Reviewer's report

Title: Duration of CQI participation: a key factor explaining improvement in delivery of Type 2 diabetes services to Aboriginal and Torres Strait Islander communities

Version: 2 Date: 8 June 2014

Reviewer: Rosa Gini

Reviewer's report:

This is a very interesting study trying to assess the impact of a ten-years Continuous Quality Improvement (CQI) program on the quality of care delivered to diabetic patients in primary care health centres, and to identify factors associated with better impact. The study question is therefore very relevant. Data collected are impressive and analysis is accurate.

However the description of the methods is insufficient, some interpretation is weak and the limitations, clearly stated in the manuscript, should in the reviewer's opinion force to rephrase the conclusions of the study. On the other hand, some sensitivity analysis could improve the evidence that can be obtained from the huge amount of data collected and restore some of the conclusions.

The recommendation is therefore that Major Revisions are introduced in the manuscript before final acceptance.

A detailed list of recommendations follows.

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MAIN RECOMMENDATION (Major Compulsory Revision is: choose between (a), (b) and (c) below, and revise the manuscript according to the choice)

The conclusion is "At the health centre level, Type 2 diabetes service delivery could be improved through long term commitment to CQI, encouraging regular attendance (for example, through recall systems) and improved recording and coordination of patient care in the complex service provider environments that are characteristic of non-remote areas." This recommendation is not supported by the study design adopted in the study, as the causal effect of long term commitment to CQI cannot be estimated. Indeed a selection bias could explain the main finding, as is correctly explained in the description of the limitations at the end of the Discussion section ("there may be factors associated with longer term participation in CQI that may be responsible for the demonstrated improvements in adherence to best practice guidelines"). So several solutions are possible: (a) weaken the conclusion: state that an association is observed between long term commitment to CQI and improvement of Type 2 diabetes service delivery and that more research is planned to assess causality of this association (b) expose convincing qualitative arguments that explain why the
association is expected to be causal (c) introduce sensitivity analysis of the dataset that support causality.

Both (b) and (c) this would imply exposing clearly what was the mechanism that led the health centres to adhere to the CQI program, which percentage of the total health centres adhered each year, if some centres left, and finally which percentage of the adhering centres participated to the study.

BACKGROUND

The mechanism leading a health centre to adhere to (or to leave) the CQI program should be described here, and percentage of adherence (and of quitting?) should be computed in the Results section, with a breakdown per year of adherence (indeed: was it possible/common for a centre to leave the program? from Figure 1 a) the number of centres in the sample in 2005/6 is 41 and in 2007 is 35: did 6 centres adhering to the study leave the program? Did this happen in the next years as well?)

In this section it would be very interesting for the external reader to have a short description of the primary care healthcare system, that makes it clear to what extent "regularity of patient attendance" is something that the health centre (and possibly CQI) has instruments to improve, or whether this should be considered an environmental factor, such as remoteness. Second, it is complicated for the reader to understand the interpretation of the findings in non remote health centres, and this anticipated explanation of the primary care healthcare system could be helpful to this respect as well.

METHODS

A subsection dedicated to the Study design should be added at the beginning of the Methods section. This is a retrospective longitudinal analysis, carried on a convenience sample of health centres. In this section the fact that health centres adhered voluntarily to the study should be declared. Correspondingly, in the Results section the percentage of centres participating to the study per each year of adherence should be computed.

To support causality, it would be great if the distribution of some key variable (location, governance, service population, ...) could be compared across centres adhering to the program vs non adhering to the program, and within adhering centres, across centres participating vs non participating to the study. If this is not possible, distribution in centres adhering to the program and to the study in more recent years could be compared to the distribution in early participants.

In the same line, a sensitivity analysis could be testing the interaction of entrance year with the results after 2-3 cycles of audit, to check whether rate of improvement is consistent across cohorts of centres. This would support causality as it is less likely that different 'waves' of adherent centres all share the same "factors ... that may be responsible for the demonstrated improvements in adherence to best practice guideline".
After the 'Study design' subsection, a subsection should be dedicated to 'Data collection'. Indeed, the beginning of the Methods section now reads: "Clinical records were audited to assess quality of Type 2 diabetes care of patients". This activity is a revision of clinical records rather than an audit (the term 'audit' in this context would be appropriate if the aim was improvement of data recording). Moreover the term 'audit' is used to describe the activity performed during the intervention and using the same term in two different contexts is misleading for the reader. This information is insufficient: how was clinical records revision performed? Was it an automatic or a manual revision? Homogeneity in revision across centres should be briefly discussed.

Finally the subsection dedicated to 'Statistical analysis' should declare the analysis plan, as is already done in the manuscript. The results of non-remote centres are puzzling: is perhaps remoteness an effect modifier? If the authors agree, this analysis could be included as well.

RESULTS

As mentioned above, they should contain

1) (at the beginning) percentage of health centres adherence (and of quitting?) the program, with a breakdown per year of adherence, and, if possible, distribution of key variables across the groups

2) (at the beginning) percentage of centres participating to the study per each year of adherence, and distribution of key variables at baseline across adherence years

3) (at the end) sensitivity analysis (interaction with year of adherence, interaction with remoteness)

DISCUSSION

A limitation subsection should be separated from the rest of the discussion. Causality should be discussed explicitly

CONCLUSION

According to the sensitivity analysis chosen and to their results, conclusions should be weakened or rephrased.

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:

I don't have competing interests