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Original Article

Prevalence and Factors Associated with Depression and Anxiety in Patients Post Coronary Angioplasty: A Cross-Sectional Study

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ABSTRACT

Background: Ischemic heart disease remains the leading cause of mortality worldwide, with India experiencing a high burden of coronary artery disease. Percutaneous coronary intervention (PCI) significantly improves survival and symptom relief in coronary artery disease; however, psychological morbidity following angioplasty is common and frequently under-recognized. Depression and anxiety adversely affect recovery, treatment adherence, clinical outcomes, and quality of life among post-PCI patients.

Objectives: To assess the prevalence and factors associated with depression and anxiety and to evaluate quality of life among patients one month after coronary angioplasty.

Materials and Methods: This hospital-based cross-sectional study was conducted in the Department of Cardiology, Government Medical College, Kannur, Kerala, over a period of one year. A total of 230 consecutive patients aged 18–70 years attending follow-up one month after coronary angioplasty were included in the study. Patients with significant cognitive impairment, poor physical condition interfering with assessment, intellectual disability, and past psychiatric illness excluding substance use disorders were excluded. Depression and anxiety were assessed using the Depression Anxiety Stress Scale-42 (DASS-42), while quality of life was evaluated using the WHOQOL-BREF questionnaire. Data were analyzed using SPSS version 24. Descriptive statistics, Chi-square test, and independent t-test were applied. A p-value <0.05 was considered statistically significant.

Results: Among the 230 participants, 45.2% experienced depression and 54.3% experienced anxiety one month following coronary angioplasty. Anxiety was more prevalent than depression during the early post-procedural period. Older age, marital status, lower socioeconomic status, family history of psychiatric illness, deliberate self-harm, and substance use showed significant associations with both depression and anxiety. Female gender showed a significant association with depression. Quality of life scores were moderate across all WHOQOL-BREF domains, with mean scores of 52.3 for physical health, 52.2 for psychological health, 53.0 for social relationships, and 52.7 for environmental health. The overall quality of life score was 52.5 ± 16.3. Depression and anxiety demonstrated significant negative associations with quality of life (p = 0.001).

Conclusion: Psychological distress is highly prevalent among patients following coronary angioplasty and significantly affects quality of life during the early recovery period. Routine psychological screening and integrated mental health interventions should be incorporated into standard post-PCI care to improve overall recovery and long-term outcomes.

Keywords: *Coronary angioplasty; Percutaneous coronary intervention; Depression; Anxiety; Quality of life.*

INTRODUCTION

Ischemic heart disease (IHD) remains the leading cause of mortality worldwide and accounts for nearly 16% of all global deaths [1]. The INTERHEART study identified several important modifiable risk factors associated with the development of ischemic heart disease, including tobacco use, hypertension, diabetes mellitus, dyslipidemia, central obesity, inadequate intake of fruits and vegetables, and psychosocial stress [2]. India carries a disproportionately high burden of IHD, characterized by early age of onset, rapid disease progression, and increased mortality rates compared to many other countries. Cardiovascular diseases constitute the most common cause of death across all regions of the country [3]. The Global Burden of Disease study reported that the age-adjusted mortality rate due to heart disease in India is approximately 272 per 100,000 population, which is substantially higher than the global average of 235 per 100,000 population [4].

Percutaneous coronary intervention (PCI), commonly known as coronary angioplasty, has emerged as an important therapeutic modality in the management of coronary artery disease. The procedure improves coronary blood flow by mechanically dilating narrowed coronary arteries and significantly reduces ischemic symptoms and functional limitations [5]. PCI plays a vital role in the management of acute coronary syndromes, particularly ST-segment elevation myocardial infarction, where early restoration of blood flow reduces myocardial damage and improves survival outcomes [5]. In addition to improving survival, PCI contributes substantially to symptom relief, functional rehabilitation, and enhanced physical capacity in patients with coronary artery disease [6]. Despite these benefits, recovery following coronary angioplasty is not limited to physical improvement alone, as psychological well-being also significantly influences overall outcomes.

Depression and anxiety are among the most common psychiatric conditions observed in patients with cardiovascular diseases. According to the World Health Organization, more than 300 million people worldwide are affected by depressive disorders [7]. In India, the National Mental Health Survey 2015–16 estimated that nearly 5% of adults suffer from depression, while approximately 15% require active intervention for one or more mental health disorders [8]. Anxiety disorders are similarly prevalent and contribute substantially to psychosocial morbidity. These psychiatric conditions often coexist with coronary artery disease and adversely affect recovery, adherence to treatment, and long-term prognosis. Depression following PCI has been reported in 23% to 48% of patients, whereas anxiety symptoms have been documented in nearly 23.5% to 66.5% of individuals undergoing coronary angioplasty [9]. Women, patients with lower socioeconomic status, and individuals with inadequate social support are particularly vulnerable to developing psychological distress during the post-procedural period [9,10].

Psychological morbidity following coronary angioplasty has significant clinical implications. Depression and anxiety are associated with poor medication adherence, reduced participation in cardiac rehabilitation, delayed recovery, increased hospital readmissions, and impaired quality of life [11,12]. Anxiety symptoms may mimic cardiac symptoms such as palpitations, dyspnea, and chest discomfort, often leading to under recognition and inadequate management [13]. Moreover, persistent psychological distress negatively influences patients 'subjective perception of health and overall well-being. The World Health Organization defines quality of life as an individual's perception of their position in life within the context of their culture, expectations, and value systems [14]. Studies have consistently demonstrated that higher levels of anxiety and depression are associated with poorer quality of life outcomes among cardiac patients [15].

Despite the increasing number of PCI procedures in India, psychological morbidity following angioplasty remains under-recognized in routine cardiac care. Most post-PCI management primarily focuses on physical recovery and secondary prevention, while emotional and psychological concerns frequently remain unaddressed. There is limited Indian literature assessing depression, anxiety, and quality of life simultaneously among patients during the early post-procedural period. Therefore, the present study was undertaken to assess the prevalence and factors associated with depression and anxiety and to evaluate quality of life among patients one month after coronary angioplasty.

MATERIALS AND METHODS

This hospital-based cross-sectional study was conducted in the Department of Cardiology, Government Medical College, Kannur, Kerala, over a period of one year after obtaining approval from the Institutional Ethics Committee.

The study population comprised patients attending the Cardiology Outpatient Department for follow-up evaluation one month after undergoing coronary angioplasty. Patients aged between 18 and 70 years who had undergone coronary angioplasty one month prior to presentation and who provided informed consent for participation were included in the study. Patients who were unwilling to participate or unable to provide consent, those with poor physical condition interfering with formal mental status assessment, intellectually disabled individuals, patients with significant cognitive impairment, and those with a past history of psychiatric illness excluding substance use disorders were excluded from the study.

The sample size was calculated using the formula (Z^2pq/d^2), taking the prevalence of depression following PCI as 18.2% from the study by Vulcanescu et al [61]. With 95% confidence interval and 5% absolute precision, the final sample size

was estimated to be 230 participants. Eligible participants were recruited consecutively until the required sample size was achieved.

After obtaining written informed consent, socio-demographic and clinical details were collected using a self-prepared semi-structured proforma. Depression, anxiety, and stress were assessed using the Depression Anxiety Stress Scale-42 (DASS-42), a standardized self-report instrument developed by Lovibond and Lovibond. The scale consists of 42 items with separate subscales for depression, anxiety, and stress. Each item is scored on a 4-point Likert scale ranging from 0 to 3, and severity was categorized according to standard scoring guidelines.

Quality of life was assessed using the World Health Organization Quality of Life-BREF (WHOQOL-BREF) questionnaire, a 26-item instrument evaluating four domains: physical health, psychological health, social relationships, and environment. Domain scores were transformed to a scale of 0–100, with higher scores indicating better quality of life. Validated Malayalam versions of the DASS-42 and WHOQOL-BREF questionnaires were used where appropriate.

Data were entered into Microsoft Excel and analyzed using Statistical Package for Social Sciences (SPSS) version 24. Descriptive statistics such as frequency, percentage, mean, and standard deviation were used to summarize the data. The prevalence of depression and anxiety was expressed as frequency and percentage. Associations between categorical variables were analyzed using Chi-square test, while comparison of continuous variables was performed using independent t-test. A p-value of less than 0.05 was considered statistically significant.

The study was initiated only after obtaining approval from the Institutional Ethics Committee and Institutional Research Committee of Government Medical College, Kannur. Written informed consent was obtained from all participants prior to enrolment. Confidentiality and anonymity of the participants were strictly maintained throughout the study.

RESULTS

A total of 230 patients who attended the Cardiology Outpatient Department one month after coronary angioplasty were included in the study. The mean age of the participants was 54.42 ±8.82 years. Majority of the participants were males (66.96%), belonged to the 51–60 years age group, and were from semi-urban background. Most participants belonged to above poverty line socioeconomic status. Baseline socio-demographic characteristics of the study participants are shown in Table 1.

Table 1. Baseline socio-demographic characteristics of the study participants (N = 230)

	Variable	Frequency	Percentage
Age group	40–50 years	84	36.52
	51–60 years	85	36.96
	61–70 years	61	26.52
Gender	Male	154	66.96
	Female	76	33.04
Education	Graduate	94	40.87
	Secondary	79	34.35
	Primary	39	16.96
	Illiterate	18	7.83
Socioeconomic status	APL	191	83.04
	BPL	39	16.96
Background	Semi-urban	126	54.78
	Rural	56	24.35
	Urban	48	20.87

The prevalence and severity distribution of depression and anxiety assessed using DASS-42 are presented in Table 2. Anxiety was more prevalent than depression during the early post-procedural period.

Table 2. Distribution of depression and anxiety severity among study participants

Severity	Depression n (%)	Anxiety n (%)
Normal	126 (54.78)	80 (34.78)
Mild	62 (26.96)	11 (4.78)
Moderate	32 (13.91)	46 (20.00)
Severe	10 (4.35)	35 (15.22)
Extremely severe	—	58 (25.22)

Significant associations were observed between psychological morbidity and several socio-demographic and clinical variables. Older age, marital status, lower socioeconomic status, family history of psychiatric illness, deliberate self-harm, and substance use were significantly associated with both depression and anxiety. Female gender showed a significant association with depression. The factors associated with depression and anxiety are summarized in Table 3.

Table 3. Factors associated with depression and anxiety

Variable	Depression	Anxiety
Older age	Significant	Significant
Female gender	Significant	Not significant
Marital status	Significant	Significant
Lower socioeconomic status	Significant	Significant
Family history of psychiatric illness	Significant	Significant
Deliberate self-harm	Significant	Significant
Substance use	Significant	Significant

Quality of life assessed using the WHOQOL-BREF instrument demonstrated moderate scores across all domains. Domain-specific scores are shown in Table 4.

Table 4. WHOQOL-BREF domain scores among study participants

Domain	Mean score
Physical health	52.3
Psychological health	52.2
Social relationships	53.0
Environment	52.7
Overall quality of life	52.5 ± 16.3

The overall quality of life distribution among participants is shown in Table 5. Majority of the participants had moderate quality of life.

Table 5. Overall quality of life categories among study participants

Quality of life category	Score range	Frequency	Percentage
Very poor	0–20	14	6.08
Poor	21–40	36	15.65

Moderate	41–60	98	42.60
Good	61–80	82	35.65
Very good	81–100	0	0

Depression and anxiety demonstrated significant associations with reduced quality of life. Participants with higher psychological distress had significantly lower WHOQOL-BREF scores across all domains (p = 0.001). The association between psychological morbidity and quality of life is summarized in Table 6.

Table 6. Association between psychological morbidity and quality of life

Variable	Statistical significance
Depression and quality of life	p = 0.001
Anxiety and quality of life	p = 0.001

DISCUSSION

The present cross-sectional study evaluated the prevalence and factors associated with depression and anxiety among patients one month after coronary angioplasty and assessed their quality of life using the WHOQOL-BREF instrument. The findings demonstrated a substantial burden of psychological morbidity during the early post-procedural period, with anxiety being more prevalent than depression. The study also identified several socio-demographic and clinical factors associated with psychological distress and highlighted the significant impact of depression and anxiety on quality of life.

In the present study, 45.2% of patients experienced depression and 54.3% experienced anxiety one month following coronary angioplasty. These findings are consistent with previous studies demonstrating a high prevalence of psychological morbidity after PCI. A meta-analysis by Saini et al. [9] reported that the prevalence of depression following PCI ranged from 23% to 48%. Similarly, Zhou et al. [16] demonstrated that nearly half of the patients experienced anxiety and depression one month after PCI. The prevalence observed in the present study was higher than that reported by Mujtaba et al. [60], who found anxiety and depression rates of 7.5% and 10.5%, respectively. This variation may be explained by differences in assessment tools and methodology. Rawashdeh et al. [10] also reported a high prevalence of depressive symptoms during the early post-PCI period.

Anxiety was found to be more prevalent than depression in the present study. Similar observations have been reported in earlier studies evaluating psychological outcomes following coronary angioplasty [9,18]. Anxiety after PCI may arise from persistent fear regarding recurrent cardiac events, uncertainty about prognosis, heightened vigilance toward bodily sensations, and concerns regarding future health status. Patients often continue to interpret symptoms such as chest discomfort or palpitations as indicators of another cardiac event, thereby perpetuating anxiety during the recovery period [18].

The present study demonstrated that older age was significantly associated with higher levels of depression and anxiety. Elderly individuals may experience greater emotional distress due to declining physical resilience, multiple comorbidities, fear of dependency, and difficulty adapting to lifestyle changes following coronary angioplasty. Similar findings were reported by Vulcanescu et al. [19], who observed more severe depressive symptoms among elderly post-PCI patients. Female gender also showed a significant association with depression in the current study. Women demonstrated higher rates of depressive symptoms compared to men, consistent with the findings of Rawashdeh et al. [10]. Hormonal influences, caregiving responsibilities, and psychosocial stressors may contribute to increased vulnerability among women following PCI.

Marital status showed a significant association with depression and anxiety, with divorced, separated, and widowed individuals experiencing greater psychological distress. Social and emotional support provided through marriage may play a protective role during recovery from major cardiac illness. Yang et al. [12] similarly identified inadequate social support as an important predictor of depression in post-PCI patients. Lower socioeconomic status was also significantly associated with depression and anxiety in the present study. Financial burden related to treatment costs, loss of employment, and long-term medication requirements may adversely affect mental health among cardiac patients. Similar findings have been reported by Saluja et al. [20], emphasizing the relationship between socioeconomic deprivation and psychological morbidity after PCI.

A significant association was observed between family history of psychiatric illness and psychological distress. Individuals with genetic predisposition to psychiatric disorders may be more susceptible to developing depression and anxiety

following a stressful medical event such as coronary angioplasty. This finding supports the diathesis–stress model proposed by Kendler et al. [21]. History of deliberate self-harm was also strongly associated with depression and anxiety in the present study. Hawton et al. [22] similarly reported that previous self-harm substantially increases vulnerability to emotional disorders and recurrent psychological distress. Substance use demonstrated a significant relationship with depression and anxiety, possibly reflecting maladaptive coping strategies following cardiac illness. Mujtaba et al. [17] also reported higher psychological morbidity among cardiac patients with substance use history.

The present study demonstrated moderate quality of life scores across all WHOQOL-BREF domains, with an overall mean quality of life score of 52.5 ±16.3. Although coronary angioplasty improves myocardial perfusion and alleviates physical symptoms, psychological adaptation may remain incomplete during the early recovery phase. Similar findings have been reported in Indian studies evaluating post-angioplasty quality of life, particularly among patients experiencing persistent psychological distress and reduced physical functioning [23]. The psychological domain score observed in the present study appears consistent with the high prevalence of depression and anxiety among participants.

A significant association was found between depression, anxiety, and reduced quality of life. Individuals with higher levels of psychological distress demonstrated significantly lower WHOQOL-BREF scores across all domains. These findings are supported by previous studies showing that depression and anxiety adversely affect physical functioning, emotional well-being, social participation, and overall life satisfaction among cardiac patients [9,24,25]. Dickens et al. [26] identified depression as an independent predictor of poorer health-related quality of life following PCI, while Celano et al. [27] demonstrated that anxiety significantly impairs emotional and social functioning in post-revascularization patients.

The findings of the present study emphasize the importance of integrating psychological assessment and support into routine post-angioplasty care. International cardiac rehabilitation guidelines recommend multidisciplinary rehabilitation approaches that incorporate psychological counselling, lifestyle modification, and emotional support alongside physical rehabilitation [28,29]. Early identification and management of depression and anxiety may improve quality of life, treatment adherence, and long-term cardiovascular outcomes in patients undergoing coronary angioplasty [30].

Strengths and Limitations

The present study simultaneously evaluated depression, anxiety, and quality of life among post-angioplasty patients using standardized instruments, thereby providing a comprehensive assessment of psychological morbidity during the early recovery period. The study also included an adequate sample size and focused on an important but often under-recognized aspect of post-PCI care.

However, certain limitations should be considered while interpreting the findings. Being a cross-sectional study, causal relationships could not be established. The study was conducted in a single tertiary care center, which may limit generalizability of the findings. In addition, pre-procedural psychological status was not assessed, and long-term follow-up was not performed.

CONCLUSION

Depression and anxiety are highly prevalent among patients one month following coronary angioplasty, with anxiety being slightly more common than depression during the early recovery period. Older age, female gender, lower socioeconomic status, marital status, family history of psychiatric illness, deliberate self-harm, and substance use were significantly associated with increased psychological distress. Despite successful coronary revascularization, quality of life remained only moderate across all WHOQOL-BREF domains, indicating that emotional recovery may lag behind physical improvement. Furthermore, depression and anxiety demonstrated significant negative associations with quality of life, highlighting the important role of psychological well-being in post-angioplasty recovery. These findings emphasize the need for routine psychological screening and integrated mental health support as part of comprehensive post-PCI care. Early identification and management of psychological morbidity may improve treatment adherence, quality of life, and long-term cardiovascular outcomes in patients undergoing coronary angioplasty.

DECLARATIONS

Ethical Approval: The study was approved by the Institutional Ethics Committee and Institutional Research Committee of Government Medical College, Kannur.

Informed Consent: Written informed consent was obtained from all participants prior to enrolment in the study.

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Conflict of Interest: The authors declare that there is no conflict of interest.

Authors 'Contributions: All authors contributed to the conception and design of the study. Data collection, analysis, interpretation, manuscript preparation, and final approval of the manuscript were performed by the authors.

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REFERENCES

1. World Health Organization. Cardiovascular diseases (CVDs). Geneva: WHO; 2025.
2. Yusuf S, Hawken S, Ôunpuu S, Dans T, Avezum A, Lanas F, et al. Effect of potentially modifiable risk factors associated with myocardial infarction in 52 countries (INTERHEART study): case-control study. Lancet. 2004;364(9438):937-952.
3. Sreeniwas Kumar A, Sinha N. Cardiovascular disease in India: a 360 degree overview. Med J Armed Forces India. 2020;76(1):1-3.
4. Prabhakaran D, Jeemon P, Roy A. Cardiovascular diseases in India: current epidemiology and future directions. Circulation. 2016;133(16):1605-1620.
5. Ozaki Y, Tobe A, Onuma Y, Kobayashi Y, Amano T, et al. CVIT expert consensus document on primary percutaneous coronary intervention for acute coronary syndromes in 2024. Cardiovasc Interv Ther. 2024;39(4):335-375.
6. Al-Lamee RK, Nowbar AN, Francis DP. Percutaneous coronary intervention for stable coronary artery disease. Heart. 2019;105(1):11-19.
7. World Health Organization. Depression. Geneva: WHO; 2023.
8. National Institute of Mental Health and Neurosciences, Ministry of Health and Family Welfare. National Mental Health Survey of India, 2015–16. Bengaluru: NIMHANS; 2016.
9. Saini RK, Chaudhury S, Singh N, Chadha DS, Kapoor R. Depression, anxiety, and quality of life after percutaneous coronary interventions. Indian J Psychiatry. 2022;31:6-18.
10. Rawashdeh SI, Ibdah R, Kheirallah KA, et al. Depressive symptoms after ten days of PCI. Clin Pract Epidemiol Ment Health. 2021;17:103-113.
11. Lapa ME, Swabe GM, Rollman BL, et al. Depression and adherence following PCI. JAMA Netw Open. 2022;5(12):e2246317.
12. Zhang WY, Nan N, Song XT, Tian JF, Yang XY. Impact of depression on outcomes after PCI: meta-analysis. BMJ Open. 2019;9:e026445.
13. Celano CM, Daunis DJ, Lokko HN, Campbell KA, Huffman JC. Anxiety disorders and cardiovascular disease. Curr Psychiatry Rep. 2016;18(11):101.
14. World Health Organization. WHOQOL: measuring quality of life. Geneva: WHO; 1997.
15. Liao W, Luo Z, Dong X, et al. Associations between depressive symptoms, anxiety symptoms, their comorbidity and health-related quality of life: a cross-sectional study. BMC Public Health. 2021;21:1911.
16. Gu G, Zhou Y, Zhang Y, Cui W. Increased prevalence of anxiety and depression symptoms in CAD patients before and after PCI. BMC Psychiatry. 2016;16:259.
17. Mujtaba SF, Sial JA, Karim M. Depression and anxiety in patients undergoing percutaneous coronary intervention for acute coronary syndrome. Pak J Med Sci. 2020;36(5):1100-1105. doi:10.12669/pjms.36.5.1749.
18. Tang X, Liu G, Zeng YJ. Anxiety disorders following PCI for AMI. World J Psychiatry. 2025;15(12):110290.
19. Vulcănescu D, Gheorman V, Pîrvu DC, Dinescu VC, Gheorman V, Udriștoiu I, et al. Primary PCI and mental health: a 12-month follow-up study. Healthcare (Basel). 2023;11(11):1620. doi:10.3390/healthcare11111620.
20. Saluja S, Keavney BD, Alawami M, El-Omar M, Keshavarzi F, Saleem M, et al. Exploring the impact of the Index of Multiple Deprivation on percutaneous coronary intervention outcomes: insights from the British Cardiovascular Intervention Society database. Glob Cardiol Sci Pract. 2025;2025(1):e202504. doi:10.21542/gcsp.2025.4.
21. Kendler KS, Karkowski LM, Prescott CA. Stressful life events and depression. Am J Psychiatry. 2005;162:1243-1252.
22. Hawton K, Zahl D, Weatherall R. Risk factors for self-harm repetition. Br J Psychiatry. 2012;200:476-482.
23. Huffman MD, Mohanan PP, Devarajan R, Baldridge AS, Kondal D, Zhao L, et al. Health-related quality of life at 30 days among Indian patients with acute myocardial infarction. Circ Cardiovasc Qual Outcomes. 2019;12(2):e004980.
24. Ruo B, Rumsfeld JS, Hlatky MA, Liu H, Browner WS, Whooley MA. Depressive symptoms and health-related quality of life: the Heart and Soul Study. JAMA. 2003 Jul 9;290(2):215-221. doi: 10.1001/jama.290.2.215.
25. Tully PJ, Cosh SM, Baumeister H. The anxious heart in whose mind? A systematic review and meta-regression of factors associated with anxiety disorder diagnosis, treatment and morbidity risk in coronary heart disease. J Psychosom Res. 2014 Dec;77(6):439-448. doi: 10.1016/j.jpsychores.2014.10.001.
26. Dickens CM, McGowan L, Percival C, Tomenson B, Cotter L, Heagerty A, Creed FH. Contribution of depression and anxiety to impaired health-related quality of life following first myocardial infarction. Br J Psychiatry. 2006 Oct;189:367-372. doi: 10.1192/bjp.bp.105.018234.
27. Celano CM, Daunis DJ, Lokko HN, Campbell KA, Huffman JC. Anxiety disorders and cardiovascular disease. Curr Psychiatry Rep. 2016 Nov;18(11):101. doi: 10.1007/s11920-016-0739-5.
28. Taylor RS, Dalal HM, McDonagh STJ. The role of cardiac rehabilitation in improving cardiovascular outcomes. Nat Rev Cardiol. 2022 Mar;19(3):180-194. doi: 10.1038/s41569-021-00611-7.

29. Adam CA, Erskine J, Akinci B, Kambic T, Conte E, Manno G, Halasz G, Sileikiene V, Fogacci F, Perone F. Exercise training and cardiac rehabilitation in patients after percutaneous coronary intervention: comprehensive assessment and prescription. J Clin Med. 2025 Feb 27;14(5):1607. doi: 10.3390/jcm14051607.
30. Ski CF, Taylor RS, McGuigan K, Long L, Lambert JD, Richards SH, Thompson DR. Psychological interventions for depression and anxiety in patients with coronary heart disease, heart failure or atrial fibrillation. Cochrane Database Syst Rev. 2024;4:CD013508. doi: 10.1002/14651858.CD013508.pub3.