

PEER REVIEW HISTORY

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ARTICLE DETAILS

TITLE (PROVISIONAL)	Targeting strategies of mHealth interventions for Maternal and Reproductive Health in Low and Middle Income countries: A systematic review protocol
AUTHORS	ILOZUMBA, Onaedo Adepoju, Ibukun-Oluwa Dieleman, Marjolein Bardaji, Azucena Broerse, Jacqueline Van Belle, Sara

VERSION 1 – REVIEW

REVIEWER	Dr. Pauline Bakibinga APHRC, Kenya
REVIEW RETURNED	18-Sep-2017

GENERAL COMMENTS	<p>This is a protocol and well written with a few typos that need to be attended to.</p> <p>1. Introduction The first two paragraphs are not really necessary. Please consider moving paragraph 3 to the beginning and make a good case for why the review is necessary before you note what the review is about. As such, I suggest that the introduction be revised.</p> <p>2. The exclusion criteria needs to be revisited. If the subject of review covers reproductive health, a clear justification for the exclusion of studies on sexually transmitted diseases. Reproductive health also includes a responsible, satisfying sexual life.</p>
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REVIEWER	Dr Siew Hwa Lee Robert Gordon University, Aberdeen, Scotland, United Kingdom
REVIEW RETURNED	30-Oct-2017

GENERAL COMMENTS	<p>This is an interesting systematic review protocol. I have a few comments:</p> <p>1. It is noted that the authors are basing their inclusion and exclusion criteria on the 12 common mHealth Information Communication Technology (ICT) applications by Labrique (2013). However, it is not clear whether the 'Registries and vital events tracking' are included or excluded (Page 6, Table 1).</p> <p>2. With regards to the search criteria - some low and middle income countries are not in the list, for example, Cambodia, Tanzania and Uganda (Page 8, Table 2, Search line number 2).</p>
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	<p>3. On page 8 and 9, I suggest reviewing the Boolean Operators used (#1 AND #2 AND #3 AND #4). The concepts #2 and #3 are the same, so line #3 is not required. Similarly, some keywords in line #4 and #5 are the same - this can be search as one line using Boolean Operator 'OR'. Finally, the concepts for line #6 should #1 AND #2 AND #3 (#1 mHealth interventions) AND (#2 low and middle income countries) AND (#3 maternal and child health and related terms).</p> <p>4. I suggest the authors refer to the latest version of the GRADE framework for their quality of evidence (page 11).</p> <p>5. Is the reference no. 29 Popay et al (2006) or AAhman et al (2005)? (page no.14)</p>
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VERSION 1 – AUTHOR RESPONSE

Dear Ms. Bedi,

Please find enclosed the revised manuscript entitled “Targeting strategies of mHealth interventions for Maternal Health in Low and Middle Income countries: A systematic review protocol” for publication consideration in BMJ Open. We would like to thank you and the reviewers for the constructive feedback and kind words. We believe that reflection on the points raised, such as reviewing our use of the term “reproductive health”, have contributed to making our manuscript stronger. We have attempted to address all the comments and below we provide a point-by-point explanation of how we have accomplished this.

Thank you for your consideration of this revised manuscript.

Yours sincerely,
Onaedo Ilozumba

Academic Editor

Comment 1

Please revise the Strengths and Limitations section (after the abstract) to focus on the methodological strengths and limitations of your study.

Response 1

The authors thank the editor for explaining that the strengths and limitations should focus on the “methodological” strengths and limitations. We recognize that a couple of our bullet points address the relevance of our research and we have modified the section accordingly:

- The protocol adheres to the PRISMA-P guidelines for reporting a systematic review protocol
- The protocol outlines a review process that will involve the use of a systematic literature review, an interdisciplinary team and a narrative synthesis methodology-allowing for an iterative review process.
- The proposed inclusion criteria includes quantitative and qualitative studies and a narrative synthesis methodology, this combination presents an opportunity for the review to answer questions not only about questions about “what “ but also “why and how”
- The protocol proposes the utilization of multiple tools to assess the strength of evidence including the Downs and Black (1998) checklist for quantitative healthcare studies and the GRADE system
- Narrative synthesis as a form of content methodology has been criticized for its potential to be biased, and its transparency has been challenged. We address these by utilizing a systematic four-step approach to this synthesis.

Comment 2

Please ensure the manuscript is correctly formatted as per our guidelines for protocol articles: <http://bmjopen.bmj.com/pages/authors/> For example, please ensure the Conclusion section is replaced with an Ethics and Dissemination section

Response 2

- 'Methods and Design' was changed to 'Methods and Analysis'
- 'Conclusion' was changed to 'Ethics and Dissemination'
- 'Contributors' was rephrased to 'Authors Contributions'
- Funding support statement was modified to read 'This work was supported by Erasmus Mundus Joint Doctorate Fellowship, Framework Partnership Agreement 2013-0039, Specific Grant Agreement 2014-0681). The funder had no role in the decision to write and publish this protocol.'
- 'Competing interest' were rephrased to 'Competing interest statements'
- The section in the earlier version titled 'Ethics approval' was deleted, as it is not required in the guidelines for protocols.

Reviewer 1

Comment 3

This is a protocol and well written with a few typos that need to be attended to.

Response 3

We thank the reviewer for the compliment. We have read through the manuscript carefully to address typos and grammatical errors that might influence reader comprehension. Particularly in addressing the reviewers' 2nd comment about the introduction section.

Comment 4

Introduction

The first two paragraphs are not really necessary. Please consider moving paragraph 3 to the beginning and make a good case for why the review is necessary before you note what the review is about. As such, I suggest that the introduction be revised.

Response 4

We thank the reviewer for this comment and have made the following changes:

- Started the introduction with paragraph 3 (from the earlier version). The text of the original paragraphs 1 or two have been reduced to a couple of sentences and combined with paragraph 3

Mobile health (mHealth) involves the use of mobile phones or portable devices such as personal digital assistants (PDAs) for healthcare service delivery. These interventions are usually in the form of direct phone calls, SMS messages, voice calls, mobile applications [1]. mHealth interventions have increasingly been used in improving maternal health and family planning outcomes. The range of available mHealth interventions resulted in Labrique et.al (2013) developing a framework which identified the 12 common uses of mHealth for maternal and child health, the most predominant being its use for client education and behaviour change communication [2]. These interventions may target the supply end of care delivery- aimed at health workers at the facility level, or individual and

community levels i.e. the demand side influencers such as household decision-makers. In this review we will focus on the individual level interventions which have focused on strategies shown to work for maternal health including increased delivery assistance by a skilled birth attendant, attendance of four or more antenatal care (ANC) visits, and an increased prevalence of contraceptive usage amongst reproductive aged women [3].

Comment 5

The exclusion criteria needs to be revisited. If the subject of review covers reproductive health, a clear justification for the exclusion of studies on sexually transmitted diseases. Reproductive health also includes a responsible, satisfying sexual life.

Response 5

We thank the reviewer for this important point about the completeness of the term 'reproductive health' and agree that there should be a holistic view to sexual and reproductive health. Upon conversation and reflection among the authors we decided to be specific and clarify that the focus of the review is maternal health. We have defined maternal health to include four outcomes family planning, antenatal care, delivery and postnatal care. This is based on current literature that have highlighted the importance of integrating family planning services in maternal and child health as one strategy to reduce maternal mortality as family planning programs helps ensure that pregnancies are planned and wanted.

- Revising the manuscript title to "Targeting strategies of mHealth interventions for Maternal Health in Low and Middle Income countries: A systematic review protocol"
- Revising all references of maternal and reproductive health to maternal health
- We have left the term "reproductive health" within the search string to maintain completeness of in capturing relevant references

Reviewer 2

Comment 6

This is an interesting systematic review protocol. I have a few comments:

It is noted that the authors are basing their inclusion and exclusion criteria on the 12 common mHealth Information Communication Technology (ICT) applications by Labrique (2013). However, it is not clear whether the 'Registries and vital events tracking' are included or excluded (Page 6, Table 1).

Response 6

We thank the reviewer for this compliment and for pointing out the omission on "registries and vital events tracking" as one of the uses of ICT applications

We have modified this to indicate that registries and vital events will be included if performed at community level.

Comment 7

With regards to the search criteria - some low and middle income countries are not in the list, for example, Cambodia, Tanzania and Uganda (Page 8, Table 2, Search line number 2).

Response 7

We thank the reviewer for this important observation. We have reworked #2 and ensured that missing low and middle countries including Cambodia, Tanzania and Uganda have been included

A developing country[Mesh] OR low income[tiab] OR middle income[tiab] OR developing countr*[tiab] OR resource poor[tiab] OR rural[tiab] fghanistan [tw] OR Guinea[tw] OR Rwanda[tw] OR Benin[tw] OR Guinea-Bissau[tw] OR Senegal[tw] BurkinaFaso[tw] OR Haiti[tw] OR SierraLeone[tw] OR Burundi[tw] OR Korea, Dem. People's Rep. [tw] OR Somalia[tw] OR Central African Republic[tw] OR Liberia[tw] OR South Sudan[tw] OR Chad[tw] OR Madagascar[tw] OR Tanzania OR Comoros[tw] OR Malawi[tw] OR Togo[tw] OR Congo, Dem. Rep[tw] OR Mali[tw] OR Uganda [tw] OR Eritrea[tw] OR Mozambique[tw] OR Zimbabwe[tw] Ethiopia[tw] OR Nepal[tw] ORGambia[tw] OR Niger[tw] OR Angola[tw] OR Indonesia[tw] OR Philippines[tw] OR Armenia[tw] OR Jordan[tw] OR São Tomé and Príncipe[tw] OR Bangladesh[tw] OR Kenya[tw] OR Solomon Islands[tw] OR Bhutan[tw] ORKiribati [tw] OR Sri Lanka[tw] OR Bolivia[tw] OR Kosovo[tw] OR Sudan[tw] Or Cabo Verde[tw] OR Kyrgyz Republic[tw] OR Swaziland[tw] OR Cambodia [tw] OR Lao PDR[tw] OR Syrian Arab Republic[tw] OR Cameroon[tw] OR Lesotho[tw] OR Tajikistan[tw] OR Congo, Rep. [tw] OR Mauritania[tw] OR Timor-Leste[tw] OR Côte d'Ivoire[tw] Micronesia, Fed. Sts. [tw] OR Tunisia[tw] OR Djibouti[tw] OR Moldova[tw] OR Ukraine[tw] OR Egypt, Arab Rep. [tw] OR Mongolia [tw] Uzbekistan[tw] OR El Salvador [tw] OR Morocco[tw] ORVanuatu[tw] OR Georgia[tw] OR Myanmar[tw] OR Vietnam[tw] OR Ghana[tw] OR Nicaragua[tw] OR West Bank and Gaza[tw] OR Guatemala[tw] OR Nigeria[tw] OR Yemen, Rep. [tw] OR Honduras[tw] OR Pakistan[tw] OR Zambia[tw] OR India[tw] OR Papua New Guinea[tw] OR Albania[tw] OR Ecuador[tw] OR Nauru[tw] OR Algeria[tw] OR Fiji[tw] OR Panama[tw] OR American Samoa[tw] OR Gabon[tw] OR Paraguay[tw] OR Argentina[tw] OR Grenada[tw] OR Peru[tw] OR Azerbaijan[tw] OR Guyana[tw] OR Romania[tw] OR Belarus[tw] OR Iran, Islamic Rep. [tw] OR Russian Federation[tw] OR Belize[tw] OR Iraq[tw] OR Samoa[tw] OR Bosnia and Herzegovina[tw] OR Jamaica[tw] OR Serbia[tw] OR Botswana[tw] OR Kazakhstan[tw] OR South Africa[tw] OR Brazil[tw] OR Lebanon[tw] OR St. Lucia [tw] OR Bulgaria[tw] OR Libya[tw] OR St. Vincent and the Grenadines[tw] OR China[tw] OR Macedonia, FYR [tw] OR Suriname[tw] OR Colombia[tw] OR Malaysia[tw] OR Thailand[tw] OR Costa Rica[tw] OR Maldives[tw] OR Tonga[tw] OR Croatia[tw] OR Marshall Islands[tw] OR Turkey[tw] OR Cuba[tw] OR Mauritius[tw] OR Turkmenistan[tw] OR Dominica[tw] OR Mexico[tw] OR Tuvalu[tw] OR Dominican Republic[tw] OR Montenegro[tw] OR Venezuela, RB[tw] OR Equatorial Guinea[tw] OR Namibia[tw]

Comment 8

On page 8 and 9, I suggest reviewing the Boolean Operators used (#1 AND #2 AND #3 AND #4). The concepts #2 and #3 are the same, so line #3 is not required. Similarly, some keywords in line #4 and #5 are the same - this can be search as one line using Boolean Operator 'OR'. Finally, the concepts for line #6 should #1 AND #2 AND #3 (#1 mHealth interventions) AND (#2 low and middle income countries) AND (#3 maternal and child health and related terms).

Response 8

We thank the reviewer the valuable suggestions on how to structure the Boolean operators so that all relevant articles can be captured in a streamlined manner. We have adapted the search strategy by:

- Deleting line #3
- Modifying line #4 and #5 into a single searching term using 'OR' as suggested.
- Thus line #6 has become line #4
- In the revised line #4 we have used the concepts #1 AND #2 AND #3 as suggested.

Comment 9

I suggest the authors refer to the latest version of the GRADE framework for their quality of evidence (page 11).

Response 9

The authors were unaware of the newer version of the GRADE framework and thank the reviewer for bringing it to our attention. We believe the reviewer was making reference to Guyatt G, Oxman AD, Akl EA, et al. GRADE guidelines: 1. Introduction—GRADE evidence profiles and summary of findings tables. J Clin Epidemiol 2011;64:383–94. doi:10.1016/J.JCLINEPI.2010.04.026

We have addressed the comment by modifying the references on page 11 to include the 2011 article

Comment 10

Is the reference no. 29 Popay et al (2006) or AAhman et al (2005)? (page no.14)

Response 10

We thank the author for pointing out this error in our referencing; reference 29 is indeed Popay et al (2006). We have corrected this.

VERSION 2 – REVIEW

REVIEWER	Dr Siew Hwa Lee Robert Gordon University Aberdeen Scotland, United Kingdom.
REVIEW RETURNED	05-Jan-2018

GENERAL COMMENTS	<p>Thank you for the revised manuscript. I have some minor comments in the following sections:</p> <p>Objective and research questions: 1. This is normally expressed as Aim (general or broad statement) and objectives/research questions (you either write as objectives or research questions which are very specific objectives/questions to help you answer your aim).</p> <p>Methods and Analysis: Search criteria 2. The search time frame reported here is different to the time frame in the abstract. 3. Table 2, search line 2 - to check the spelling of the country 'Afghanistan'. 4. Table 2, search line 3 - the following search terms are repetition - "newborn* [tiab] OR antenatal [tiab] OR obstetric [tiab] OR postnatal [tiab] OR postpartum [tiab] OR prenatal [tiab] OR perinatal [tiab] OR infant* [tiab] OR interpartum neonatal [tiab].</p> <p>Selection of studies: 5. PRISMA flowchart - a reference is required.</p> <p>References: Reference no. 2 - missing year of publication and name of journal</p>
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	Reference no. 14 and 23 - missing year of publication Good luck in your systematic review.
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VERSION 2 – AUTHOR RESPONSE

DEAR EDITOR,

Please find below our response to the reviewer comments for the manuscript ID bmjopen-2017-019345.R1. We have addressed all the comments raised by the reviewer.

In addition, we would like to bring your attention a change in the name of the second author from Ibukun-Oluwa Omolade "Adepoju" to Ibukun-Oluwa Omolade "Abejirinde". She recently got married and has officially changed her last name on all documentation. Her preference is to have her new name on all upcoming publications. Please let me know if any additional information is required.

We thank the reviewer for his comments and look forward to further communication.

Kind regards,

Onaedo Ilozumba

REVIEWER COMMENTS 1

Thank you for the revised manuscript. I have some minor comments in the following sections:

1. This is normally expressed as Aim (general or broad statement) and objectives/research questions (you either write as objectives or research questions which are very specific objectives/questions to help you answer your aim).

RESPONSE 1

Thank you for your earlier comments, which were very helpful in creating the revised version.

The aim and objective section has now been reformulated in line with the standards you have presented.

“The aim of this review is to understand the effects of targeting strategies applied in mHealth interventions for maternal health in low and middle-income countries (LMICs). To address this aim the following research questions were developed”

REVIEWER COMMENTS 2

Methods and Analysis:

Search Criteria

2. The search time frame reported here is different to the time frame in the abstract.
3. Table 2, search line 2 - to check the spelling of the country 'Afghanistan'.

4. Table 2, search line 3 - the following search terms are repetition - "newborn* [tiab] OR antenatal [tiab] OR obstetric [tiab] OR postnatal [tiab] OR postpartum [tiab] OR prenatal [tiab] OR perinatal [tiab] OR infant* [tiab] OR interpartum neonatal [tiab].

RESPONSE 2

2. The search frame in the text (line 198) has been changed to match the frame of 1999 and July 2017 as presented in the abstract.

3. The spelling in table 2, line 2 has been changed from "fghanistan" to "Afghanistan"

4. Table 2, search line 3 has now been modified and the repetitive search terms have been deleted.

REVIEWER COMMENTS 3

Selection of studies

5. PRISMA flowchart - a reference is required.

RESPONSE 3

The appropriate reference has now been included:

Moher D, Shamseer L, Clarke M, et al. Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement. doi:10.1186/2046-4053-4-1

REVIEWER COMMENTS 4

Reference no. 2 - missing year of publication and name of journal

Reference no. 14 and 23 - missing year of publication

RESPONSE 4

Reference no. 2: This has been updated to : Labrique AB, Vasudevan L, Kochi E, et al. mHealth innovations as health system strengthening tools: 12 common applications and a visual framework. Glob Heal Sci Pract 2013;1:160–71. doi:10.9745/GHSP-D-13-00031

Reference 14: This has been updated to : Tamrat T, Kachnowski S. Special Delivery: An Analysis of mHealth in Maternal and Newborn Health Programs and Their Outcomes Around the World. Matern Child Health J 2012;16:1092–101. doi:10.1007/s10995-011-0836-3

Reference 23 was updated and changed to the appropriate: Moher D, Shamseer L, Clarke M, et al. Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement. doi:10.1186/2046-4053-4-1

REVIEWERS COMMENTS 5

Good luck in your systematic review.

RESPONSE 5

We would like to thank you for the attention to detail and helpful feedback. We hope that we have sufficiently addressed your comments.