Reviewer's report

Title: Health Service Costs and Clinical Gains of Psychotherapy for Personality Disorders: A randomized controlled Trial of Day Hospital-based Step-down Treatment versus Outpatient Treatment in Specialist Practice

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Reviewer: Morten Hesse

Reviewer's report:

Major compulsory revisions

This is an interesting study. But the writing is complicated, and at times I got very uncertain. In fact, my main question is: What would be the best decision for a healthcare provider who is responsible for all costs: Should I offer OPC or SDC as the frontline treatment for personality disorders? What will it cost? And what will help patients in my uptake area best? And how do the two things balance.

If I read the data right, it says that I will get the same costs, no matter what I do, but that my patients will be better off with SDC. And that I get more health benefits for less by offering SDC. If I read the conclusions in the discussion, it says that SDC is not cost-effective. Meaning that I will not get more health benefits for my money. I could not see any conclusion pertaining to this problem in the abstract, or in the conclusions section.

Further, when I look at table 6, it says that the costs for avoidant personality disorder in the outpatient group was 49728 Euros. The costs in the SDC condition was 35524 Euros. How can this not be cost effective, unless the SDC performs much worse in terms of functioning? And when I look at table 5, the coefficients for GAF change goes in the same direction as for the sample as a whole, i.e., more improvement in the SDC group. There must be some error somewhere around here.

Another question relating to the relative benefits of the two treatments, is that in SDC the change is bigger at a later point in time due to continuing improvement in the SDC group. This continuing change may be a quite important indicator of the potential long-term benefits of the treatment.

On the other hand, those in the ODC group were somewhat more likely to be employed during the follow-up waves. Was this difference present during period 0 as well, could it be a chance finding, or does it indicate that it is easier for people in ODC have a higher chance of actually getting or keeping a job?

Further, I think the sub-group analyses in the study are overstated. The subgroup with avoidant personality disorder consists of a total of 24 patients, and huge fluctuations in healthcare costs may simply be a chance finding. While I do not recommend that this is removed from the article, I think it would benefit greatly from focusing on cost-effectiveness of the two treatment modalities.
Minor essential revisions:

Overall:
I would be greatly helped by a clear definition of different health economic terms that can be used throughout the paper.

One example is treatment costs. Please clarify that this refers to the treatment that is associated with either OPC or SDC only.

You may then add a different term to refer to other healthcare costs, and finally a term for total healthcare costs.

Further, the statistical procedures section should be clarified so that the outcome variables for each model are highlighted and it becomes clear what models are applied for what purposes. References to tables of results should not be in the statistical procedures section.

1. Bottom page four:
"For poorly functioning PD patients, however, low-intensity outpatient treatments have been considered insufficient [14,22]."

This statement seems to suggest that the evaluation of the two references is based on subjective evaluations from experts. If that is so, please state this explicitly (e.g., "For poorly functioning PD patients, experts have considered low-intensity outpatient treatments insufficient."). However, if the two references cite or present data to support the claim, please rephrase.

2. Statistical procedures:
Typo: Aikikes is Akaike’s

3. Table 5: Please state the the unit of measure for GAF is GAF points.

4. Table 6 was not clear to me. The text says the cost of a GAF point, but the table does not mention that. Please clarify exactly what is meant by Delta GAF in the notes. If it is the improvement in GAF points in the sample, then I am very confused as to why you did not conclude that the OPC is more effective, as the decline in GAF points is clearly higher in the OPC condition. The text says something about the cost of a GAF point in table 6, but there is no indication in the table that that is what is meant.

The notes and legend for a table must be self-explanatory. However, if Delta-GAF means the cost of a GAF point, then the cost of a GAF point is 8 euros higher in the OPC condition, and according to the asterisk it is significant. Meaning that you get more clinical improvement for SDC. Meaning that the SDC is cost-effective, and whether the additional cost is acceptable will depend on the value of a GAF point. In the discussion, it is stated that SDC is not cost-effective. Please clarify.

Results:
5. In this section:

"In addition, increasing numbers of PDs were associated with higher costs of emergency health services [mean cost deviation per PD: 858 euros (SE: 452), PLM = 0.06]. Mood, anxiety, and increasing numbers of Axis-I disorders were not associated with deviating health service costs (PLM >0.1)."

...the word increasing could refer to an increase over time. I understand that in fact it refers to patients with more PD diagnoses according to the SCID II incurring more costs than patients with fewer PD diagnoses, but is should be clear from the text.

Discussion:

6. The discussion mentions cost-effectiveness, and states that it did not favour SDS. However, I keep getting confused about this conclusion.

So please clarify what the conclusion is: if a GAF point costs 19 Euros in the OPC condition and 10 Euros in the SDC condition, and the difference is statistically significant, then how is SDC not cost-effective?

Figure 1: This figure contains way too much information. Divide it into different subgroups or better outcomes, so that the graph becomes easier to read.

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Declaration of competing interests:

I declare that I have no competing interests.