Reviewer's report

Title: Personality and time delay to treatment of acute myocardial infarction.

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Reviewer: Kim Smolderen

Reviewer's report:

The aims of the paper written by Schlyter et al. are 2-fold: to study the association between psychosocial patient characteristics and prehospital delay and to study gender differences in these psychosocial characteristics. Although the 2 objectives are both interesting to study, it is hard to combine these different objectives into one paper. It prevents the intro, analyses, discussion from being focused and leaves us with very superficial observations that do not reach the level of precision that these topics deserve; addressing these objectives in separate papers would probably have been better. Besides this overall comment, I have some important concerns (Major Compulsory Revisions) about the lack of updated literature that the authors failed to integrate in their intro and discussion, the non-transparent analysis plan they performed, and the selection bias that must have been introduced in their sample, by only including those MI patients when research staff was available (absence of researcher between 8am-5pm and during holidays). I will be more specific in my suggestions and comments below:

1. Introduction; it is odd to start the intro with a broad overview of psychological factors that have been studied in CVD, when the primary outcome measure is prehospital delay. Also, Type A behavior is considered as a personality trait, which is actually not true. It is a constellation of behaviors that was observed in men that were considered at-risk of CVD. Its component ‘hostility’ is probably the only trait that comes closest to a personality trait.

2. Also in the introduction – I miss the clinical context/background on the research/clinical relevance of studying prehospital delay in acute myocardial infarction.

3. Papers that are relevant to the area of research on prehospital delay (and its association with psychosocial characteristics) have been missed in this paper. The scientific statement on patient characteristics and prehospital delay in Circulation (Moser et al., 2006), the work of Kathleen Dracup, the recent work of Sullivan et al., (Sullivan MD, Ciechanowski PS, Russo JE, Soine LA, Jordan-Keith K, Ting HH, et al. Understanding why patients delay seeking care for acute coronary syndromes. Circ Cardiovasc Qual Outcomes. 2009;2:148-54.), Smolderen et al., (Smolderen KG, Spertus JA, Nallamothu BK, Krumholz HM, Tang F, Ross JS, et al. Health Care Insurance, Financial Concerns in Accessing Care, and Delays to Hospital Presentation in Acute Myocardial Infarction. JAMA. 2010;303(14):1392-400.), and several other articles all discuss the importance of psychological factors in prehospital delay. Moreover, in most of these papers,
psychological factors WERE associated with prehospital delay, while the current study could not identify such associations, which – when interpreted against the potential selection bias and the limited sample size – raises some questions about the robustness of the results the authors report.

4. Methods – The headings design, setting, and participants could probably be combined into one heading (Study Design and Participants).

5. Participants – it is not clear to me why those aged 71 years or older are excluded – this probably introduces another selection bias in your sample, as a substantial proportion of patients who have had an AMI are older than this threshold.

6. The description of the primary outcome measure (prehospital delay), should deserve its own heading and would need to be described in more detail how this information was obtained? Was information collected as a continuous variable or in categories? I assume the former, as the authors seem to divide their cohort into quartiles based on the delay times. This is also problematic, as typically, classifications that are more clinically interpretable are being used in the research that has been done on prehospital delay. In how many cases was prehospital delay information missing? How did the authors handle missing data or correct for missingness in their analyses?

7. The lack of information AMI severity is another limitation. Readers will not have a notion about the proportion of STEMIs, non-STEMIs in your cohort, LVEF, Killip class, …

8. Stroop test – seems that only a limited subset of the total cohort completed this burdensome assessment. Would probably leave this measure out for your prehospital delay paper, as you will end up with a limited sample size, limiting your power.

9. Statistical analyses – it is absolutely unclear to me how the analyses were performed, how many, which model was being used, what covariates did the authors include into their models,... From table 2, it almost seems that they did multiple comparisons for all these factors listed in the table. From the descriptions the authors provide, I would be unable to replicate your study, and this is what a method section/doing research really is about. Can somebody else, who is interested in your work, replicate what you did? How else could we compare our findings of all the studies we perform in this area?

10. The absence of the researcher between 8am-5pm is problematic. It is problematic because you have introduced a selection bias in this way. Prior findings have demonstrated that the time of day/week people are experiencing an MI is an important factor for prehospital delay as well. This study failed to take this information into account and only had a cohort that experienced an AMI at certain times of the day/week, which limits generalizability of your findings.

11. Overall, I appreciate the effort that certainly must have went into this project and paper, but I would really encourage the authors to focus on one or the other objective, streamlining and focusing your intro according this objective, and review the literature that I mentioned in my comments, and look for a more thorough analysis plan, and description of your results (prior work done on
prehospital delay can give you good examples on how data is being handled).

**Level of interest:** An article of insufficient interest to warrant publication in a scientific/medical journal

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

I declare that I have no competing interests