Author's response to reviews

Title: Differences in relative risk of stillbirth among women of different regions of origin compared with women from Germany: an analysis of the German perinatal database, 2004-2007

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Author's response to reviews: see over
Dear Editor,

We thank the reviewers for their detailed and helpful comments. We revised the manuscript accordingly, implementing the reviewers' suggestions wherever possible. Please find attached a detailed response for all reviewers separately. In addition to the remarks below we included several new citations from a Lancet series about stillbirths in the background which was published in 2011. We followed the advices of the reviewers and would be pleased if our manuscript is now ready for publication.

**Version: 1**  
**Date:** 11 April 2011

**Reviewer:** Siri Vangen

**Reviewer's report:**

**Major compulsory Revisions**

**General comments:**

1. The article documents differences in stillbirth rates among ethnic Germans and different immigrant groups. The article has a well-defined research question.

2. The manuscript adheres to relevant standards of reporting and data deposition.

3. Some of the variables included might have suboptimal validity due to reporting deficiencies to the registry or crude reporting. Inadequate reporting of complications during pregnancy such as preeclampsia among immigrants. Missing information about the specific country of origin could have an impact on the reported results. Consequences of pooling populations from large areas of origin as for example total Asia could be further addressed.

   \[R: We \textit{extended the discussion on this aspect in the last section of the discussion.}\]

4. The manuscript adheres to the relevant standards of reporting and data deposition.

5. The discussion is adequately supported by the data. However, the crude population grouping and missing data about the specific country of origin could hide important information about the differences in stillbirths. Immigrants' health often mirrors the situation in their country of origin. For example Asia includes some of the most deprived areas of the world such as Central Asia with high stillbirth rates and areas with some of the lowest stillbirth rates such as Japan.
This issue could be further outlined.

R: We included this aspect in the discussion.

The result of attenuated stillbirth difference after correction of socioeconomic status is interesting and point to the importance of the integration policy and education and working possibilities of immigrants. This issue could be further addressed in the discussion.

R: We added a section in the beginning of the discussion, when reporting the SES related results.

As the authors state themselves indicators of SES in the present study was not optimal. Some speculations of the implications of a better indicator of SES would be interesting.

R: We added some ideas concerning the implementation of more sufficient variables for migrant status and SES by the end of the discussion.

6. The authors discuss the limitations of their work, but the limitations could be further outlined according to the issues s raises above.

R: We did. See previous answers.

7. This research question has been addressed by several previous research projects in different European countries and North America. The results of previous studies also revealed a higher perinatal mortality rates among the immigrants. The current study is the first from Germany to use a nationwide datasets with a large number of births. The new findings of the current study compared to previous research addressing the same topic could be better highlighted. The new findings could be reported in the first part of the discussion and in the abstract. What about the attenuation of stillbirth difference after stratification for social status. Is this a new finding?

R: We added the following aspects in the abstract and the first part of the discussion: The higher risk was attenuated after stratification for low SES (at least among women from the Middle East/North Africa). But we did not find considerable differences in
use and timing of antenatal care as well as preterm birth and low birthweight, but when looking at SGA we did find increased risks.

As we don't have any nationwide analyses so far, it is a "new finding" for Germany. We included an additional citation for the fact that higher rates of infant mortality among Turkish migrants were partly explained by socioeconomic factors (Troe et al. 2006).

8. The title and the abstract largely convey what has been found. However, the impact of socioeconomic factors on stillbirth rates among immigrant populations is an important issue. These results could be implemented in the abstract.

R: See 7.

The title is complicated and could be better articulated: For example: Stillbirth differences according to regions of origin: an analysis of the German perinatal database, 2004-2007.

R: We changed the title according to your suggestion.

9. The article would also benefit from some language revisions.

R: The manuscript was again checked by a native speaker.

Specific comments

Background 4th section. Previously reported differences in risk factors of stillbirths between immigrants and non-immigrant could be mentioned.

R: We added a sentence with several citations in the background section.

Discussion: Strengths and limitations: Could the low rate of preeclampsia reported in immigrant groups be a result of inadequate reporting? This issue should be discussed.

R: We added several sentences in the discussion and further citations.
9th section page 11. The role of doctor’s delay and patients delay should be discussed.

R: We already discussed quality of care related influences which included the factors you mentioned. But according to your comment we specified the factors, including non-compliance, delay in antenatal care attendance and late or missed diagnoses. Some of these factors might be due to miscommunication between migrant women and health care providers. We also discussed this issue.

Version: 1 Date: 23 March 2011
Reviewer: Marcelo L Urquia

Reviewer’s report:
This study provides a detailed examination of the risk of stillbirth according to maternal region of origin. It represents a unique case study. Despite Germany receiving large flows of immigrants, German studies on perinatal outcomes by immigration status are scarce, and this study contributes to filling the gap. The use of recent data at the national level is a strength. However, the most serious limitation is that authors do not understand “how the variable (region of origin) is collected in hospitals” (page 12), and the study is build upon this exposure. The manuscript is unclear in some places and this makes it difficult to evaluate the validity of the results. More detailed comments below.

Methods
Page 4: If the dataset covers 90% of all births in Germany, does this mean that the remainder is composed entirely of home births? If not, how does the 10% break down? It would be good to discuss how stillbirths and immigrants are represented among the births not included in the study and the possibility of bias.

R: The majority of the 10% are quite likely home births as the participation of hospitals and completeness of BQS data was about 98 % in recent years (we added this aspect in the abstract). We know that the rates of home births, especially among those from Turkey, are rather low, thus we can rule out bias to a high extent.

Does the definition of stillbirth also include a gestational age criterion, like in many countries (>= 22 or 28 weeks), or includes any gestational age?
R: No, in this case it doesn’t include a gestational age criterion. It just says that if there is no vital sign and the birthweight is 500g and above it is defined as stillbirth. If the birthweight is under 500g it is defined as miscarriage. But based on the gestational age distribution we can see that the majority of stillbirths in our dataset was older than 28 weeks.

Region of origin: It is important to define the exposure as precise as possible, since studies like this may be used in future systematic reviews or meta-analyses. What do “origin” and “migrant background” mean?

Country/region of birth? Of last permanent residence? Of nationality? If it is nationality (or whatever), then refer to what is being actually measured rather than to what would be desirable to measure. Please try to provide more details regarding how this variable is recorded in the database, such as the instructions to complete the perinatal sheet. To allow readers to better interpret results I recommend to include an online appendix listing the countries/ethnic groups by region, including those that fell within the “others” that were excluded from analyses.

R: The variable provides the “region of origin” grouped into six bands, with each band including several “countries of origin”, which cannot be divided. Unfortunately, the instruction for completing the perinatal sheet doesn’t provide any further information. According to your suggestion, we included a list of the countries of origin in each group as annex and also added a sentence concerning the exclusion of the band “other countries” in the method section.

Page 5, paragraph 3: Where it says “maternal status”, did authors mean “marital status”?

R: We corrected this into “single status” as we don’t know if all women are married when they are not single. It could also be “to be with sb”.

Results

It would be informative to state the overall proportion of births to immigrant women.

R: We included the number and proportion in the beginning of the result section.
Ultrasound examinations are reported in the results but I cannot find the definition in the variable list of the methods section.

R: We added a description in the method section.

Discussion
The implications of the poor measurement of "region of origin / migrant background" should be discussed in more detail. The inability to separate countries and form regions suitable for international comparisons (and its impact on the results) needs to be discussed, at least for some groups very heterogeneous such as “Asians”.

R: We edited the section “strengths and limitations” according to your comments and also added some ideas concerning the implementation of more sufficient variables for migrant status and SES by the end of the discussion.

Version: 1 Date: 25 March 2011
Reviewer: Rhonda Small
Reviewer’s report:
This manuscript is well written and presents important data on stillbirth among immigrant women compared with non-immigrant women using national perinatal data for Germany. The four years of national data ensures sufficiently large numbers of stillbirths for robust findings. The analyses are carefully presented and the findings are well described and discussed in the context of other relevant studies. The study’s strengths and limitations are also clearly identified.

Major compulsory revisions
None

Minor Essential Revisions
1. The Gissler et al review referred to on page 3 did not investigate 'ethnic' differences but differences between international migrant populations and non-immigrant populations. This needs to be made clear.
R: We corrected this.

2. The comment that immigrant women had an appropriate number of ultrasounds (3-4 scans) perhaps needs a comment about practice in Germany, as 3-4 scans is not standard in other places, nor is there an evidence-base to
support multiple scans.

*R: We included a short explanation in the method section, saying that 3-4 scan are considered as “standard” according to the maternity guidelines in Germany.

3. Some proposed typographical and/or language changes are:
- 'obstetrics' rather than ‘obstetric’ when used to mean the discipline of obstetrics; and ‘obstetric’ rather than ‘obstetrical’ when used as an adjective; also, maternal 'characteristics', rather than ‘characteristic’.
- the word ‘autochthonous’ is used very rarely in English to my knowledge, and when used refers to the Indigenous populations or original inhabitants of a country, not quite the meaning intended here I think. It might be better to refer to the ‘non-immigrant’ population instead.
- ‘un-learned’ worker would probably be more usually described as ‘unskilled’ worker; and ‘offician’ as either ‘office worker’ or ‘white collar worker’, I think.
- under Maternal morbidities (p6): ‘showing partly a considerable non-response’ might be better phrased: ‘but data quality are poor’ or ‘with a large amount of missing data’. I think it needs some re-phrasing to make the meaning clear.
- ‘pronouncedly’ could be replaced by ‘significantly’.
- ‘anamnestic’ data (p11) is not commonly used and could be replaced with ‘obstetric’ or ‘obstetric and medical history’ data. ⇒ we did not change this phrase as it is used by the authors of the study themselves.
  - ‘extensively’ might best be replaced by ‘confidently’

*R: We revised the language and included your suggestions. Also, a native speaker rechecked the manuscript.

Discretionary Revisions
An addition the authors might also consider for the Discussion:
One of the common problems for studying perinatal outcomes in immigrant populations, acknowledged appropriately by the authors, is the absence of migration-specific data in routine datasets, as occurred here where region of origin was identified, but individual maternal country of birth was not. And there is rarely data available on other potentially important factors, such as fluency in the receiving country language, type of migration (skilled/voluntary, forced
migration/refugee/asylum seeker or guest worker), or length of residence post-migration. I think the Discussion could include some recommendations about the importance of better migration indicators in routine perinatal data collections to increase the availability of relevant data variables to enable more nuanced analyses of perinatal outcomes in immigrant populations.

*R: We included a section by the end of the discussion.*