Reviewer's report

Title: Assessment of need for Inpatient Treatment for Mental Disorder among Female Prisoners: A Cross-Sectional Study of Provincially Detained Women in Ontario

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Reviewer: Ingeborg Jeandarme

Reviewer's report:

I read this paper with interest. This study investigated the security needs for female prisoners in Ontario. The study covers an entire province in Canada and investigates need for admission, which is interesting. DUNDRUM-1 and DUNDRUM-2 was scored for those that were assessed as having a 'very serious', 'serious' or 25% of the group with 'moderate' mental health needs. The DUNDRUM-1 is designed to assist in determining the level of hospital security (high, medium, low, open facility or out-patient). The DUNDRUM-2 is designed to assist in determining the urgency of admission to hospital. It's an interesting study attempting to provide validation for a specific subpopulation within forensic psychiatry. The paper addresses an important area of forensic mental health. There are, however, some limitations that needs to be discussed.

Background

1*The introduction lacks a reason on why it is important to investigate women separately. Are women expected to be different compared to men with regard to mental health needs and security needs. Prevalences for women are given without comparing them to the prevalences of men. Why would you expect different DUNDRUM scores for women? The authors state that "Moreover, this group frequently have complex and multiple needs due to having simultaneous mental disorders, and high rates of previous trauma (5) and high levels of psychological distress(6)." However this is also the case for male prisoners. eg. Fazel et al. 2002 reports prevalences for men also.


3*The study by Jakobowitz (2017) needs to be explained in more detail. I.e. the definition given for an unmet need is not clear for me.
Method

1* The authors state that: "Health care managers at each institution were asked to categorise the severity of mental health need of every prisoner on a 5-point scale as either "Very Serious", "Serious", "Moderate", "Mild" or "None"."

Which method/scale was used to determine the severity? Is this done with the BJMHS? Does the BMJMHS provide cut off points for these categories? If this is not done with an existing scale/method what steps have been done to investigate it's validity?

Statistical analyses

1* This section needs to get into more detail. For example with regard to AUC analyses, which variables were used: outcome, predictors. For example, sometimes need for admission is used, whereas in other cases, need for general bed of need for high intensity bed is used.

2* Are the analyses done with the 9 item total score of the DUNDRUM or the 11 item total score? Please make this clear throughout the manuscript and preferably use both.

Results

1* The authors state that "Taken together, this means that if the sample of case files rated as "moderate" is representative of all cases rated as "moderate", and assuming that no cases rated as "mild" or "none" would require admission, and that among the three missing files 1 would require admission, in total 41 inmates (6.5%) need admission, of which 8 require a high intensity bed."

I tried to recalculate these numbers but could not find the same conclusion. I find 42 (25 + 16 + 1) requiring admission and 20 requiring a high intensity bed, given that the missing file does not require a high intensity bed; please rephrase this section to make it clearer.

2* "The weighted Cohen's Kappa coefficient for all DUNDRUM-1 and -2 items was 0.52 and Percent Agreement Coefficient of 0.87, indicating moderate agreement."

Please provide kappa and PAC for DUNDRUM-1 (11 item total and 9 item total) and DUNDRUM-2 separately including mean, SD and range per rater.
3* "We found that DUNDRUM-1 scores for those requiring a high intensity bed were significantly higher than those needing a general hospital bed (t=-3.27, p=0.003, AUC = 0.83, [0.67-0.98])."

Which test is used? I can imagine that the DUNDRUM-scores were not normally distributed. Please clarify in the statistical analyses.

4*line 47 "There was a trend towards associations between item 7 (Preventing Access) and item 8 (Victim Sensitivity) and need for admission which did not reach statistical significance."

.10 is not a trend. Be careful with interpreting results like this, one could indeed argue that the choice to use 0.05 as a cut-off for significance is arbitrary and that a p-value of 0.06 is possibly as similar as 0.05. A p-value of 0.10 however is double the original cut-off.

5* "There was strong evidence for association with need for admission and the other items."

Refer to a table or provide values. Interpretation of results should be placed in the discussion section. The results section should not contain interpretations of magnitudes of effects.

6* "Item 11 (Legal Process) perfectly predicted need for outcome."

Do the authors refer to the OR of 1 in table 1? Because that is an incorrect interpretation of the OR. Patients who needed admission scored the same as patients who did not need admission. Please check your interpretations of the analyses.

7* "The AUC for DUNDRUM-1 predicting need for admission was slightly higher when items 2 (Seriousness of self-harm) and item 4 (Immediacy of risk of Suicide) were omitted from the total scores (AUC = 0.82 [0.71-093]) compared with (AUC = 0.75 [0.63-0.88])."

Again could you clarify the interpretation of your results. You can compare these AUC's in STATA to see whether or not the model improved by removing item 2 and item 4 and report the p-value.

8* for DUNDRUM-2 separate AUC's are given (general vs no need; high intensity vs general). As mentioned earlier the statistical analyses are not detailed enough which makes the results
section difficult to follow. Please provide these values for DUNDRUM-1 (9-items and 11 items) also.

9*" There was only weak evidence for an associated between legal urgency scores and need for admission (OR 1.53, p=0.068)."

Again interpretation of results. Technically it is not significant therefore no association.

10* Please provide sample sizes in table 2.

Discussion

1* The second sentence of the discussion states:

"We estimated that among a population of 643 provincially detained women in Ontario 42 required admission to a hospital facility, and a further 16 required a high intensity bed" whereas in the results section it states:

"in total 41 inmates (6.5%) need admission, of which 8 require a high intensity bed."

Perhaps I read this incorrectly (see comment 1 for the results) and by clarifying that section this misinterpretation will be corrected.

2* "There was no difference in mean age between those that needed admission and those that did not." Data regarding this is not reported in the manuscript, you need to report this in a table or in the main text. It would be interesting to see whether the people that needed admission were different with regard to demographics compared to the people that did not need admission. Also I would like more background information on type of offences, length of imprisonment and whether or not some of the remand women were declared NGRI or not fit to stand trial.

3* "Those requiring admission primarily had a psychotic illness (schizophrenia/schizoaffective disorder)." Who made the diagnoses? And based on what manual/method? Did you find significant differences between types of diagnoses between no admission, general or high. Please report the data in results section.
"This is consistent with the purpose of the tool, and our finding provides support for the use of this tool in a female population."

Please clarify in the introduction on why you would expect differences in women? Please also expand on why you think the DUNDRUM has additional value in determining need for admission or high intensity admission.

5* Nothing is said about the interrater reliability.

Limitations

Line 17-19 "the same clinician rated the DUNDRUM and provided an opinion as to whether the inmate needed admission"

I believe this is a major limitation. Scoring the DUNDRUM could have influenced the decision on whether or not the inmate needed admission and vice versa and this could explain the predictive value of the DUNDRUM. Why did the author not register which patients were admitted to a general secure bed or a high intensity bed. This would have given an unrelated outcome measure more free of rater bias. I understand that the authors want ecological valid data but for a validation study, the outcome measures should not be made by the same people that did the scoring of the instrument. The study becomes a lot less valuable in this respect, if not useless. The authors report data on which patients were admitted and should use that as an (additional) outcome measure.

Conclusions

"We have also provided validation, for the first time, of the DUNDRUM in a female prison sample."

Your study may be the first study in an exclusive female population. However, previous studies have included both male and female participants.

Minor remarks

The paper needs a thorough proofreading regarding typo's, consistency in reporting, reference styles (not conform journal guidelines) and the use of past tense.
For example:

Abstract

The word 'scale' is missing in line 32
The second 'and' should be deleted in line 54

Background

P4 line 38 'a recent study' not 'a recent studies'
P4 line 55 'a particular lack' not 'a particular a lack'
P5 line 44 I believe the word 'females' is missing after 'both males and'
P5 line 55 'of the number of women that required treatment' not 'of the numbers of women that requires treatment'

Variables and procedure

P7 Line 58 remove 'in'
P8 line 4 remove 'in'

Results

Line 28 'association' not 'associated'

Limitations

Line 45 'required' not 'requires'

Good luck with the review!
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.

No

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

No

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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I translated and validated the DUNDRUM in Flanders.

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