Author’s response to reviews

Title: Continuity of care is an important and distinct aspect of childbirth experience: findings of a survey evaluating experienced continuity, experienced quality of care and women's perception of labor.

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Author’s response to reviews:

Dear editor and reviewers,

Thank you for giving us the opportunity to respond to the reviewers’ comments on our manuscript, PRCH-D-16-00971 entitled: “Continuity of care is an important and distinct aspect of childbirth experience: findings of a survey evaluating experienced continuity, experienced quality of care and women's perception of labor” which we submitted for publication in BMC.

We are pleased to hear that our article addresses a gap in the research evidence regarding the relationship between experienced continuity of care and perceived quality of care/perception of labor.

We have read the comments of the editor and the reviewers with interest and we have revised the manuscript. Please find a detailed reply to each comment below.
We hope the adjustments make the manuscript suitable for publication in your journal and we are looking forward to your reply.

On behalf of the authors,

Sincerely,

Comments from the editors and reviewers:

Maralyn Foureur (Reviewer 1):

One of the major issues is that the grammar and syntax throughout the paper needs further work as even the title of the paper is grammatically incorrect and I am left wondering if the paper is about 'the experience of continuity of care' or about 'experiencing continuity of care' but 'experienced continuity of care' has been taken out of context from a measurement tool and simply inserted into the title as if it was grammatically correct. I wonder why the term 'experienced' is needed at all since the survey appears to be about 'continuity of care'- yes or no and I am left wondering why the term 'experienced' even needs to be present at all? Is this a particularly new version of the construct- if so then a clear definition needs to be provided as I have never seen the term used in this way previously.

Thank you for your constructive comments. We asked a native speaker to revise the use of the English language, and adjusted the manuscript according to his suggestions.

Continuity of care can be evaluated in different ways. For example, by monitoring how many people were involved in a woman’s care or whether a midwife stayed with a woman after she was referred to obstetrician-led care. In our study, we evaluated continuity of care from the women’s perspective and therefore used the term ‘experienced continuity’ to make that clear.

We have changed the title into:

Continuity of care is an important and distinct aspect of childbirth experience: findings of a survey evaluating experienced continuity, experienced quality of care and women's perception of labor.
The study design appears to be robust although the time from the actual birth to completing the questionnaire - that can range up to 6 months - seems somewhat problematic as women's processing of their experience changes and matures over time and responses at 6 months post birth may be very different to those gathered close to the birth. There has been no further comment provided in the paper about this aspect of the study.

Based on the suggestion of the reviewer, we added this to the discussion section as a limitation:

The time between giving birth and completing the questionnaire varied from one to six months. As women's perceptions of their experience of birth change over time, this could have influenced our results. Women who filled in the questionnaire soon after birth might have been more positive about their care compared to those who filled it in after a few months (ref) (page 18, line 417).

Given that there were only 15 respondents who received obstetric-led care I am also left wondering if any of the cell sizes on any responses were less than 5 which is a statistical issue not mentioned as being addressed. How many of the 15 women in this group experienced a spontaneous vaginal birth? How was this handled in the data analysis. There is insufficient data provided on the data analysis or provided sufficiently clearly for me to make an informed comment about the robustness of the analysis. It would be extremely useful if the subscale range was provided on the Tables to make more sense of what the table is displaying. I don't know for instance if scores of 3-4 are low or high. Given the research aims included - to compare continuity of care among women who received midwife led versus obstetrician led care at the onset of labor- I expected to see a table comparing the measures by these two criteria.

We added a sentence describing mode of birth in the manuscript:

Of the 15 women in obstetrician led care from the onset of pregnancy 12 women had a spontaneous vaginal birth, 1 woman had an assisted vaginal birth and 2 women had an emergency caesarian section (data not shown). (page 11, line 245)

The analyses were not corrected for mode of birth because of low numbers. (page 11, line 233)

Below table 2 the range of scores are given:

Mean score (1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree) (page 25)
To give insight into the questions which belong to the subscales, a more detailed table has been inserted. (page 26)

In line with the research aims we did compare women who were in midwife-led and obstetrician-led care at the onset of labor. However, the scores for experienced continuity of care are not restricted to the labor experience only. Therefore we also showed scores for the midwife given by women who were referred during pregnancy. We clarified this in the research question and in table 2:

To compare experienced continuity of care during pregnancy and labor among women who were in midwife led versus obstetrician led care at the onset of labor (page 7, line 147)

In the additional files more details are given with regards to specific items.

Oyelola Adegboye (Reviewer 2): The authors have presented a manuscript of great interest. It was a pleasure to review this questionnaire based manuscript that successfully explored the importance of continuity, experienced quality of care and women's perception of labor through empirical analysis.

However, I have the follow comments concerning the methods and the analysis:

1. The response rate seems very low, please discuss it.

Of the 790 women who were asked to participate, 325 (41%) gave written informed consent and were invited to complete the online questionnaire. 195 of the 325 women who gave informed consent (60%), completed the online questionnaire. (page 11, line 237)

The following paragraph has been added to the limitations:

Our study has some limitations as well:

The response rate was low with nearly 25% of the eligible women taking part and the total number of women in obstetrician-led care was small. The percentage of women in midwife-led care in our sample was high, also compared to national data. Possibly midwives were more alert (or prone) to include women whom they had taken care of during their pregnancy. Also, this response bias could have impacted the results of this survey as literature shows a positive
correlation between patient satisfaction and response rate [28]. If the response rate had been higher, the scores for experienced continuity, satisfaction and birth experience might therefore have been different. (page 17, line 392).

2. Could you report the internal consistency and reliability of the questionnaire items within each of the three subscales (NCQ, PCQ and CPS). You may report the Cronbach's alpha for each subscale.

The Cronbach’s Alpha has been analyzed for the three subscales. The following sentences have been added to the results:

In Table 2 the mean scores for three subscales of the NCQ are presented. The Cronbach’s Alpha values for women who were not referred during pregnancy for the three subscales were 0.81, 0.75 and 0.84 and for women who were referred during pregnancy 0.84, 0.74 and 0.83 respectively (page 12, line 253)

Use the following citation for SPSS: IBM SPSS Statistics for Windows, Version 22.0 [1] software
Thank you for your reference. This has been added.

4. Please elaborate on the multivariable regression model used in the analysis and clearly state what you have done in the application.

Multivariable linear regression analyses were performed to adjust for parity, which might be associated with the experienced continuity, quality of care or perception of care. For women who were referred during pregnancy, both the scores for the primary care midwife and hospital staff were calculated. Women in midwife-led care during pregnancy and at the onset of labor were taken as the reference group and were compared with the other groups.

The analyses were not corrected for mode of birth because of low numbers. (page 10, line 223)

5. Why did you classify the Spearman correlation coefficient as 0 - 0.3, 0.3 - 0.5, and > 0.5, is there any reference to back this up.

The source we used for this is:

http://www.statisticssolutions.com/spearman-correlation-2-tailed/
Natasha Donnelly, BSc(HIM) (Reviewer 3):

The areas of greatest concern are the statistical analysis, small sample sizes and overstating the results to support the conclusion.

The sample size is very small and uneven, particularly for the subgroup analysis. I would suggest a further review by a bio-statistician on the appropriateness of the correlation coefficients and regression analysis. There was no table comparing the underlying differences between the groups (only between the study group and regional/national data) that might identify significant differences between women receiving midwife-led vs obstetrician led care that would need to be adjusted for. While there was adjustment for parity there has been no adjustment for the indication for secondary/tertiary care that might result in lower scores for obstetric-led care or referred care. 'Confounding by indication' is a common issue in observational studies, particularly in maternity studies where the 'risk profile' of women can affect outcomes independently of the intervention (in this case the intervention being the model of care). There was also no examination of the effect of timing of referral on scores - if women were referred early or late in pregnancy could influence their scores for personal continuity for both their primary midwife and the hospital staff.

The sample size is indeed small, especially for women who received obstetrician-led care throughout pregnancy and labor. However, women who were referred during pregnancy were in obstetrician-led care after referral, which means we have a score for the obstetrician from 51 women. We agree that further research is needed in a larger group.

A statistician assisted with the analyses. We are aware that confounding by indication could play a part. However, as the groups are small we could not adjust the analyses for more than one variable and based on the literature parity is likely to be important. (Waldenstrom, Experience of labor and birth in 1111 women, J Psychosom Res. 1999 Nov;47(5):471-82).

The following limitation was added to the discussion section:

We did not adjust for complications because of the small size of the groups. This could have resulted in higher scores for obstetrician-led care. (page 18, line 405)

We did not examine the effect of timing of referral (early or late in the pregnancy) as the numbers are too small. In future research it would be interesting to examine the influence of moment of referral during pregnancy.

I am not convinced from the results how the integrated model will influence continuity of care, as the integration of the two lead carer types (midwife and obstetrician) is different to women
being transferred from a midwife to an obstetrician-led hospital team. It is possible that the integrated model of care will improve experienced continuity for that group of women who are not eligible for primary midwife-led care (and are currently referred out). If women commence their care with the integrated team, that may not have as much of a negative effect on relational continuity as being referred from a single midwife to a hospital team during pregnancy. Some models of midwife-led continuity of carer models in Australia and New Zealand provide care for women of all risk, as midwives provide collaborative care with obstetricians or maternal fetal medicine sub-specialists. The midwife continues to provide primary care throughout pregnancy, birth and postnatal, and the women will also see a specialist when indicated. This provides a high level of experienced continuity. While I acknowledge that the system in the Netherlands is different regarding the scope of practice for community midwives (vs clinical hospital midwives) perhaps the impact on continuity of care may not be as significant as suggested by the authors. For some useful references on maintaining continuity in an all risk midwife-led model see:


If women will have a case manager throughout their care process, regardless of their level of risk, this may enhance personal continuity of care. However, we are concerned that personal continuity might be reduced for many women as more professionals may be routinely involved in the care process, even if they have one case manager.

We have added the following paragraph to the introduction section:

Currently, the Netherlands is in a transition regarding the organisation of maternity care moving from separate midwife- and obstetrician-led care towards a system of integrated care; care will be delivered by professionals from multiple disciplines and across care setting boundaries in close collaboration. (page 7, line 130)

On one hand, integrated care could improve personal continuity of care if women have one case manager regardless of their level of risk (Lewis, Tracy). On the other hand, personal continuity of care may be reduced as more professionals are routinely involved in the care process.
Therefore, it is important to evaluate the effect of integrated care on continuity, quality of care and perception of labor from women’s perspectives. (page 7, line 149)

In line with the article of Lewis, we advise a minimum number of caregivers. In the discussion we refer to this:

This will be a great challenge, especially in hospitals in the Netherlands, as teams usually include a large number of caregivers. Small teams in which women are seen by a minimum number of caregivers, could result in more continuity of care as well [27] (page 17, line 401)


I am concerned that the measures of continuity of care used in this study through the NCQ mix two different concepts - continuity of care and continuity of carer - to then identify an association with quality of care. These are distinct concepts and the latter is important if the authors are attempting to examine what the impact of an integrated maternity care system would be. There is clearly going to be a difference in continuity of carer between a model that has a single known caregiver (midwife-led or obstetric-led) and a team model (either the referral group or the proposed integrated care model), however when looking at continuity of care, there may possibly be an improvement in this measure for the women who are being referred out in the present system if they were in the new integrated model in the future.

Indeed, the NCQ measures different aspects of continuity of care: personal continuity (care provider knows me and care provider shows commitment) and team and cross boundary continuity (see table 2). It is important to evaluate the impact of integrating maternity care on these different aspects of continuity of care. We have clarified this in the discussion:

It will be important to evaluate the effect of integrating midwife-led and obstetrician-led care on the different aspects of continuity of care. (page 17, line 365)

I am curious why there was no sub-analysis of the PCQ and CPS for the women referred during labor. Both of these instruments are relevant to care provided during labor. Comparing the scores from this group of women to the other groups may provide additional information about the influence of continuity of carer from their primary carer during the pregnancy, especially when
compared to the group referred during pregnancy, ie that the relationship with their known midwife throughout pregnancy can influence a better birth experience even if their primary midwife was not providing care during the birth. There is a gap in the evidence currently regarding whether continuity of carer throughout the continuum of pregnancy, childbirth and the postnatal period results in better outcomes than just having continuity of carer in the antenatal and postnatal periods - ie does having your primary midwife present for intrapartum care make any difference to perceived quality of care and perception of labor? Suggest looking at Freeman, L. M. (2006). "Continuity of carer and partnership. A review of the literature." Women & Birth: Journal of the Australian College of Midwives 19(2): 39-44.

This is a relevant point. However, we chose not to make a sub-analysis for women who were referred during labor as the group of women was too small. Future research is needed to examine whether continuity of carer during pregnancy and labor leads to higher perceived quality of care. Although the article of Freeman is interesting we chose not to refer to it because it does not apply to our research question.

I am concerned about the validity of looking for an association between continuity of care provided by one provider and quality of care provided by a completely different set of providers. The CPS is directed at the care being provided during labor, while the NCQ is directed at care provided by a number of different carers during pregnancy. For women in the referred group the only valid scores to correlate would be the NCQ questions asked about the hospital staff and the CPS and PCQ (which are by their nature only about the hospital staff). I do not see how it is valid to associate personal continuity of care by the primary midwife with the quality of labor care provided by the hospital staff. Further, I am not clear how the team continuity questions apply to the midwife-led or obstetric-led groups if the care is only provided by the one carer. For these reasons, I do not see how the results support the conclusions and would suggest the authors revisit the concepts of continuity being measured in the different groups and how they have been analysed.

Team and cross-boundary continuity of care in the NCQ questionnaire is not based on one care provider. Women who are taken care of within midwife-led care or obstetrician-led care are (usually) taken care of by several caregivers. The same counts for the PCQ.

It is correct that the questions of the CPS are directed at the care provided during labor. However, the questions of the NCQ are general questions which count for both pregnancy and labor. We agree that it would be more precise to compare questionnaires which focus on pregnancy or labor.
The following sentence has been added to the limitation section:

The questionnaires we used varied from general questions (NCQ) regarding pregnancy and labor to specific questions with regards to labor (CPS and PCQ). Therefore, they are not fully comparable. (page 18, line 409)

Thank you for this useful comment regarding the correlation between the different scores.

In Table 4 and 5 the score of the midwife has been removed as the NCQ score of these women concerns the pregnancy and the score of the CPS and PCQ concerns labor.

Team continuity questions apply for the midwife-led and obstetrician-led group as team continuity refers to colleagues within the same echelon, for instance continuity between midwives in one practice or between professionals within a hospital.