Reviewer's report

Title: Implications for treatment burden of comorbidity and polypharmacy in people with stroke: cross-sectional population-based study

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Reviewer: Will Whiteley

Reviewer's report:

I am a clinical neurologist looking after stroke patients. This is an interesting paper, well written and worth publishing. I have a few comments:

1. The difference between multimorbidity and co-morbidity seems to me rather slight, and more a question of semantics than any meaningful difference. From a patient's and a clinician's perspective they are the same.

2. The introduction is too long, and I would suggest paring it to a description of the key question.

3. Worth mentioning the particular characteristics of the Scottish population registered with GP, so other can compare.

4. There is a qualitative difference between long term conditions, between those that might give daily symptoms (e.g. depression, heart failure) and those that are asymptomatic (e.g. blood pressure, diabetes).

5. It is not necessary to describe the calculation of odds ratios.

7. The analysis has a very high power. Is such a high p-value appropriate?

8. Is 'painful condition' a construct you have made, or is it a Reed code?

9. I am not sure it necessarily follows from the analysis that patients are on too many drugs (though I agree that this is most likely, particularly in those on 11+ medications).

The counter argument that some are on too few medications might also be made. At the very least, one would expect a patients with an ICH to be on an antihypertensive; most of those with an ischaemic stroke might be prescribed 4 medications (an antiplatelet, 2 anti-hypertensives, and a statin). One co-morbidity, present in ~ half would add at least 1, so a median of 5-6 might be too few.

10. It is really unknown whether polypharmacy is causal for poor outcomes, so it is difficult to make firm recommendations without experimental evidence, though I agree a very important question (though my gut feeling is to agree with the authors).
However, one might very reasonably ask if people with stroke have made their own decisions whether or not to take so many medications, given their modest benefits: treatment burden is necessarily subjective (some patients are terrified to stop medication, however small the benefit). Making sure patients with stroke know the relative benefits of their drugs - and make their own decision whether to take them - might be a firm clinical recommendation from the paper.

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

None