Reviewer's report

Title: The impact of preoperative anxiety and education level on long-term mortality after cardiac surgery

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Reviewer: Tom Rutledge

Reviewer's report:

Summary: This study reports on relationships between a collection of psychosocial measures and mortality rates over a median 7.5 years of follow-up in a moderate sample of post-CABG patients. Consistent with many prior papers, several psychosocial factors emerged as predictors of subsequent mortality events.

Merits: The paper is well-written and competently performed, yielding results that are consistent with prior research.

Major revisions

• The principle limitation of the paper is the lack of novelty. In the abstract and introduction, the authors point out that there is considerable evidence linking psychosocial factors to cardiovascular events and mortality. In both places, however, they further state that “there is still a scarcity of knowledge about how these factors are related”, which suggests that this paper will focus on mechanisms, interactions, or some other question that doesn’t duplicate the hundreds of prior papers on this subject. Unfortunately, the methodology and results do not focus on the “how” question at all, instead presenting survival models similar to prior studies. The lack of anything new certainly weakens the impact of the findings.

• As a reader, I can offer suggestions that could augment the above. For example, a novel feature of the study was the repeated measures of anxiety and depression; providing a component of the results dedicated to examining the consistency of anxiety or depression scores over time or predictors of consistently elevated anxiety/depression could be novel and clinically useful. Similarly, in light of the well-known overlap between anxiety and depression, it could be valuable to examine interactive models that categorized patients into groupings such as anxious only, depression only, neither, or both rather than statistically assessing them as competing, independent factors.

• It would seem prudent to have controlled for anxiolytic/antidepressant use in the survival models, particularly given that Table 1 suggest different rates of treatment in the survivor groups.

• The authors present psychiatric treatment and psychotropic medication use data in Table 1, but provide no interpretation. The endpoints appear conflicting in some sense, with survivors having lower rates of psychiatric treatment history but
higher rates of anxiolytic & antidepressant use. Based on these alone, it would seem that one could argue that the lower income, higher anxiety folks could have either been undertreated or their symptoms less effectively managed.

- Finally, it is common in these types of papers to conclude with recommendations for further psychiatric screening and treatments. This paper does the same. However, there exist multiple reviews and randomized trials showing that screenings are not cost-effective and psychiatric interventions in cardiology populations ineffective at lowering event rates. Given the lack of objective evidence supporting such recommendations, it seems nonscientific to keep making them (references: Thombs BD, de Jonge P, Coyne JC, Whooley MA, Frasure-Smith N, Mitchell AJ, Zuidersma M, Eze-Nliam C, Lima BB, Smith CG, Soderlund K, Ziegelstein RC. Depression screening and patient outcomes in cardiovascular care: a systematic review. JAMA.; Baumeister H, Hutter N, Bengel J. Psychological and pharmacological interventions for depression in patients with coronary artery disease. Cochrane Database Syst Rev. 2011;9:CD008012.). Instead, it may be better fitting with the data to suggest further inquiry into the mechanisms by which anxiety, education, or other psychosocial factors may be related to objective health endpoints.

Minor revisions

- The figures confused me. The figure titles indicate that the contents reflect correlations, yet the actual figures display means and error bars. This should be made consistent.

- What was the rationale for enrolling 197 consecutive patients? For example, did a power analysis determine this was sufficient to address relationships? Did logistical factors limit enrollment to the 11-month period?

- Given the importance of psychological factors to this paper, I recommend differentiating between anxiolytic and antidepressant use in Table 1, which are currently combined.

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:

I declare that I have no competing interests