Reviewer’s report

Title: The influence of population characteristics on variation in general practice based morbidity estimations

Version: 1 Date: 7 June 2011

Reviewer: Dulcie McBride

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Overall Comments

This was a very interesting paper and makes an important point about the variation in morbidity estimates between practices and GPRNs and understanding the reasons for this.

Discretionary Revisions

Abstract

1. Does ‘listed’ need to be in inverted commas?

Background

2. Are the brackets around fully in (fully) understood necessary?

Minor Essential Revisions

Abstract

3. Define SES before using the abbreviation

4. “The differences in socio-economic status, urbanization level and ethnicity are substantial.” – suggest add explanation of which differences, e.g. between networks, practices, disease prevalence?

5. “Adjusting for these differences in patient populations did however not decrease the variation in morbidity estimations” – the grammar is a little difficult to follow in this sentence

Background

6. “To gain more insight in possible explanations for these differences in morbidity rates, we investigate to which extent variation is reduced if age, gender, SES, urbanization level,” – should this be to “what extent” not “which extent”

Methodology

7. “(population about 4.000 per postal code)” – should this be four to three decimal places, in which case I don’t think the decimal places are required, or
should this be four thousand?

Tables

8. Need a definition of 95% BI (or should that read CI?)

Results

9. “The total study population consisted of 480,038 persons in 111 practices with an average age of 38.6 years” – is the average mean or median?

10. “(MORnetwork= 1.08 (1.00-1.34) not significant)” – suggest changing “not significant” to a p-value.

11. “This indication is more visibly in incidence figures (10 out of 13) in comparison to prevalent figures (5 out of 10).” – “visibly” should be “visible” and explain what the 10 out of 13 and 5 out of 10 refer to.

Major Compulsory Revisions

Background

12. The hypothesis is generally referred to throughout this section but at no point does the hypothesis appear to be explicated stated. My assumption is that as the distribution of various socio-demographic factors varies between GPRNs the hypothesis is that the incidence and prevalence of certain diseases will be higher in those GPRNs with a greater proportion of patients living in urban/deprived areas, for example. The hypothesis needs to be clearly stated.

Methodology

13. It should be explained which codes are used to define to the diseases. Are just diagnostic codes used – thereby implying that tests were required or referral to secondary care may have been necessary to get the diagnosis. There is evidence that referrals to secondary care vary by socio-demographic factors. Or are the authors also looking at symptom codes in which case is there the possibility that some patients have been missed, particularly with generic conditions such as “back problem” which may be written in free-text sections of databases and not have an ICD-10 code.

14. Further explanation would be useful around incidence and prevalence of disease. Are incident cases the first episode ever recorded for a patient or the first episode in that year?

15. Many readers will not be familiar with this SES score so some mention of its validity is necessary. The rationale for grouping the quintiles into three categories is needed. Again, the validity of the methods for defining urbanisation level would be useful. And again, many readers may not be familiar with ‘non-western
immigrants’ as a definition of ethnicity and further explanation may be necessary along with its validity and the rationale for distinguishing the four categories.

Analyses

15. Suggest an explanation of why picked the two models including adjusting for age and gender together rather than models adjusting for each socio-demographic variable separately and then together.

Results

16. Socio-demographic characteristics and differences in morbidity
- this paragraph may need clarifying as it starts by suggesting that socio-demographic factors contribute significantly to morbidity estimates for some of the diseases (results not shown) but then goes on to state that only small changes in variation in morbidity estimates are observed after adjustment for these characteristics.

17. The same paragraph notes that “minor decreases” in MORs were observed for most diseases – suggest that an explanation of the significance or lack of significance of these decreases is included.

Discussion

18. “For these diseases, differences were large between practices as well as between networks, indicating that diseases that are more difficult to diagnose are more susceptible for variation, partly due to diagnostic differences among GPs.” – another alternative is that they are more susceptible to different ways of coding and recording and some population groups may be more likely to present than others with these conditions.

19. “In this context it is also interesting to investigate the differences between strict and more interpretable registration rules on variation among practices.” – what is meant by registration rules? This probably needs some further explanation here.

20. “Osteoarthritis is a chronic disease, but since health care cannot always provide effective treatment patients do not necessarily contact their GP each year. These differences in registration rules may explain some of the variation in prevalence rates among GPRNs.” – there is also evidence that presentation and frequency of presentation to primary care for osteoarthritis is related to a number of socio-demographic characteristics.

21. “Overall, the relations found seem to be legitimate. For example, low SES was related to higher morbidity rates of diabetes mellitus and in COPD high SES was related to lower morbidity rates (results not shown) [20]. Although direct measures are more precise, the contribution to explaining the differences in morbidity estimations was very small.” – again more explanation and discussion would be useful about why this is the case as it appears contradictory.
Level of interest: An article of importance in its field

Quality of written English: Needs some language corrections before being published

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'