Author's response to reviews

Title: The role of 'confounding by indication' in assessing the effect of quality of care on disease outcomes in general practice: results of a case-control study

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Author's response to reviews: see over
Dear BioMed Central Editorial Team,

First of all, thank you for inviting us to resubmit our manuscript ‘The role of ‘confounding by indication’ in assessing the effect of quality of care on disease outcomes in general practice: results of a case-control study’. After reading the comments of your reviewer, we have decided to accept this invitation and to revise and resubmit the manuscript.

On a separate sheet, you will find the corrections and adjustments I made in order to clarify the issues raised by the reviewer.

Looking forward to your response.

Yours sincerely, on behalf of all authors,

Dr. Johan S. de Koning
1. Reviewer’s comments: ‘It is not clear whether stroke cases and controls were matched in terms of the same general practitioner. I believe it would be appropriate not to do this, but whatever the authors’ strategy, it should be made explicit.’

Author response: As mentioned in the text: ‘for each case, two controls were randomly selected and matched with the cases in terms of overall distribution on sex, age, and hypertension’. This means that we selected controls based on patient characteristics (sex and age distribution) the presence of risk factors (hypertension) only. We did not match cases and controls on the same general practitioner and agree with the reviewer that we should make this more explicit in the text (page 6, 1st paragraph, last sentence).

2. Reviewer’s comment: ‘The study itself is very small. There were only 28 cases of stroke. The authors indicate that the participating general practitioners often “were unable to identify stroke patients from their patient register”, thus possibly influencing the representativeness of this small number as well. Also, about half the time it was necessary to use information from the physician’s memory, rather from his/her medical records. Thus, the possibly of recall bias is present.’

Author response: Indeed, if the aim of our study was to investigate the relationship between guideline adherence on the one hand and the occurrence of stroke on the other, than we would agree with the reviewer that because of a very small number of stroke patients and a lack of information (inaccurate recording of patient and risk factor information by general practitioners) our case-control study would not be ‘an excellent’ study. However, the aim of this study was different. As detailed in the third paragraph of the introduction (page 4 and 5), the aim of this study was to investigate the ‘feasibility’ of a case-control method in assessing the effect of guideline adherence on the occurrence of stroke. We have tried to identify potential obstacles in applying a case-control study for the afore-mentioned purpose. For example, obstacles with respect to case recruitment, availability of information on risk factors, and possibilities to control for confounding by indication. The latter is reflected in the conclusion of this study: ‘at present, inaccurate recording of patient and risk factor information by GPs seriously limits the potential use of a case-control method to assess the effect of guideline adherence on disease outcome in general practice.’

3. Reviewer’s comment: ‘At the bottom of page 6, it’s stated that “for controls, however, the panellists had asked themselves the question: “If this patient had experienced stroke, could the identified sub-optimal care have failed to prevent'}
this stroke?” If the panellists indeed did this, the answers to the question never appeared in the analysis of the data. I suggest this sentence be deleted.

Author’s response: At this point we do agree with the reviewer’s comment and have deleted this sentence at the top of page 8.

4.
Reviewer’s comment: ‘In the last paragraph on page eight, the authors assess the statistical significance of a relation between the number of risk factors and case/control status. The assessment of potential confounding ought not to utilize a statistical test, and so I suggest it be deleted.’

Author’s response: We agree with the reviewer that the assessment of potential confounding should not be done by means of statistical tests (p-values). In our study we performed this analysis, however, for a different purpose. The analysis was to investigate whether the difference in risk factor prevalence among cases and controls was significant and whether we could make any judgement on a relation between risk factor prevalence and case/control status. Clearly, the purpose of this statistical test was ‘not’ to select or identify confounders. Because of possible misunderstanding in interpreting this part of the results, we decided to remove “This relationship is statistically borderline significant (p=0.096), and could be an explanation for the somehow surprising result found earlier, that is, that cases receive sub-optimal care less often than controls” in the text and present it in the legend text of Figure 1 (see legend text Figure 1, underlined).

5.
Reviewer’s comment: ‘Finally, I question the novelty of the issue that the authors have identified. They claim that they are dealing with “a previously unreported variant of confounding by indication”. I believe that it is just simply confounding by indication. They amplify on this on page 10, stating that observational studies of treatment efficacy usually find that patients “who are more in need both receive more care and have a higher risk of adverse health outcomes”. I believe that in their studies, that is exactly what has happened, but that they have simply defined “more care” as “better quality of care”.’

Author’s response: The assumption made in our paper is that patients with more risk factors for stroke receive more attention from their GP or visit their GP more often. Because of their frequent consultations (frequent contact between patient and GP), GPs automatically comply more often with guidelines for regular follow-up (quarterly) of e.g. hypertensive patients. The chance that a GP checks a patient blood pressure if seen regularly by the GP is higher. Therefore, patients with more risk factors for stroke visit their GP more often, which in turn enhances guideline compliance. Because of aforementioned, this form of confounding by indication in quality of care studies might be typical for this type of studies, where performance measurement with respect to clinical interventions or
prevention programs often is carried out on the basis of evidence-based guidelines (guideline compliance). For this reason we believe that confounding by indication in this study refers to a somewhat different concept than confounding by indication that refers to situations in which patients who are more in need both receive more care have a higher risk of adverse health outcome. Nevertheless, we have modified our findings and changed “previously unreported variant of confounding by indication” into “a variant of confounding by indication” (see text Page 2, 5, 12).