International Journal of Women's Health

Dovepress
Taylor & Francis Group

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RESPONSE TO LETTER

Impact of Mobile Health (mHealth) Use by Community Health Workers on the Utilization of Maternity Care in Rural Malawi: A Time Series Analysis [Response to Letter]

Chiyembekezo Kachimanga[1,2], Wingston Felix Ng'ambi[3], Doctor Kazinga[1], Enoch Ndarama[4], Mercy Ambogo Amulele[5], Fabien Munyaneza[1], Ibukun-Oluwa O Abejirinde[6,7], Thomas van den Akker[2,8], Alexandra V Kulinkina[1,9,10]

[1]Partners in Health Malawi, Neno, Malawi; [2]Athena Institute, Vrije Universiteit Amsterdam, Amsterdam, Netherlands; [3]Health Economics and Policy Unit, Department of Health Systems and Policy, Kamuzu University of Health Sciences, Lilongwe, Malawi; [4]Ministry of Health, Neno, Malawi; [5]Medic, Nairobi, Kenya; [6]Women College Hospital Institute for Health System Solutions and Virtual Care, Toronto, ON, Canada; [7]Dalla Lana School of Public Health, University of Toronto, Toronto, ON, Canada; [8]Department of Obstetrics and Gynaecology, Leiden University Medical Center, Leiden, Netherlands; [9]Swiss Tropical and Public Health Institute, Allschwil, Switzerland; [10]University of Basel, Basel, Switzerland

Correspondence: Chiyembekezo Kachimanga, Partners in Health Malawi, Post Office Box 56, Neno, Malawi, Email chembekachimanga@yahoo.co.uk

Dear editor

We are grateful for Sofia and Zubaidah's[1] comments in their letter to the Editor. We find their review of our study engaging and informative as we explore the future of mHealth use by community health workers (CHWs) in resource-limited settings. The letter points out some limitations that may affect the results and scalability of the study. Some of these were already presented in the discussion section of the study.

The authors point out that a longer observation period and disaggregating data from six facilities would have provided more robust evidence for sustainable change. While no agreed minimum observations exist for interrupted time series analysis,[2] pre- and post-observation periods between 8 and 12 months may be used depending on the study.[3–5] The aggregation of the results from the facilities was required in our study due to the smaller sample sizes of some of the facilities. Therefore, we used aggregated data and 12-month pre- and post-observation periods. However, as noted, longer follow-up would provide an opportunity to study long-term impact of mHealth on the outcomes presented in the paper, other outcomes that were not measured, and allow disaggregation of data across individual facilities.

The authors also noted that mHealth does not seem to impact the complete continuum of care. In our study, mHealth use by CHWs impacted facility-based births and antenatal care, but not postnatal care (PNC). As explained in our paper, and in line with our systematic review, this finding is common in many contexts in Africa.[6] Previous studies have shown mixed results across the maternal health continuum of care, with more studies reporting on the impact of mHealth use by CHWs on facility-based births, followed by antenatal care. Lastly, few studies have reported on the impact of mHealth use by CHWs on PNC. We have explained the lack of impact of mHealth use by CHWs on PNC previously.[7] Firstly, as noted in the paper, the challenging PNC workflows may have impeded CHW's abilities to use the app to improve PNC uptake. Secondly, cultural factors may have affected how CHWs interacted with mHealth and PNC women. Finally, the impact of mHealth on CHWs depends on the social context, which includes relationships with stakeholders, trust, availability of training, and mentorship, among others.[8] This highlights, again, that mHealth might be more effective if CHWs are well supported by both the health system and communities and if mHealth implementation is accompanied by positive CHW experience and cultural considerations.

The use of health management information system (HMIS) data may have introduced some bias. As explained in the study, data were collected retrospectively; therefore, we experienced missing data during data collection. These gaps

Received: 14 March 2025
Accepted: 5 April 2025
Published: 17 April 2025

were filled by HMIS data, which, in our context, have been deemed to be of high quality.[9] However, we presented a sensitivity analysis using original data. Future studies may consider collecting data prospectively to improve its robustness. We also agree with the authors of the letter that future studies could explore the impact of COVID-19, cyclones, and cholera.

It is important to note that the study is part of a larger mHealth study conducted by us.[6–8,10] In the previously published systematic review and qualitative study, contextual factors, including implementation barriers and facilitators of mHealth, have been explored using mixed methods approaches. We did not explore the cost-effectiveness of mHealth, but future evaluations can consider exploring this aspect.

Despite these limitations, we believe the study provided a scholarly basis on which other researchers can generate hypotheses, implement context-specific mHealth programs, and advocate for scaling up mHealth. We, therefore, appreciate that the authors of the letter confirm that our study contributes valuable knowledge to mHealth use by CHWs in resource-limited settings.

Disclosure

The authors report no conflicts of interest in this communication.

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https://doi.org/10.2147/IJWH.S528378