Reviewer’s report

Title: Factors associated with utilization of maternal serum screening for Down syndrome in mainland China: a cross-sectional study

Version: 0 Date: 15 Sep 2015

Reviewer: Linda Martin

Reviewer's report:

This is an interesting study on a large dataset. However, it needs extensive further work to fully highlight the aim of the study, the study context and to get more out of the available data.

Abstract

Please change the abstract after addressing the remarks below.

Introduction

# The introduction could be more concise. Some tips:

Please start to describe the aim of the Chinese prenatal anomaly screening, more to the point MSS for Down Syndrome (and trisomy 13 and 18?), and the prenatal anomaly screening program (is the NIPT offered to pregnant women yet?). Compare this aim and program with the aims and programs of other countries, including those who have other aims and goals.

Than describe the number of children born with DS and the uptake of MSS for DS in China from 1990 on. Compare figures to other countries. How many parents choose to terminate the pregnancy after they found out their unborn child had DS? What are the factors influencing the uptake as far as you know? Review of the literature about factors influencing MSS uptake.

Paragraph about the aim of this study, including the usefulness of the results in the light of the aim of the prenatal screening program and your hypothesis. How does this study add to relevant knowledge given the introduction of NIPT?
Describe the study context; e.g. The one child policy of China is not mentioned in the introduction. Why not? It seems an important part of the study-context. Additional questions:

p. 5 line 41: "The needs of special care for DS patients usually bring tremendous financial and psychological burden not only to the family, but also to the society. The lifetime economic burden of each new DS case estimates to be US$55,000 in 2003 in China from a societal perspective [5]." What is the point here? Please clarify in the study context of the aim of the prenatal anomaly screening program and reconsider this part of the text.

p. 6 line 44: "Both MSS and follow-up diagnostic procedures are voluntary and based on informed consent by pregnant women in China." What is the reference? And, since this is the case, why is your introduction focusing on the prevention of children born with DS? So again, I don't understand the Chinese prenatal anomaly screening context. Please clarify.

It might be interesting to use the following literature:


Methods Section

Overall I think that you have to re-run the results for those participating health care institutions who provided MSS service during pregnancy, and those who were not able to provide it. See also publication of Gitsels et al 2014 in which such an approach was used.

Some smaller remarks:

# P. 8 line 56: "A total of 8110 puerperas from these institutions were accrued after their consent to participate in this study." This part belongs to the Result section.

# Define the word puerperas in the context of your study.

# Re-write the 'Design, setting and participants' part of the Methods concise and chronologically (Design, setting and participants) without giving double information and reporting results.

# p. 10 line 2: Please show the final structured, interviewer guided questionnaire in an Appendix.

# It remains unclear when and how participants were interviewed or given the questionnaire. So please re-write the section so that any other researcher can reproduce the study.

# How many local surveyors were 'used'?

# How was Knowledge about DS measured?

# Please clarify the next procedure: "Subsequently, multivariate analysis was conducted using a hierarchical logistic regression model including the characteristics of individuals at level 1, the characteristics of health care institutions at level 2 and the characteristics of cites as level 3." Make clear why you choose to make the models the way you did (it seems that you forse your results to be in line with the Anderson model).
Results section:

Please provide background information on participating institutions (see remark above).

Re-write the section based on new results.

Discussion:

Please start this section with the aim of the study. Your second paragraph is the key answer to your research question and can be stated as such after the aim.

More detail can be given with:

"All the five kinds of factors from Andersen's behavioral model" e.g. ….Just mention these factors again.

p. 15 line 54: Please notice also that the test-uptake in the Netherlands is lower compared to the test-uptake of MSS in your study. And the introduction of MSS was not so much earlier compared to China.

p.17 line 27: “If the above two results were combined, one possible explanation could be that part of pregnant women missed the service not because of the expenditure for utilization but they were not provided the option or suggestion to utilize.” Or is it possible that they simply did not want to opt for screening? Please look for alternative explanations.


p. 19 line 19: some of the discussion here should be mentioned earlier as it is very relevant for understanding the study context. Knowing this, what were your hypothesis?
# p. 13 line 46: Furthermore, it was intriguing to notice that .....as low risk ones, women " Please formulate more neutral, since this is the Result section.

Please add a paragraph on the relevance of these results internationnally also given the context of NIPT being more and more available.

**Are the methods appropriate and well described?**

If not, please specify what is required in your comments to the authors.

No

**Does the work include the necessary controls?**

If not, please specify which controls are required in your comments to the authors.

Yes

**Are the conclusions drawn adequately supported by the data shown?**

If not, please explain in your comments to the authors.

No

**Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?**

If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I recommend additional statistical review

**Quality of written English**

Please indicate the quality of language in the manuscript:

Needs some language corrections before being published

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