Author’s response to reviews

Title: Measuring the quality of maternal and care processes at the time of delivery in sub-Saharan Africa: Development and validation of a short index

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Author’s response to reviews:

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To the Editors of BMC Pregnancy & Childbirth:

We are pleased to submit our revised article manuscript entitled “Development and validation of a short index to measure the quality of care processes at and immediately following delivery in sub-Saharan Africa.”

We appreciate the reviewers’ thoughtful comments and provide a point-by-point response below. The changes made to address reviewer requests have been tracked in the revised manuscript files. Page and line numbers below refer to the revised documents.

Reviewer 1

Comment: Restate the study description on page 6, lines 104-106, with a statement of purpose so it is clear to readers what the authors sought to accomplish in this study.

Response: The requested change has been made on p. 6.
Comment: In many disciplines the term "domain" relates to a substantive topical area covered by an instrument. Thus, the use of "domain" as a methodological concept on page 9 is/would be very confusing to many readers. I recommend to reduce confusion about how the term "domain" is used in this study that the authors make their use of this term more transparent by moving the text on page 9, lines 165-169 up earlier on this page, eg., about line 157.

Response: The requested change has been made on p. 9, with descriptive text about domains moved up to the suggested location.

Comment: In the Abstract Background, insert "feasibility of" after "delivery hinders the"

Response: The requested change has been made on p. 2.

Comment: Move the paragraph on page 12, lines 212-216, to page 6, line 106. The material on page 12 relates to the study purpose and is more logically placed on page 6.

Response: Because the material on p. 12 refers to a comprehensive index that has not yet been defined, the suggested paragraph cannot be placed on p. 6 without further context. However, a comparable statement regarding the study purpose has been added to p. 6, lines 107-109.

Comment: Table 2, page 10, item 3: The domain and the benchmark are incongruent as written: the domain focuses on associations, but the benchmark focuses on items with NO association.

Response: Item 3 in Table 2 has been amended as requested on p. 10.

Comment: Table 2, page 10, item 4: insert "between" after "discriminate" for the domain.

Response: Item 4 in Table 2 has been amended as requested on p. 11.

Comment: For clarity, specify the indices being referred to on page 12, line 206.

Response: The requested change has been made; this text is now on p. 11, line 223.

Comment: Table 4: define in a footnote what a + and - signify.
Response: The requested footnote has been added to Table 4, on p. 15.

Comment: Table 5: This table would benefit from a consistent style (see lines 4-6), and use a colon ":" to indicated subordinate items, and add a heading to the far left column.
Response: Table 5 has been amended as requested, on p. 16.

Reviewer 2

Comment: There is a considerable amount of overlap between this paper and reference 39, bordering on self-plagiarism (see Tables 1, 2, 3, Figure 1) with absolutely no reference to their original source
Response: There are fundamental points of overlap between this paper and reference 39, which reported our earlier study to develop a comprehensive quality of care index. As noted on p. 6, the measure developed through the earlier paper is our 'reference point.' The delivery-only index developed and validated in the current paper is evaluated by the same standards as the index in the earlier paper. The delivery-only index is also directly compared to that earlier, comprehensive index. Additionally, to maximize comparability, the same sample of observed deliveries provides validation data for both studies. As a result, there are several citations of the original study (reference 39) as well as textual discussions of the methodological and sample overlap (e.g., p. 6, 10, 20). However, the reviewer comments demonstrate that additional, explicit reference to the earlier paper is required. Therefore, further explanatory comments have been added to indicate the overlap with the earlier paper, including that Tables 1, 2, and 3 are drawn from the previous study (p. 6-8, 14). Similar comments have been added to the Web Supplements. However, Figure 1 and the remaining figures present new data, on the performance of the measure evaluated in this study – the visual similarity of Figure 1 (presenting AUROC values for the current index) may have led to the impression that it was identical to a figure in the earlier paper. Given the inter-dependence of this paper and the earlier study, we have been conscious of the importance of avoiding the appearance or fact of self-plagiarism. We appreciate the reviewer comments that further guide us on this matter and welcome any additional recommendations from the Editors.

Comment: I do not feel competent to evaluate the statistical methods employed however given the high level of co-linearity between the two indices (the comprehensive tool condensed from ref 39, and the delivery only index), a statistical review may be useful.
Response: Methods to validate indices are not as well-established as those to evaluate scales. In case it is of use to the editorial team, we note that this paper is drawn from research conducted as part of the first author’s doctoral studies at the Johns Hopkins Bloomberg School of Public Health. As such, the methods, results, and inferences were evaluated by a doctoral committee including two faculty with statistics expertise from the school’s International Health and Health Policy and Management departments. These faculty, who are not co-authors of the paper, are noted in the acknowledgements. While such review is, of course, distinct from any additional statistical review the Editors may wish to conduct, we hope it is helpful to know that the methods were assessed in depth and judged to be sound by academic researchers.

Comment: The authors are attempting to develop a tool to routinely evaluate the quality of care. Given that over 1000 deliveries were observed from beginning to end, and outcome data are no doubt available, as part of a validation exercise I was expecting to see how the tools performed relative to the outcomes they were expected to influence.

Response: The reviewer makes a very important point; ideally, a measure of the quality of care processes could be assessed on its association with clinical outcomes. However, as the paper’s background section notes, the uniqueness of obstetric care (i.e., the unpredictability of maternal complications even in the presence of good clinical care) makes it particularly challenging to use outcomes as a metric for the validity of a labor and delivery quality of care measure. Additionally, while the sample is over 1,000 deliveries observed during routine care, clinical outcomes were not recorded with completeness for all cases, particularly those with complications where referral to another facility was required; in addition to this potential bias, the small number of adverse maternal outcomes available in the records, in particular, would make it statistically difficult to conduct the validation exercise proposed by the reviewer. Therefore, for both conceptual and practical reasons, validation was restricted to the face, content, and criterion validity measures described in the paper.

Comment: p5, line 73: insert "review" after literature; p5, line 73 - unclear what "[x]" refers to;

Response: The requested change has been made on p. 5, line 85, with the correct reference number has been inserted to replace [x].

Comment: p14, Table 3 - error in row "total deliveries" analysed

Response: The error has been corrected in Table 3 (now on p. 15), with 1,1145 changed to 1,145.
Comment: p15, Table 4 - seems final column in line 3 is incorrect; Seems data on the "# of items >90%" is also incorrect

Response: Line 3 in Table 4 (p. 15) has been checked, and the final column is correct (‘-,’ indicating that the item is not present in the delivery-only index). The second point appears to refer to Table 5 (p. 16); this has also been checked and the value in the table cell (2) is correct. The narrative notes that, across countries, from 1-3 items were performed in >90% of cases. Table 5 provides illustrative findings from Tanzania Round 1 data, where 2 items were performed in >90% of cases.

Comment: p19, Table 7 - check column 1 heading - is this "Delivery index" vs "Comprehensive index"?

Response: The heading in the first column of Table 7 (p. 20) has been corrected.

Comment: As a point of interest - it would be useful to state why JHU IRB exempted the protocol from review.

Response: The JHU IRB determined the protocol as exempt under Department of Health and Human Services federal regulations, section 45 CFR 46.101(b), Category (5).

Comment: For persons unfamiliar with Africa, it could be stated that Zanzibar is a protectorate of Tanzania.

Response: A clarification re: Zanzibar’s status has been added to the abstract (p. 2) and to p. 8 (line 138 and line 152).

We believe these revisions address the points raised through review, and look forward to your response.

Sincerely,

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