Reviewer’s report

Title: A retrospective analysis of determinants of involuntary psychiatric in-patient treatment

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Reviewer: Lily Peppou

Reviewer’s report:

In the present manuscript, authors set out to explore the risk factors for compulsory admission in a metropolitan area of Germany in an endeavour to inform the design and implementation of preventive interventions. To this end, they have extracted data from hospital records.

I think the topic is of primary importance and I really enjoyed reading something from Germany. Most of the existing literature on the topic emanates from UK, the Netherlands and the Scandinavian countries. Nonetheless, authors have not appropriately placed their study in the international literature, highlighting the Germany case, especially the Cologne case, as I presume that legislation on involuntary hospitalization is different at different parts of Germany.

Concomitantly, a lot of information about the study methods is deducted from reading the Discussion, which is a flaw of the manuscript.

Please find below my comments/recommendations/queries per section:

Introduction

I think the authors have appropriately justified the rationale of their study (i.e. to design preventive interventions) and place it in the wider medical, ethical and legal context.

However, I find their literature review poor and focusing largely on German findings, rendering their study unattractive for an international audience. The vast majority of European studies, which have explored similar research objectives (i.e. to identify risk factors for compulsory admissions) concentrating either on patient characteristics or systemic characteristics (e.g. the configuration of mental health services) are not included into the introduction. For example:

- Bindman et al. 2002, Social Psychiatry & Psychiatric Epidemiology
- Craw & Compton, 2006, Social Psychiatry & Psychiatric Epidemiology
- Myklebust et al. 2012, Nordic Journal of Psychiatry
- Salize & Dressing, 2004, British Journal of Psychiatry
van der Post et al. 2009, Psychiatric Services


In this context, authors should better argue for the added value of the present study in relation to an international audience.

Furthermore, "legal traditions" (p. 4, line 16) requires elaboration and "quota" (as opposed to rates) (p.4, line 16) requires clarification.

Methods

This is a retrospective cross-sectional study, using hospital records to glean information on variables.

Sample

-I would like to know more about the Mental Health Act in this region of Germany. Some information about the process and the criteria would have been helpful. Moreover, I could not assess the generalisability of study findings. Are these 4 psychiatric hospitals the only hospitals in Cologne treating involuntarily admitted patients? Are there any general hospitals? Is there outpatient civil commitment in this region?

-Moreover, it would have been interesting to compute the rates of compulsory admissions in the region of Cologne, if this is feasible. This would have been an interesting finding for an international audience, as international diversity in the rates of involuntary hospitalizations in European countries is of outmost importance.

-Regarding the involuntarily admitted group, authors state that in this group both patients primarily admitted on an involuntary basis were included as well as patients whose status changed from voluntary to involuntary during hospitalization. I am wondering whether these two groups are different in terms of their clinical and socio-demographic profile. A sensitivity analysis with both sub-groups mingled (as the authors did) as well as with two sub-groups separated would greatly enhance the robustness of the study methods.

-More information about the sample size of the control group is required. Information about the random selection (how was random selection performed?) is necessary as well as the rationale for selecting its size. Why not include all voluntarily admitted patients? Was it for feasibility reasons solely or was there another justification?

Instrument and Procedure
I think information gleaned from the hospital records should included in the main text of Methods, rather than being summarized in a Table, as a supplementary material. It is highly important information and I would like to know more details about data extraction from these records (especially how the 5 raters gleaned this data) in order to assess whether investigator bias may have arisen. Authors make a note about inter-rater reliability in the Discussion section (Strengths and Limitations); however, readers miss important information about the ways whereby information was gleaned or/and rated.

-Much of the paper's discussion addresses the influence of diagnosis. For this reason, the classification system (I presume the ICD-10 has been employed) used and the ways whereby diagnosis was assigned (was diagnosis assigned by the rates or by hospital staff?) should be explicitly stated and discussed.

Statistical Analysis

I am not an expert at CHAID analysis. I think the manuscript will be improved, if authors could add some information about the superiority of this method over regression models. In this way, readers could better grasp the strength of this study, as opposed to studies utilizing multiple regression models.

Overall comment: the Methods section is poor in terms of the information it provides. A lot of information regarding the methodology of the study is deducted from the Discussion section and as a result of this, I think authors should definitely re-write their Methods section.

Results

Sample characteristics is not included into the results.

Discussion

I particularly enjoyed reading the Discussion. I think study findings are interesting and worth reading. Nonetheless, the part where present findings are discussed in relation to existing literature is poor (for the reason explained in the Introduction). Moreover, I think the importance of symptom severity (overall or by symptom area: e.g. psychotic symptoms, disorganization severity, etc) and insight (lack of insight) as clinical variables in driving involuntary hospitalizations is concealed in the paper. From my point of view, these two variables are very important in explaining involuntary hospitalizations and having not included an assessment of these clinical variables is a noteworthy limitation. Of course, I can understand that by extracting data from medical records measuring symptom severity was not feasible, but I think this limitation should be acknowledged. I think authors rightly address the limitation of using hospital records with respect to the reliability of this data source; however, they miss another limitation attached to medical records, i.e. that data routinely collected for clinical purposes are usually incomplete for research purposes. My concern is not about the missing information
percentages (that authors acknowledge as a shortfall). Rather, it is about the missing variables that may constitute the confounders of the study design.

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

No

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

Unable to assess

**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 recommend additional statistical review

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