diseases, as the efficacy of an intervention may vary depending on which types of professional expertise are instrumental in designing the treatment approach and monitoring outcomes.


The protocol proposed by Albus et al. (2011) and the medical studies associated with it represent an interesting development in psychosomatic medicine. Broadly defined, this is a psychiatric field seeking to understand and utilise the influence of human psychology on physiological well-being (Jacob et al., 2015). In the period just before the work of Albus et al. (2011), overall interest in the influence of psychosocial factors on physical health was rising in psychosomatic medicine (Astin et al., 2006). The concept of psychosocial factors describes the ability of social conditions to impact the relationship between psychological variables and bodily health (Upton, 2020). Expectations of how much social conditions could mediate the mind-body relationship were initially great, with some academics speculating that psychosocial factors could bring psychosomatic medicine to the forefront of political discussion (Hayward, 2012).

Results like those of Herrmann-Lingen et al. (2016) have somewhat tempered the initially grand expectations for psychosocial factors in practice. Such results are informative to psychotherapists in the psychosomatic field working

with CAD patients in an outpatient setting. The low-to-moderate responses displayed in RCT results may inform psychotherapists of how much variables like income, family structure, and access to social interaction can really be expected to help or harm health behaviours. Albus et al. (2011) and more recent studies like Luo et al. (2018) show that improvement in psychological well-being does not necessarily translate into physical improvement for CAD patients. Though physical benefits failed to manifest, the results of these studies do not necessarily indicate that there is no place for psychotherapists in the treatment of CAD. Reduction of depressive symptoms is a worthwhile result of psychosocial intervention and psychotherapists should continue to employ such interventions in multidisciplinary efforts.

## Conclusion

In sum, this critical appraisal has considered a health psychology intervention developed by Albus et al. (2011) to measure the impacts of antidepressant psychotherapy in reducing the risk factors for adverse events in patients with CAD. Overall, the study protocol is well-designed, as it uses clear measures for depression and incorporates secondary measures that are suitable for measuring the well-documented associations between psychological variables and CAD outcomes. The study's main strength is its RCT design, but this aspect of the study also raises questions about how to create an intervention that properly captures how real-world behaviours may or may not change in response to treatment. Nonetheless, the RCT design is well suited to measure

causal relationships between psychological interventions and health psychology, along with health-related quality of life 

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