PEER REVIEW HISTORY

ARTICLE DETAILS

TITLE (PROVISIONAL)	Effectiveness of self-management applications in improving clinical health outcomes and adherence among diabetic individuals in Low and Middle-Income Countries: A Systematic Review
AUTHORS	dsouza, sherize; Shetty, Sahana; venne, Julien; Pundir, Prachi; Rajkhowa, Priyobrat; Lewis, Melissa; Brand, Helmut

VERSION 1 – REVIEW

REVIEWER	Lim, Lee Ling University of Malaya, Medicine
REVIEW RETURNED	03-Mar-2022

GENERAL COMMENTS	Dsouza et al. reported a systematic review protocol to examine the effectiveness of self-management applications in improving health outcomes and adherence among people with diabetes in LMIC. This manuscript is difficult to follow. Here are my major comments: 1) Page 3 of 28, Line 47-53: This reviewer opined that limitation 1 is not legit. 2) Introduction section is too lengthy with repetitive information especially the epidemiology data. 3) Page 6 of 28, Line 4-14: Review question 2 did not align with the study title. Furthermore, the focus on LMIC especially India wasn't stated here. 4) Page 6 of 28, Line 32-42: The authors included both randomized and non-randomized studies (quasi-experimental and controlled before-after). How did the authors pool the data of different study designs? 5) How long was the duration of intervention of eHealth and mHealth? Although Table 1 included 3 months, 6 months and 1 year, this reviewer opined that this definition was too diverse. 6) Page 10 of 28, Line 18-20: The authors stated observational studies were excluded (Page 6). However, the authors planned to use Newcastle Ottawa Scale for cross-sectional studies. Please explain. 7) The manuscript did not discuss why a focus on India as stated on Page 4 Line 4-8. 8) Was this protocol registered on PROSPERO?

REVIEWER	Epiphaniou, Eleni University of Nicosia School of Humanities Social Sciences and Law, Department of social science
REVIEW RETURNED	04-Apr-2022

GENERAL COMMENTS	THis is a very interesting topic that aims to examine the effectiveness of SM intervention based on mhealth for patients with type 2 diabetes.
	Abstract
	1. In the abstract the authors refer for the first time on LMICs. I would suggest that this was fully explained and the give the abbreviation.
	2. The research question refers to 'how effective are the diabetic self-management applications on controlling type 2 diabetes?' It would have been good to explain what the authors mean my controlling type 2 diabetes.
	3. Is not clear whether the authors will include studies with different research designs or specific ones
	4. Will participants have specific characteristics?
	Intro
	1. Since the abbreviation of LMIC authors can use this instead of the whole word and the abbreviation alongside.
	2. Line 16: 'To manage....a better understanding.' I am sorry but this sentence is needs clarification.
	3. Line 42 and 43: 'have thoroughly tested' do the authors mean in general or for LMICs?
	4. Introduction could have discussed the effectiveness of these interventions for Type 2 diabetes patients in other countries and support the need to examine their effectiveness in LMICs too.
	5. This section structure perhaps it could start with an Introduction of Type 2 diabetes, the mHealth interventions and their effectiveness, then Type 2 diabetes in LMICs and its impact. This will lead to studies examining the effectiveness of mHealth intervention in this population too.
	6. I believe it is important to include more scientific evidence on mHealth, what it can include, if is effective or not etc.
	Review questions
	1. I believe they can be more specific. Perhaps for example: Are diabetic self-management applications effective in controlling diabetes among the type 2 diabetic individuals in LMICs? Or be more specific effective to what? QoL? sugar levels? etc
	Inclusion criteria
	1. I believe the studies' year of publication needs to be reported
	2. The types of interventions and secondary data I believe they are very interesting but perhaps the authors should think to narrow them down for a more realistic search?
	3. The search strategy should be include in the methods section? Are there going to be any forward citations?
	4. I suggest the authors include details on the extraction table and what it will include.
	5. It is suggested that authors specify to what type of studies meta-analysis etc. will occur.

VERSION 1 – AUTHOR RESPONSE

Sl. No.	Reviewers comments	Comments addressed by the study authors

I	Reviewer: 1	
1.	Page 3 of 28, Line 47-53: This reviewer opined that limitation 1 is not legit.	Yes, we agree with you. Here, we wanted to mention that the articles behind the paywall would not be included as the study is not funded. We have reframed the sentence (page 5 of 43, lines 21-25)
2.	Introduction section is too lengthy with repetitive information especially the epidemiology data.	The repetitive information is removed and the introduction part is modified. Thank you for the advice.
3.	Page 6 of 28, Line 4-14: Review question 2 did not align with the study title. Furthermore, the focus on LMIC especially in India wasn't stated here.	Thank you, based on your advice, the review questions have been updated (page 7 of 43, lines 15-22); 1. Are diabetic self-management applications effective in controlling blood sugar levels among individuals? 2. What is the impact of using Diabetic self-management applications in managing type 2 diabetes in LMICs in the context of India?
4.	Page 6 of 28, Line 32-42: The authors included both randomized and non-randomized studies (quasi-experimental and controlled before-after). How did the authors pool the data of different study designs?	The pooled estimate will be obtained separately for RCTs, and Non-RCTs (Quasi-experimental and controlled before-after studies) (Page 11of 43, lines 9-11)
5.	How long was the duration of intervention of eHealth and mHealth? Although Table 1 included 3 months, 6 months, and 1 year, this reviewer opined that this definition was too diverse.	As the HbA1c levels are usually repeated every 3 months in India during the patient follow-up. We have included the follow-up duration of the studies to be at every 3 months intervals like 3, 6, 9 months to a year. It will be included to assess the adherence of the people to the extended period of follow-up. We have edited it under the subheading subgroup analysis as 3-month intervals. (page 12 of 43, line 50)
6.	Page 10 of 28, Line 18-20: The authors stated observational studies were excluded (Page 6). However, the authors	We will not be using the New castle Ottawa scale, we have removed this

	planned to use Newcastle Ottawa Scale for cross-sectional studies. Please explain.	information on NCOS from the manuscript. Thanks.	
7.	The manuscript did not discuss why a focus on India as stated on Page 4 Line 4-8.	We plan to focus on Indian studies because it is the country with the second-highest burden of diabetes in the world and first among the LMICs. The second reason is, that this paper will be a part of the RCT to be done in India, we plan to focus on Indian studies. We have stated this in the rationale of the review. (page 7 of 43 & 8 of 43, lines 52- 56 & 3-9 respectively)	
8.	Was this protocol registered on PROSPERO?	Yes, we have added the information to the methods section as well as in the dedicated space for the registration number provided in the manuscript format. (please refer to Abstract on page 4 of 43) Prospero registration ID: CRD42021245517	
II	**Reviewer: 2**		
	Abstract		
9.	In the abstract the authors refer for the first time on LMICs. I would suggest that this was fully explained and the give the abbreviation.	Thank you for the suggestion, the changes have been included in the title.	
10.	The research question refers to 'how effective are the diabetic self-management applications on controlling type 2 diabetes?' It would have been good to explain what the authors mean by controlling type 2 diabetes.	Based on the advice, we have explained -what is meant by controlling type 2 diabetes in the introduction. Thank you. (page 3 of 14, lines 65-72)	
11.	Is not clear whether the authors will include studies with different research designs or specific ones	Have included the study design and explained the analysis part under data synthesis. (page 6 of 14, lines 129-132) & (Page 9 of 14, Line 208 onwards)	
12.	Will participants have specific characteristics?	Yes, we have mentioned in the inclusion criteria of the methodology section (page 6 of 14, lines 135-139)	

	Intro	
13.	Since the abbreviation of LMIC authors can use this instead of the whole word and the abbreviation alongside.	We agree and have made the replacement
14.	Line 16: 'To manage....a better understanding.' I am sorry but this sentence is needs clarification.	We have rephrased the sentence to "A deeper knowledge of the influence of mHealth applications in controlling blood sugar levels and managing diabetes is crucial to manage diabetes in terms of diabetic self-management among the LMICs, as well as to prioritize research agendas, and policies". Thanks. (page 5 of 14, lines 108-114)
15.	Line 42 and 43: 'have thoroughly tested' do the authors mean in general or for LMICs?	The research represents the general population globally. Specific to India, data has been added in the introduction. (page 4 of 14, lines 90-100)
16.	The introduction could have discussed the effectiveness of these interventions for Type 2 diabetes patients in other countries and support the need to examine their effectiveness in LMICs too.	Thank you for the suggestion, we have incorporated your suggestions in the introduction part. The need to examine the effectiveness of mHealth interventions is added under the subheading 'Measures to control Type 2 diabetes Diabetes'. (page3 of 14, line 65-72) The effectiveness of the mHealth interventions for the type 2 diabetic patients is discussed under the subheading 'mHealth applications' in the LMICs, as well as, in particular in India. (page 4 of 14, lines 90-107)
17.	This section structure perhaps it could start with an Introduction of Type 2 diabetes, the mHealth interventions and their effectiveness, then Type 2 diabetes in LMICs and its impact. This will lead to studies examining the effectiveness of mHealth intervention in this population too.	Thank you for the suggestion, we have incorporated it in the introduction.
18.	I believe it is important to include more scientific evidence on mHealth, what it can include if is effective or not etc.	Thanks, we have added it in the introduction (page 4 of 14, lines 90-100)

	Review questions	
19.	I believe they can be more specific. Perhaps for example: Are diabetic self-management applications effective in controlling diabetes among the type 2 diabetic individuals in LMICs? Or be more specific effective to what? QoL? sugar levels? etc	Added We will be specific to HbA1c levels ultimately. (page 5 of 14, lines 115-119)
	Inclusion criteria	
20.	I believe the studies' year of publication needs to be reported	Included in the year of publication (page 6 of 14, lines 133-134)
21.	The types of interventions and secondary data I believe they are very interesting but perhaps the authors should think to narrow them down for a more realistic search?	Since very few apps have been under trial for the scientific outcome in India. We will be categorising the different interventions to mhealth applications as well as other mhealth solutions that are already mentioned in the type of interventions included.
22.	The search strategy should be included in the methods section? Are there going to be any forward citations?	Yes, we will search the reference lists of the included studies and any key references identified, and have added them in the methods section under 'search methods for identification of studies. (page 8 of 14, lines 176-180) also, refer to supplementary file 2 on the search strategy.
23.	I suggest the authors include details on the extraction table and what it will include.	Thank you for the suggestion, it is added as a supplementary file (file 3) and more explanation is provided in the section 'Data extraction and management'
24.	It is suggested that authors specify what type of studies meta-analysis etc. will occur.	Meta-analysis with a random-effects model will be performed if there is a similarity in terms of the participants, study design, comparator, and outcomes. The pooled estimate will be obtained separately for RCTs, and Non-RCTs (Quasi-experimental and controlled before-after studies).

VERSION 2 – REVIEW

REVIEWER	Epiphaniou, Eleni University of Nicosia School of Humanities Social Sciences and Law, Department of social science

REVIEW RETURNED	05-Jul-2022

GENERAL COMMENTS	1. Abstract: This section indicates that 'The objective of the research is to identify how effective are the diabetic self-management applications (DSMA) in controlling the blood glucose levels of individuals with T2DM and to find the impact of DSMA in managing T2D in LMICs.' By reviewing the remaining document it seems that the aim is to 'to identify how effective are mHealth diabetic self-management applications (DSMA) in controlling the blood glucose levels of individuals with T2DM and to find the impact of DSMA in managing T2D in LMICs. 2. I would suggest in the Introduction to provide scientific evidence on the effectiveness of mHealth on diabetes management coming from other countries. This will enhance the need and rationale for this review in LMICs 3. Is not clear based on study outcomes how question 2 (What is the impact of using Diabetic self-management applications in managing type 2 diabetes in LMICs in the context of India) will be answered. Is more of a general question.

VERSION 2 – AUTHOR RESPONSE

Reviewer: 2 Abstract	This section indicates that 'The objective of the research is to identify how effective are the diabetic self-management applications (DSMA) in controlling the blood glucose levels of individuals with T2DM and to find the impact of DSMA in managing T2D in LMICs.' By reviewing the remaining document, it seems that the aim is to 'to identify how effective are mHealth diabetic self-management applications (DSMA) in controlling the blood glucose levels of individuals with T2DM and to find the impact of DSMA in managing T2D in LMICs.	Thank you for the suggestion. Based on it, we have edited the objective to, " The objective of the research is to identify the effectiveness of the mHealth applications in managing the blood glucose levels of individuals with T2DM and to assess the impact of using mHealth applications in managing T2DM with respect to health-promoting behavior among the LMICs in the context of India" (Page no. 3, lines 15-21)
Introduction	I would suggest in the Introduction to provide scientific evidence on the effectiveness of mHealth on diabetes management coming from other countries. This will enhance the need and rationale for this review in LMICs	Thank you, based on your suggestion, we have added supporting studies from other countries in the first paragraph (introduction section). Page no. 4, lines 39-53
RQ 2	Is not clear based on study outcomes how question 2 (What is the impact of using Diabetic self-	Thank you for the suggestion, we agree that

	management applications in managing type 2 diabetes in LMICs in the context of India) will be answered. Is more of a general question.	the specific impact was not mentioned for the secondary objective. We have edited it to "impact on health-promoting behavior change" and made the suggested changes in the abstract, objective, and outcome section. (Page no. 7, lines 11-13 & Page no. 9, lines 35-45)