Author's response to reviews

Title: Health worker preferences for community-based health insurance payment mechanisms: a discrete choice experiment

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

Please find attached a revised version of our manuscript titled "Health worker preferences for community-based health insurance payment mechanisms: a discrete choice experiment" (MS: 1293710137609366). We thank the reviewers for their thoughtful comments and overall positive evaluation of our manuscript.

Below, we describe in detail how we have taken each of the reviewers into account. We attach a clean version of the revised manuscript. In our response letter, we show the reviewers comments in italics and our responses in normal font. The page and paragraph numbers (in bold font) refer to the clean version of our revised manuscript.

Thank you very much for the opportunity to revise and resubmit our manuscript.

Best regards,

Paul J Robyn, Till Bärnighausen, Aurélia Souares, Germain Savadogo, Brice Bicaba, Ali Sié and Rainer Sauerborn
Reviewer: Dorte Gyrd-Hansen

The participation rate (95%) is exceedingly impressive. The only caveat is that the study does seem to produce results that are not altogether intuitive. This may reflect that some respondents have failed to understand the task. The authors need to address this issue and critically discuss their results. In current manuscript lack a discussion of study weaknesses.

We agree with this comment provided by the reviewer that for the attribute related to capitation payments for children, the results are not altogether intuitive. We have incorporated the appropriate revisions within the manuscript. We now explicitly state this result is not intuitive, which may be caused by a potential misunderstanding of this attribute level among certain respondents. This has been addressed in the now added section on study limitations (page 27, paragraph 2):

“We note a few potential limitations of our study. Firstly, some respondents may have misunderstood the payment attribute level related to premium levels for children, because a large proportion of respondents chose an attribute level that was intended to be inferior. Given that the proposed increase in capitation payments for children was to be subsidized by an external donor, the higher payment level should have received 100% support. Another explanation for the large proportion of respondents who chose the inferior attribute level is that respondents were fearful that relying on such subsidization could generate an unsustainable dependency on external support. If the subsidy were to end after a few years, enrollees themselves would potentially become responsible for the higher payments.”

We have also included commentary regarding potential misinterpretation of attributes in the Discussion section (page 24, paragraph 1):

“Our DCE analysis shows that sex does not play a particular role in health worker preferences for CBI payment attributes, except in the preference for an increase in the capitation payment for children. Men (n=103, 59%) significantly preferred an increase in the capitation per child, while women (n=73, 41%) did not. This difference may be due to certain respondents misinterpreting the increase in capitation payments as an increase in premium payments, borne by individual enrollees, while in fact the increase in capitation payments would be a result of external subsidization for children, and not a direct increase in premium levels for enrollees. If this were the case, it might imply that women were more likely to fear that such an increase could in the long-term reduce children’s access to health insurance and healthcare.”

Attributes and attribute levels need to be further clarified. For example on page 13: “Payment levels for the capitation attribute #1 were determined based on ongoing policy debate on whether to subsidise child premiums”. It should be stressed that subsidisation is by fourth party. Also, regarding attributes 3 and 4, are we also here dealing with reimbursement and provision from fourth party? The authors need to provide a more precise description of attributes and attribute levels.
We agree with the recommendation and the description of attributes and attribute levels now includes more details and clarifications (page 13, paragraph 2):

“Payment levels for the capitation attribute (#1) were determined based on an ongoing local policy debate on whether a fourth external party (the same German philanthropic organization mentioned above) would subsidize child premiums with an additional 1000 FCFA ($2 USD), in order to be equal to the 1500 FCFA premium paid by adults. Previous simulations had been run with various subsidy levels and the additional 1000 FCFA was estimated to significantly reduce the recurring annual deficit.”

Table 2 now provides more explicit information on attributes 1, 3 and 4 (page 36):

<table>
<thead>
<tr>
<th>Number</th>
<th>Payment element</th>
<th>Level</th>
<th>Payment modality</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Level of capitation payment per individual</td>
<td>A 500 FCFA per child (under 15 years of age) and 1500 FCFA per adult (current level)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>B 500 FCFA per child (under 15 years of age) and 1500 FCFA per adult. Children will continue to pay 500 FCFA, while a 1000 FCFA subsidy (financed by a fourth external party) will be added for payment to facilities.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Capitation payment schedule</td>
<td>A Payment one time per year (current schedule)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>B Payment twice per year (each April and July)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>C Payment four times per year (each quarter)</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Annual allocation of medical supplies/equipment by CBI scheme</td>
<td>A None (current allocation)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>B Basic medical supplies (cotton, alcohol, Bétadine, Sparadrap)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>C Basic medical supplies (cotton, alcohol, Bétadine, Sparadrap) and medical equipment (tension meter, stethoscope, thermometer, scale, height gauge)</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Reimbursement of service fees (consultation + medical acts), financed by a fourth external party</td>
<td>A None (current reimbursement)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>B Reimbursement at 50% the price of service fees paid by non-enrollees</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>C Reimbursement at 100% the price of service fees paid by non-enrollees</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Results-based financing (RBF) – indicator to determine size of payment</td>
<td>A By individual enrolled (500 FCFA for new enrollees and 250 FCFA for re-enrollees)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>B By household enrolled (2000 FCFA for newly enrolled households and 1000 FCFA for households who renew their membership)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>C A monetary award for the three best health facilities, based on the increase in CBI coverage between the previous year and current year</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Results-based financing (RBF) – recipient</td>
<td>A Individual health agents (distribution of RBF among different team members will be pre-determined and applied district-wide)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>B Global payment for health worker team (method of RBF distribution among different team members will be decided by the facility team members)</td>
<td></td>
</tr>
</tbody>
</table>
That some respondents may not have understand the attributes and attribute levels is indicated by Table 4, where large proportion of respondents appear to prefer attribute levels that are objectively inferior (according to my understanding). The authors need to discuss these results more explicitly, and reflect on results: For example, if we are dealing with fourth party subsidisation, why is there not 100% support for full subsidisation for relevant attributes in Table 4? For example, why do women tend to be more opposed to child subsidisation? I do not understand the argument (p. 23) that women should “fear that such an increase could in the long term reduce children’s access to health insurance and health care”. Please explain.

We agree with the comment and the manuscript now includes a brief discussion on potential misinterpretation of this attribute level in the section on study limitations (page 27, paragraph 2):

“We note a few potential limitations of our study. Firstly, some respondents may have misunderstood the payment attribute level related to premium levels for children, because a large proportion of respondents chose an attribute level that was intended to be inferior. Given that the proposed increase in capitation payments for children was to be subsidized by an external donor, the higher payment level should have received 100% support. Another explanation for the large proportion of respondents who chose the inferior attribute level is that respondents were fearful that relying on such subsidization could generate an unsustainable dependency on external support. If the subsidy were to end after a few years, enrollees themselves would potentially become responsible for the higher payments.”

As well as in the Discussion section (page 24, paragraph 1):

“Our DCE analysis shows that sex does not play a particular role in health worker preferences for CBI payment attributes, except in the preference for an increase in the capitation payment for children. Men (n=103, 59%) significantly preferred an increase in the capitation per child, while women (n=73, 41%) did not. This difference may be due to certain respondents misinterpreting the increase in capitation payments as an increase in premium payments, borne by individual enrollees, while in fact the increase in capitation payments would be a result of external subsidization for children, and not a direct increase in premium levels for enrollees. If this were the case, it might imply that women were more likely to fear that such an increase could in the long-term reduce children’s access to health insurance and healthcare.”

Page 14: “…empirical evidence shows that rarely more than 20 respondents per survey version are needed to estimate reliable models using discrete choice data”. Is this also true if sub-group analyses are performed. The authors should reflect on whether they have sufficient statistical power to perform their analyses.
Subgroup analyses were not in fact performed. When looking at respondent characteristics (sex, professional title, etc.), we are in fact investigating whether there is effect modification across sub-groups, using the full sample of 176 respondents. As this is the case, power issues related to sub-group analysis should not arise. Therefore we have not made any revisions to the text regarding this comment.

*The authors should explain how the odd ratios and percentage changes are to be interpreted in Tables 5 and 6. What is the reference?*

Table 5 now includes an asterisk on interpreting the percent changes (Page 42, Table 5):
“percent change in odds for unit increase in X”

**Reviewer: Laura Ternent**

1. Whilst acknowledging that space is limited the methods could be better described in the methods section of the abstract.

We agree with this suggestion. The abstract now includes additional information on the methods of the study (page 2, paragraph 2):

“A discrete choice experiment (DCE) was used to examine CBI provider payment attributes that influence healthcare workers’ stated preferences for payment mechanisms. The DCE was conducted among 176 health workers employed at one of the 34 primary care facilities or the district hospital in Nouna health district. Conditional logit models with main effects and interactions terms were used for analysis.”

2. There seems to be a general lack of references in the introduction section. E.g. pg7 when discussing payment systems in Nouna, Pg8 when discussing dropout rates for CBI, pg 9 when discussing RBF and its links to CBI coverage etc.

We have added additional references for the Nouna CBI payment system and history of dropout rates. We have not found any additional references that address the relationship between RBF and CBI coverage, as to our knowledge our study is the first to link RBF payments directly to CBI coverage.


3. More information should be provided on the design of the DCE. In particular, more information in relation to the focus groups should be provided. How many focus groups were conducted? Who made up these focus groups? How did the authors produce the list of candidate attributes? How this was long list of attributes narrowed down to 6? How were the levels of the attributes decided?

The revised manuscript now provides additional information on the design of the DCE (page 12, paragraph 2):

“In order to determine how to divide the CBI payment mechanisms into coherent attributes that could be easily understood by respondents, we conducted 6 focus-group discussions and 16 in-depth interviews with health workers practicing within the CBI zone, as well as 3 in-depth interviews with members of the CBI Management Unit. Based on analyses of these qualitative findings [25], we produced a list of 10 candidate payment attributes, which was presented to the CBI Management Unit and District Health Management Team (DHMT) for discussion. In order to make sure that there was no overlap in attributes, and to ensure that the proposed attributes comprehensively described the CBI payment mechanisms, the list was also presented to local stakeholders during a half-day workshop. During this workshop, the final list was narrowed to 6 attributes and then validated by workshop participants as being a representative description of the CBI payment mechanisms. Four attributes on the final list were related to the provider payment mechanisms currently in place and two attributes were related to a proposed RBF mechanism that would pay health facilities an additional bonus payment based on CBI coverage results for each health facility. The final DCE attributes included: (1) the level of capitation paid, (2) the capitation payment schedule, (3) medical supplies and equipment paid for by the CBI scheme, (4) reimbursement of service fees, (5) the indicator used to determine the size of the RBF payment, and (6) the recipient of the RBF payment. Follow-up meetings were held with the CBI Management Team and DHMT to choose and validate the levels for the 6 final DCE attributes. For each attribute, either two or three levels were chosen, with the baseline level for the first four attributes being the payment mechanism at the time of the study (Table 2).”

5. Pg 15 the authors state that minor revisions were made to the questionnaire after pre-testing. Briefly expand on what these revisions were.
The revised manuscript now includes details on the revisions that were made after pre-testing the questionnaire (page 15, paragraph 2):

“The full questionnaire was pre-tested with 10 health workers and minor revisions were made, including changes to the terminology used to describe several attribute levels and the addition of a more detailed description of the objectives of the study and the history of the Nouna CBI scheme.”

6. Small error in Table 3 male = 59% not 58%

The percentage of male respondents has been corrected in Table 3.

7. Pg 21 the authors state that DCEs are ‘a cost-effective way of obtaining data’. Cost-effective in comparison to what?

The sentence referring to DCEs being cost-effective has been revised. It now states that DCEs are “Discrete choice experiments are a comparatively inexpensive approach to obtain data for health program planning and policy making.” (page 22, paragraph 1):

“Discrete choice experiments are a comparatively inexpensive approach to obtain data for health program planning and policy making [44-46].”

8. Pg 21. DCEs have been used previously to elicit employment preferences of health workers in low and middle income countries. This literature should be acknowledged e.g. Mangham and Hanson (2008), Chomitz (1998) Blaauw et al (2010), Largarde et al (2009).

The references on DCEs have been updated to include the four abovementioned studies (page 22, paragraph 1):

“DCEs have been used to elicit patient [46-48] and health worker [49-52] stated preferences in a variety of settings.”

9. Pg 24 the authors state that payment preferences for head nurses were significantly different from other health workers. The numbers in each sample should be stated. Also this should be highlighted in the limitations of the study, given a relatively small sample size. The conclusions from this sub-analysis should be toned down given that the sample size is small.

The revised manuscript now includes the sample size and percentage of respondents for each subgroup that is discussed (page 24, paragraphs 2-3). Subgroup analyses were not in fact performed. When looking at respondent characteristics (sex, professional title, etc.), we are in fact investigating whether there is effect modification across sub-groups, using the full sample of 176 respondents. As this is the case, power issues related to sub-group analysis should not arise. Therefore we have not made any revisions to the text regarding this comment.
1. No limitations of the work are stated. This section should be added and should address issues such as sample size, the large numbers of choice sets presented to respondents, issues of inducing bias given that respondents were given 10 days to complete the questionnaire etc.

The revised manuscript now includes a section on study limitations (page 27, paragraph 2). We did not include the number of choice sets, nor the 10 days to respond, as we do not see these issues as creating any potential biases. The number of choice sets is within the accepted level in the published literature (Lancsar & Louviere, 2008).

1. Quality of written English: the writing is acceptable but would benefit from editing to ensure that the appropriate academic style is adhered to throughout the manuscript.

The overall manuscript has been edited to ensure appropriate academic style, such as tense use, has been adhered to throughout the manuscript.