Reviewer's report

Title: Somatic health among heroin addicts before and during opioid maintenance treatment: a retrospective cohort study

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Reviewer: Jodie Trafton

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General
Although this manuscript addresses an interesting and important topic, the study is not described in enough detail to allow for adequate interpretation of the results. The methodology is vaguely described, making it impossible to understand exactly how the study outcomes are defined. The manuscript will need to be revised to better describe the methodology before the science can be adequately reviewed.

Similarly, the background literature is only briefly described. A more detailed summary of existing data on medical health in opioid dependent patients in and out of OMT, and the limitations of existing literature would greatly strengthen the manuscript.

A strength of the study is the long-time period over which health care use was assessed, and the inclusion of the majority of OMT patients in the district.

Some specific questions and suggestions:

Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

Background:
1. First Paragraph: It is not obvious why the fact that substance-using populations have high morbidity and insufficient contact with health services implies that “we have insufficient knowledge of epidemiological patterns within these groups”. Are you suggesting that we can only study epidemiology in people who show up for health services? Doesn’t the fact that you know that they have high morbidity suggest that we know something about epidemiological patterns within these groups? I would elaborate to better explain this rationale or remove this argument.

2. A more detailed presentation of results from previous studies of health and health-related quality of life in OMT patients is warranted. Similar, a more in depth presentation and critique of current evidence of health benefits and improved health care follow-up in association with OMT is needed. Simply stating that evidence is poor does not clarify the limitations of the current literature that this study is attempting to fill.

Methods
3. More information on the “structured patients interview focusing on disease episodes and contact with health services” is needed. How was a disease episode defined? Were diagnoses obtained? Were symptoms and symptom severity obtained? What was included as an episode? Were psychological diseases counted (e.g. episodes of depression)? How were chronic conditions coded (e.g. diabetes, asthma)? Was pain considered a disease (i.e. was a period of low back pain considered a disease episode)? Did a disease episode always correspond to a health care visit? You mention in the discussion that “we only counted events documented in records”. Does this means that episodes were based on upon medical record review and thus actually more of a measure of health care utilization than morbidity? Was a validated interview instrument used? Could patients reliably remember all disease episodes over a 10 year period? You presumably could check this by comparing interview and medical record results. Were methods to improve patients’ recall of disease episodes (e.g. Time-line followback procedures) used? What training did the interviewer receive and were there multiple interviewers?

4. More information on how patient record information was collected is needed. It appears that medical
records are stored separately at hospitals, outpatient clinics, emergency wards and GPs in Gjøvik. Is that true? Were clinics searched for records for each of the participating patients? Were records looked for only at clinics where patients reported attending? What information was extracted from medical records? Please define treatment day and outpatient clinic contact in hospital. Does “number of outpatient clinic contacts in hospital” mean that visits to outpatient clinics and GPs were not included? How did you define “due to acute disease”? Were acute problems related to chronic disease counted (i.e. an emergency room visit for an acute asthma attack, a GP visit about recent migraine headaches)?

5. Examples of “other substance-related episodes and other episodes” (in Table 1) would be helpful. Similarly examples of what would be rated as a serious, moderate, not serious or trivial episode would be helpful for understanding the categorization.

6. For the diagnosis and severity categorization, who categorized the episodes? What was their training? What was the categorization based upon (the interview or the medical record review, or both)? Did more than one person conduct the categorization?

7. The authors describe inter-scorer agreement between 2 independent investigators on severity and diagnosis category for a subsample of the population. As they describe, agreement on severity was poor. How did they choose to report severity in cases where the investigators disagreed (Table 2)?

8. The authors measure health care utilization as their main measure of health problems. As they mention in the first line of their background section, substance use disorder patients make unreliable use of health care despite health problems. Do they have evidence that patients regularly obtained health care for their disease episodes? If they did in the period before OMT, does this suggest that they were non-representative of the typical injection drug-using population? This should be discussed.

RESULTS

9. The median methadone dosage is high compared to what is typically used in many settings. This is fine, but could you please report the range of methadone doses in the study population.

10. Table 1: the definition of an episode/contact is needed.

DISCUSSION

11. You state that “This study demonstrates a high level of somatic morbidity and health care consumption…”. What standard are you using for comparison? Is somatic morbidity and health care utilization still high in patients in OMT, as compared to for example, patients matched on age, and chronic co-morbidities? Given that this study did not use validated and normed measures of morbidity and health care use, it is difficult to interpret the level of morbidity and health care consumption. Is 123.5 episodes/contacts per 100 patient years a lot? Depending on what was counted as an episode/contact 1.2 contacts per year might not be much. For example, one viral infection or check-up per year and sporting injury every 5 years could give you 1.2 health care contacts per year, and that seems pretty normative for a typical healthy person. An additional non-opioid dependent control group would greatly strengthen the study and improve interpretability.

12. It is notable that OMT did not alter frequency of disease episodes that were not related to substance use. This should be discussed. Does OMT simply prevent the direct medical consequences of drug use or does it improve physical health in general? This suggests that it may only reduce the consequences of drug use. Here again, it would be helpful to know whether the general physical health of patients in OMT is similar to that of the general population. This would clarify whether the lack of improvement in non-substance related physical health is due to an inability to improve poor health in opioid dependent patients or simply a floor effect on health outcomes.

Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

Discretionary Revisions (which the author can choose to ignore)

13. The language throughout the manuscript is often imprecise and roundabout and could be improved. As
an example, in the notes in table 4, “All patients had episodes neither before nor during OMT” should be revised to something like “All patients had zero episodes.”

**What next?:** Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

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

**Quality of written English:** Needs some language corrections before being published

**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.