Reviewer’s report

Title: Associations between physical activity and motivation, competence, functioning, and apathy in inhabitants with mental illness from a rural municipality: a cross-sectional study

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Reviewer: Lizzette Gómez-de-Regil

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Physical activity, motivation, apathy, and functioning in inhabitants with mental illness from a rural municipality: a cross-sectional study

Poor physical activity, a major risk for cardiovascular diseases, is an important issue in public health. This cross-sectional study explores this topic in patients with SMI, whose psychical status might prevent them from PA, although physically they do not present any limitation. Overall the manuscript presents an interesting topic not widely explored. Ideas are expressed with clarity; however, the organization of the text is irregular, from the title to the conclusions. Some words are used interchangeably, order of ideas is not homogeneous, and some information is presented in other sections. I consider the manuscript of good quality, and improving the edition and format of concepts and ideas will allow the reader to understand the relevance of the study.

Introduction

Ideas are presented clearly and fluently. High mortality in patients with SMI, apart from suicidality, is related to cardiovascular diseases, which in turn, are related in all populations with poor PA. This study focuses particularly on motivation as a factor influencing the engagement to PA of patients with SMI; yet, mentioning other important factors (e.g. side effects of medication, symptoms and comorbidities).

In the second paragraph the levels of motivation are briefly presented, from "amotivation" to "integrated regulation", followed by the mention of "perceived competence". Following the four extrinsic motivation levels is the "intrinsic motivation" level, which is not mentioned. Also, in the SDT "autonomy", and for some authors "relatedness" as well, is a factor determining the individual's motivation. It will be very valuable for the reader if the authors mention these concepts and comment why they decided not to include them in their study.

The third paragraph emphasizes that "competence" and "intrinsic motivation" are related to PA; yet, the latter was not mentioned in the previous paragraph. This association has been evidenced
in patients with SMI, but in addition in this study authors also considered negative symptoms and functioning. The last paragraph presents the two study aims.

Paragraph 3 reads: "…. to bring forth knowledge on the association between PA and motivation for PA, as well as indicators of negative symptoms and functioning". This last sentence is not clear.

I recommend authors to organize and name factors/variables of interest homogenously through all the manuscript (title, abstract and main body), else it becomes confusing; for instance:

- Does "motivation for PA" include "motivation for PA" and "perceived competence"?

- In paragraph 3, they mention "indicators of negative symptoms" and "indicators of functioning"; in paragraph 4 "clinical variables"; in methods, "health and social functioning" and "apathy", in the title "apathy" and "functioning".

Methods

"Potential participants were identified through examining lists of individuals utilising mental health service in the municipality and the relevant mental hospital and outpatient clinics" Were these lists electronic? Do they include all SMI patients, receiving mental health care in public and/or private facilities of the municipality?

"This resulted in a total of 106 participants being interviewed in the study (i.e., 0.7% of the population of the municipality)" Is this 0.7% out of the general population or the SMI estimated population?

For all measures I suggest to clearly state the minimum and the maximum possible score, and the direction of meaning, e.g. a high SH-AES score means low levels of apathy.

Page 10, line 11. Is the term "stem" correctly used? It sounds odd to me.

As with Apathy, I recommend to mention what theoretical background the measures of motivation and competence rely on.

For the HoNOS measure I recommend to include who developed the instrument (British College of Psychiatrists) and if it is regularly used in Norway or just for the research purpose of the study. The criterion for inclusion in the "clinical" group is at least one item with a score of 2 .... and not even one score of >2, I assume, is that correct? Please clarify in text.
The results of the normality testing along with internal consistency must go in the Results section, and equally provided for all five scales. Given that 5 scales were used I think it is worth to mention which were or not normally distributed rather than just stating "the majority".

How patients were grouped by variable must be included in the measures section, as being classified into a particular group is a (simplified) measure criterion. Data analysis section must briefly state the descriptive and inferential statistics ran, and state clearly which tests aimed at responding each one of the two aims of the study as they were presented in page 5.

The last paragraph of the Methods section better be included in the results, after the descriptive features of the sample and before the descriptive statistics on scales.

Results

I miss the following features of the final sample.

- Distribution by inclusion criteria (as three possible options are mentioned in the design and procedure section (lines 7 - 13).

- Distribution by primary mental illness diagnosis spectrum either icd or dsms (e.g. substance related, anxiety, affective, schizophrenia and other psychosis, …)

Although the necessary information is present it is really difficult to follow, and so is trying to find the information that was earlier mentioned in text. I strongly recommend ordering the text in all sections following the same sequence when presenting variables and aims, and all that follows (measures, analyses, results, tables, discussion). It is very important to be constant when naming variables/factors. For instance, apathy is indiscriminately name for clinical variables.

Please follow the order of the variables in the results section as they were presented in the methods section, and in all through the text.

Why are some tables inserted in text whereas others come after?

Why were sociodemographic variables not included in the analyses presented in table 5?

Discussion

Given that motivational issues seem an important factor related to PA it would be interesting to know some of the most (and the least) reported reasons (items) that patients addressed.

Main results should be mentioned in short so that comments on their pertinence outstand. Implications and limitations are accurate. I miss some comments regarding the relevance of the
social (e.g. interaction with others, commitment and discipline) and physical (e.g. body oxygenation) aspects of getting involved in PA that benefit everybody's mental health. I also consider important to make a reflection on the particular circumstances of patients with SMI, for whom doing any specific activity (even basic daily activities such as self-hygiene and feeding) is not a matter of motivation but rather of volition, i.e. abulia. Conclusions in the abstract mention "...health care practitioners should emphasize helping people with SMI develop more intrinsic forms of motivation". Practitioners must be cautious and sensitive, as some patients might be struggling with their emotional dysfunction, rationally motivated to better social functioning (including PA) but finding themselves lacking that vital energy, the inner burst to move forward, and that is not a matter of motivation per se. For those patients whose volition is affected, practitioners calling on their "motivation" might seem non-empathic and their suggestions overwhelming.

**Are the methods appropriate and well described?**
If not, please specify what is required in your comments to the authors.

Yes

**Does the work include the necessary controls?**
If not, please specify which controls are required in your comments to the authors.

Yes

**Are the conclusions drawn adequately supported by the data shown?**
If not, please explain in your comments to the authors.

Yes

**Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?**
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics

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Please indicate the quality of language in the manuscript:

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