**Author's response to reviews**

**Title:** Barriers to and Competency with the Use of Metered Dose Inhaler and Its Impact on Disease Control among Adult Asthmatic Patients in Ethiopia

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Authors reply

1. Into the introduction section authors could briefly explain that name of available devices for orally inhaled products in Ethiopia. If DPis are available why did authors, select only asthmatics using MDIs. Please discuss this point.

Dear Reviewer,

We included your comment as follows,

MDIs are the most available and used devices for asthma treatment in Ethiopia. Yet, the dry powder is in the drug formulary, but not available in pharmacies.

2. Method. I understand that authors enrolled all consecutive subjects referring to the chest clinics as outpatients for a visit. Please confirm this point into the text or explain in a better manner.

Authors should explain whether were subjects only experienced with MDIs enrolled.

Please review the sample size determination with the help of a statistician.
Dear Reviewer,

Thank you for your comment. We included the formula used we used to calculate our sample size.

3. Authors studied barriers to adherence using a questionnaire with five domains. Please explain in a better manner how do you select this questionnaire. Please add it as a supplementary file if it is not previously published.

Dear reviewer,

We took the barriers from different literature. We uploaded as an attachment.

4. Authors used the ACT to evaluate the control of asthma

Authors evaluated the adherence using a independent variables comorbidities (which ones? did they used the Charlson score or others?), disease length (from diagnosis?) and follow-up (time period between visits?). Incoming (money) will be another interesting variable influencing adherence. is it possible to insert this information?

Dear reviewer,

Yes, we applied ACT to measure asthma control. About comorbidity, we didn’t use any score. It was just a self-report open question if they have a comorbidity. Yes, the disease length was measured by the time from diagnosis. Follow up time was the time between visits and we evaluated if the follow-up was regular or not. we identified the cost of medication as a barrier at B17.

5. I agree that inhaler misuse is a common variety of unintentional non-adherence, typical of OIP (please see some references, such as Nikander11, Melani15), but not the only form. I also agree that poor adherence is associated with poor asthma control and poor inhaler technique. Contrivance is a behaviour in which a subject knows how to use an inhaler effectively, but chooses to utilize a different ineffectual technique. Noteworthy, repeated instruction on inhaler technique increased adherence in asthmatics by self-reports (Takemura10) and reduced the frequency emergency room visits due to exacerbations (Takemura12) and control (Coelho12).

Dear Reviewer,

Thank you for your comments and your suggestions here.
6. Although there is no "gold standard" on how to measure adherence, a variety of patient-administered questionnaires have been developed to estimate adherence, such as the four-item Morisky self-report score (Morisky86) and its varieties (Morisky08, Foster12), the MARS (Horne99, Cohen09, Mora), and so on. Did authors use these questionnaires to evaluate adherence? If not, they should modify the text and explain that they have only studied inhaler technique in experienced asthmatics and evaluated its relationship with disease control and other independent variables affecting inhaler use.

Dear reviewer,

We utilized the

the National Asthma Education and Prevention Programs of America (NAEPP) step criteria for demonstration of an MDI. We didn’t use another adherence measurement scale for adherence.

7. There is no standardized method to evaluate MDI use (as well as use of inhalers). Please discuss the questionnaire that you have used with its limit. Shake the device is not an error using a solution but only MDIs formulated as suspensions. The superiority of open mouth technique is questionable and not a critical or essential error. Hand-lung coordination is a key-point using MDI and is not cited into the text.

Please review these points

Dear Reviewer,

We discussed the limitations of the tool. Their experience to shake the device is a general question that if they can shake when the procedure is necessary. We described that we measured the closed mouth procedure in our study. Regarding the hand-lung coronation, in the competency measures, questions 1-4 assessed hand techniques and 5-9 evaluated lung activities.

Jane E. Scullion (Reviewer 2): This is an interesting paper addressing common barriers to asthma control and use of MDI and relevant both to Ethiopia but also in raising issues that have an international concern and commonality.

there are a couple of issues i would like to raise:

1. On page 13 you state that patients with regular follow up had decreased control to the counterpart and this needs some discussion as it appears counterintuitive
Dear Reviewer,

Thank you for your valuable comments.

We run the analysis again to sort out the counterintuitive. accordingly, the irregular follow-up showed decreased diseases control.

2. I note that correct MDI use uses either the open mouth or inhaler in the mouth method. Although I realize that the open mouth method is advocated in some countries it would not be good practice in most and may be worth commenting on.

Dear reviewer,

During our survey we got only the closed-mouth inhaler or inhaler in the mouth technique and we evaluated this in our study.

3. Additionally, the use of just Salbutamol for asthma control is recognised as insufficient and again you may wish to add further discussion on this point.

Dear Reviewer,

The use of salbutamol puff is insufficient we explain the problem with this prescription in our discussion.

4. It is a well referenced article and the literature supports your discussion well. There are some stylistic issues which need to be addressed prior to publication if your paper is accepted.

Dear Reviewer,

We addressed some unnecessary words in order to use plain English.