

## Peer Review Report

# Review Report on Spatial distribution and determinant factors of hand washing practice with essential agents among households in Ethiopia

Original Article, Int J Public Health

Reviewer: Gilbert Fokou

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### EVALUATION

**Q 1** Please provide your detailed review report to the authors. The editors prefer to receive your review structured in major and minor comments. Please consider in your review the methods (statistical methods valid and correctly applied (e.g. sample size, choice of test), is the study replicable based on the method description?), results, data interpretation and references. If there are any objective errors, or if the conclusions are not supported, you should detail your concerns.

#### Major comments

1. In the statement of the problem, the authors show that “despite the unquestionable evidence in favor of hand washing in developing countries it is still a gap in appropriate use of essential hand washing agent” (line 81–82). However, information is missing on the knowledge and perception of population on essential hand washing agent. Do basic components of WASH such as water and soap exist in the assessed contexts? Are population aware of the importance of essential hand washing agent for their body and hand hygiene? Those questions are not clearly addressed in this study, making the problem statement a bit weak. In other words, to be able to assess the hand washing practice using essential hand washing agent among households, one should be able to link it to the knowledge of those households on essential hand washing agent. To put it differently, what has been done in Ethiopia to improve handwashing practice with essential agents? Which policy? Which nationwide intervention? You can question the existence of a gap in appropriate use of essential hand washing agent only if you have clearly demonstrated that conditions are in place for an appropriate use.
2. Analyses focus basically on variables such as educational status, improved sanitation facility, region, wealth quintile and place where household members wash their hands were significantly associated predictors of households with handwashing practice with essential agents. However, those variables cannot explain why households in Amhara and Somali were less likely to wash their hands with essential agents compared to other areas like Addis Ababa, Tigray region, etc. Based on the assumption that hand washing (and health prevention behaviours) has cultural underpinnings, the authors could have had more interesting results when taking into account sociocultural variables such as the ethnicity, religion, etc. It might be difficult in a study analysing secondary data, it is still very useful to consider those variables. A paragraph in the discussion section could discuss such a result comparing the findings with several KAP studies in various locations in Ethiopia to show why some people are more likely adopt handwashing practice with essential agents compared to others.
3. My general comment on the manuscript is that there is nothing new in the findings of this study. I mean here, no surprising new result. It is obvious as demonstrated in the paper that educational status of the head of the household, the economic status of the household (closely associated with “improved sanitation facility”) are significantly associated predictors of households with handwashing practice with essential agents. Therefore, the study is not bringing anything new and original. This makes the feasibility of the recommendation to target households with low access to improved sanitation facilities, low wealth status and low educational status during interventions, difficult as it has to do with more structural and general issues like poverty alleviation strategies and national education policies.

I recommend a careful analysis of determining factors of handwashing using essential agents by a social scientist.

#### Minor comments

- The manuscript needs careful review for English editing
- Line 70–71: “Reductions in pneumonia, diarrhea, and measles collectively were responsible for half of the 3.6 million fewer deaths recorded in 2013” : Is this worldwide or in a specific context. More precision is needed
- Line 72–73: Not very sure of the definition to the acronym WASH as Water Soap and Hygiene. Shouldn't it be Water Sanitation and Hygiene?
- Essential hand washing agent: what does it mean? You have repeatedly used this notion without clearly defining what you mean by essential hand washing agent.
- Line 85: “... hand hygiene practices using essential hand washing agent differs from region to region...”: there is a need of data and references to illustrate what you are saying here.
- Line 87–88: Why are the authors referring to Ethiopia here? They should properly introduce the context of the study by gradually narrowing the scope of the study from general to particular.
- Line 117: the enumeration of essential hand washing agents, ie soap, water and other cleaning agents, as you did here should also appear in the Abstract and also in the Introduction (e.g. line 82), to clearly indicate what you mean by this notion.
- Line 118–120: You said : “Then dependent variable was dichotomized as “Yes” if a household had experienced of hand washing practice with essential agents and “No” if a household didn't experience of hand washing practice with essential agents within the study period”. My comment here is that the objectivity in the answer to this question is a pretty questionable as it might be affected by cultural, geographical and socioeconomic indicators. Some households will respond “YES” just because they do not want to be perceived as dirty people, while others will say “NO” because they would like to be supported in the provision of essential hand washing agents. This variable should be analysed critically.
- Line 123: “essential hand washing agent” also deserves being defined.

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#### **Q 2** Please summarize the main findings of the study.

Based on secondary data analysis of the Ethiopian Demography and Health Surveys (EDHS) in 2016, the paper aimed to assess spatial distribution and determinate factors of hand washing practice using essential hand washing agent among households in Ethiopia.

Findings show that the spatial distribution of handwashing practice with essential agents was found to be spatially clustered in Ethiopia with Global Moran's  $I$  0.62 ( $p < 0.001$ ). Thus, the highest prevalence of household handwashing practice with essential agents was identified in Addis Ababa, Tigray, Afar, Dire Dawa, SNNPR and Gambela, while Amhara and Somali regions had the lowest prevalence of household handwashing practice with essential agent

Additionally, the Spatial SaTScan analysis of handwashing practice with essential agents revealed that the highest performing clusters of handwashing practice with essential agents were detected in Addis Ababa, SNNPR, Tigray, Beneshangul and Afar regions

Lastly, an assessment of factors associated with handwashing practice with essential agents revealed that educational status, the quality of sanitation facilities, the wealth status of the household and other factors like the region (geography) and the place where household members wash their hands were significantly associated predictors of households with handwashing practice with essential agents. Thus, households in Amhara and Somali regions are less likely to wash their hands with essential agents compared to households in Addis Ababa or those from Tigray region

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#### **Q 3** Please highlight the limitations and strengths.

Stengths: 1. the use of GIS and SaTScan to analyse statistically high-risk clusters of handwashing practice with essential agents  
2. The geographical scope of the study: its representativeness at national and regional levels.

Limitations: depth of the analysis. The paper focusses on variables associated with handwashing practice such as residence, improved water source, educational status, improved sanitation facility, region, wealth quintile and place where household members wash their hands. However, the sociocultural aspect that may be very important factor explaining the use (or reluctance to use) of essential hand washing agent is missing in the discussion. It is this difficult to clearly explain why the use of essential hand washing agent is so low in some areas like Amhara and Somali regions.

#### PLEASE COMMENT

**Q 4** Is the title appropriate, concise, attractive?

Yes

**Q 5** Are the keywords appropriate?

Yes

**Q 6** Is the English language of sufficient quality?

The language is pretty good, but still needs a good quality check. A review by a native English speaker is recommended.

**Q 7** Is the quality of the figures and tables satisfactory?

Yes.

**Q 8** Does the reference list cover the relevant literature adequately and in an unbiased manner?)

Yes but still needs improvements. There is a need for more literature to discuss the determinants factors of hand washing practice with essential agents. For example, there is a need of more include literature on sociocultural determining factors that could help to understand why the probability to use essential hand washing agent is high in some areas and low in some areas like Amhara and Somali regions.

#### QUALITY ASSESSMENT

**Q 9** Originality



**Q 10** Rigor



**Q 11** Significance to the field



**Q 12** Interest to a general audience



**Q 13** Quality of the writing



**Q 14** Overall scientific quality of the study



#### REVISION LEVEL

**Q 15** Please take a decision based on your comments:

Major revisions.

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