

## PEER REVIEW HISTORY

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### ARTICLE DETAILS

<b>TITLE (PROVISIONAL)</b>	The use of information and communication technologies to promote healthy lifestyle behaviour: A systematic scoping review
<b>AUTHORS</b>	Joseph-Shehu, Elizabeth; Ncama, Busisiwe; Mooi, Nomaxabiso; Mashamba-Thompson, Tivani

### VERSION 1 – REVIEW

<b>REVIEWER</b>	Sarah Kelly University of Cambridge, UK
<b>REVIEW RETURNED</b>	01-Jul-2019

<b>GENERAL COMMENTS</b>	<p>The focus of this review on information and communication technologies to promote healthy lifestyle behaviours with an emphasis on low and middle income countries (LMIC) is an important one, and the finding of a lack of studies in LMICs which are experiencing an increase in NCDs is an informative message.</p> <p>However, the paper needs clarification about the inclusion criteria and the outcomes sought. The searches are also 2 years out of date now (to July 2017) and given the fast pace of development of ICT and health applications, should be updated. Standard review practice is that searches should have been completed within 1 year of publication (and this should apply even though this is a scoping review). Further specific comments are listed below:-</p> <p>1. There needs to be more clarity about the health promoting lifestyle profile instrument (HPLP) and how it was used to define inclusion criteria. On p6/Inclusion criteria it states 'studies reporting on interventions such as any subscales of the health promoting lifestyle profile (stress management, interpersonal relationships, nutrition, self-actualisation, health responsibility, and physical activity).....</p> <p>Were studies only included if they reported on one/some of these factors? Some explanation is needed of why studies that focused on alcohol or smoking cessation or obesity only were not included? There is an argument that these are lifestyle factors too, that would not be captured by HPLP.</p> <p>Were studies only included if they used the HPLP instrument to assess outcomes?</p> <p>A fuller description of HPLP is needed and the domains - a paper about the HPLP tool is at reference 30 - it should be much earlier in the paper along with the description.</p>
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	<p>2. p6/inclusion-exclusion criteria - this section repeats a lot of what is in table 1 so they could be combined into Table 1 for clarity.</p> <p>3. Some justification is needed about why searches were limited to 2007 onwards.</p> <p>4. p5 Methods/designs - please mention PRISMA-ScR as that has been used to guide reporting.</p> <p>5. Table 1 - it is not clear from the wording if patients, children, students, adolescents (youth) were included or excluded - please make clearer. (It appears to be adults only from earlier in the paper).</p> <p>6. p9 - Patient and public involvement - the review is not a systematic review - please describe as a scoping review.</p> <p>7. p9 - characteristics of included studies - state reviews and type also.</p> <p>8. The discussion and conclusions need some more work and clarity - while the results section is based on the findings of the scoping review, the discussion section seems to make claims that are not substantiated by the results or the initial aims of the review.</p> <p>For example alcohol, smoking and obesity seemed to be excluded in the section on inclusion/exclusion but are in the discussion section. While it seems some studies included a range of behaviours including alcohol, smoking and obesity it needs to be made clear that these are included as part of studies that included a range of health behaviours (if that was the case).</p> <p>The first line of the discussion should state the aims and inclusion criteria more explicitly than 'comprehensive health promoting behaviours'.</p> <p>There is repetition of some of the points in the introduction e.g. p12/lines 14,15,16 of the discussion repeat some of the points made in the introduction.</p> <p>p12/line 31 - 'Furthermore, our systematic review reported that use of ICT for health promotion, improves and enhances health-promoting behaviours' - what is the evidence for this. This is a scoping review, so there should be caution in making overall claims of effectiveness.. Please use scoping review instead of systematic review for this sentence.</p> <p>p14/line 19 'Nevertheless healthy individuals prefer to be busy with other issues of life rather than to engage in health-promoting lifestyle behaviour' - this doesn't make sense.</p> <p>Conclusions - line 43/44 - again caution is needed about claims of effectiveness - if these claims are to be made needs to be backed up with statements of fact e.g. x studies said this, y studies said that ....</p>
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	<p>Abstract/Results - needs more clarity - it reads as if physical activity is the main outcome, perhaps state the absence of studies examining other behaviours.</p> <p>Conclusion - it would be helpful to state ICT in relation to health promoting lifestyle behaviour in the first sentence also.</p> <p>In general, the paper needs editing and 'polishing' - examples of editing: p4/line 8 beneficial to the general population; p4/line 5: a composite; line 46 relationships.</p> <p>There are quite a lot of such minor edits needed throughout the text. Repetition should be reduced also and as stated above, the discussion and conclusions need more focus on the evidence and rewritten to flow better.</p>
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<b>REVIEWER</b>	Khin Than Win University of Wollongong, Australia
<b>REVIEW RETURNED</b>	07-Jul-2019

<b>GENERAL COMMENTS</b>	<p>The authors are ambitious to conduct the systematic scoping review of ICT to promote healthy life style behaviour including nutrition, physical activity, stress management, interpersonal relationships, self-actualisation/spiritual growth and health responsibility among healthy individuals. As authors indicated there was no other studies that review all these perspectives together as it is a very broad area. However, there were some reviews on physical activity and nutrition but they were not cited or mentioned in the review. It would be appropriate to mention some of these studies. For example, Norman et al. 2007, A Review of eHealth Interventions for Physical Activity and Dietary Behavior Change and other articles. Search criteria could be modified if all the relevant articles to be included, for example, instead of the word nutrition only "diet behavio*", "eating behavio*" could be included. There are a lot of studies on nutrition education or promotion to health adults or clinical trials with or without ICTs but these were not included in the review. Similar to this, "physical activity", "stress management", "spiritual growth" all needs to be included. Population included in the search were adult OR workers OR employees. What-if the study is in the general population but they do not include adult in the keywords? Would these studies be excluded. It would be more appropriate if the study population is not adult, these studies would be excluded at the exclusion stage. If the population to be included in the search stage, it will be good to be more inclusive.</p> <p>Authors indicated there were only 13 research articles and 7 reviews eligible for the study. If the search criteria is more inclusive there would be more articles and the results might be different. Thus, the feedback is mainly on the initial stage of the study. This study included both the actual studies and the reviewed articles. Most reviews in the literature were based on either the research studies or the critical review of reviews but not both.</p>
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### VERSION 1 – AUTHOR RESPONSE

Reviewer: 1  
Reviewer Name: Sarah Kelly  
Institution and Country: University of Cambridge, UK

Please state any competing interests or state 'None declared': None declared

Please leave your comments for the authors below

Comment

The focus of this review on information and communication technologies to promote healthy lifestyle behaviours with an emphasis on low- and middle-income countries (LMIC) is an important one, and the finding of a lack of studies in LMICs which are experiencing an increase in NCDs is an informative message.

However, the paper needs clarification about the inclusion criteria and the outcomes sought. The searches are also 2 years out of date now (to July 2017) and given the fast pace of development of ICT and health applications, should be updated. Standard review practice is that searches should have been completed within 1 year of publication (and this should apply even though this is a scoping review).

Response

We have updated the search to June 2019

Further specific comments are listed below:-

1. There needs to be more clarity about the health promoting lifestyle profile instrument (HPLP) and how it was used to define inclusion criteria. On p6/Inclusion criteria it states 'studies reporting on interventions such as any subscales of the health promoting lifestyle profile (stress management, interpersonal relationships, nutrition, self-actualisation, health responsibility, and physical activity).....Were studies only included if they reported on one/some of these factors? Some explanation is needed of why studies that focused on alcohol or smoking cessation or obesity only were not included? There is an argument that these are lifestyle factors too, that would not be captured by HPLP.

Response

We have rephrased the above sentence. We also agree with you that alcohol or smoking cessation or obesity are lifestyle factors that are not directly captured by HPLP but it beyond the scope of the study.

Comment

Were studies only included if they used the HPLP instrument to assess outcomes?

Response

No but if they report on one or more of the subscales of HPLP

Comment

A fuller description of HPLP is needed and the domains - a paper about the HPLP tool is at reference 30 - it should be much earlier in the paper along with the description.

Response

We have provided brief description of HPLP in the revision. The reference 30 was not brought early in the paper to encourage flow of reading.

Comment

2. p6/inclusion-exclusion criteria - this section repeats a lot of what is in table 1 so they could be combined into Table 1 for clarity.

Response

The eligibility criteria are derived from our PICOS hence the similarities. We would like to request to keep eligibility criteria section separate from the PICOS table.

Comment

3. Some justification is needed about why searches were limited to 2007 onwards.

Response

Thank you for the observation, we have included justification

Comment

4. p5 Methods/designs - please mention PRISMA-ScR as that has been used to guide reporting.

Response

Methods/designs has been revised

Comment

5. Table 1 - it is not clear from the wording if patients, children, students, adolescents (youth) were included or excluded - please make clearer. (It appears to be adults only from earlier in the paper).

Response

We have revised Table 1

Comment

6. p9 - Patient and public involvement - the review is not a systematic review - please describe as a scoping review.

Response

Revised as recommended

Comment

7. p9 - characteristics of included studies - state reviews and type also.

Response

Revised as recommended

Comment

8. The discussion and conclusions need some more work and clarity - while the results section is based on the findings of the scoping review, the discussion section seems to make claims that are not substantiated by the results or the initial aims of the review.

For example alcohol, smoking and obesity seemed to be excluded in the section on inclusion/exclusion but are in the discussion section. While it seems some studies included a range of behaviours including alcohol, smoking and obesity it needs to be made clear that these are included as part of studies that included a range of health behaviours (if that was the case).

The first line of the discussion should state the aims and inclusion criteria more explicitly than 'comprehensive health promoting behaviours'.

Response

Revised as suggested

Comment

There is repetition of some of the points in the introduction e.g. p12/lines 14,15,16 of the discussion repeat some of the points made in the introduction.

Response

We have revised the section

Comment

p12/line 31 - 'Furthermore, our systematic review reported that use of ICT for health promotion, improves and enhances health-promoting behaviours' - what is the evidence for this. This is a scoping review, so there should be caution in making overall claims of effectiveness.. Please use scoping review instead of systematic review for this sentence.

Response

The above conclusion was drawn from the existing studies. Details of the findings/studies can be found under ICT and health-promoting lifestyle behaviours and health status section.

Comment

p14/line 19 'Nevertheless healthy individuals prefer to be busy with other issues of life rather than to engage in health-promoting lifestyle behaviour' - this doesn't make sense.

Response

we have revised the sentence

Comment

Conclusions - line 43/44 - again caution is needed about claims of effectiveness - if these claims are to be made needs to be backed up with statements of fact e.g. x studies said this, y studies said that

....

Response

We indicated it in the result section under the use of ICT for health-promoting lifestyle behaviours and health status.

Comment

Abstract/Results - needs more clarity - it reads as if physical activity is the main outcome, perhaps state the absence of studies examining other behaviours.

Response. It has been revised

Thank you for your observations, we have revised accordingly

Comment

Conclusion - it would be helpful to state ICT in relation to health promoting lifestyle behaviour in the first sentence also.

Response

Revised as recommended

Comment

In general, the paper needs editing and 'polishing' - examples of editing: p4/line 8 beneficial to the general population; p4/line 5: a composite; line 46 relationships.

There are quite a lot of such minor edits needed throughout the text. Repetition should be reduced also and as stated above, the discussion and conclusions need more focus on the evidence and rewritten to flow better.

Response

English editor edited the paper again.

Reviewer: 2

Reviewer Name: Khin Than Win

Institution and Country: University of Wollongong, Australia

Please state any competing interests or state 'None declared': None declared

Please leave your comments for the authors below

Comment

The authors are ambitious to conduct the systematic scoping review of ICT to promote healthy life style behaviour including nutrition, physical activity, stress management, interpersonal relationships, self-actualisation/spiritual growth and health responsibility among healthy individuals. As authors indicated there was no other studies that review all these perspectives together as it is a very broad area. However, there were some reviews on physical activity and nutrition but they were not cited or mentioned in the review. It would be appropriate to mention some of these studies. For example, Norman et al. 2007, A Review of eHealth Interventions for Physical Activity and Dietary Behavior Change and other articles. Search criteria could be modified if all the relevant articles to be included, for example, instead of the word nutrition only "diet behavio\*", "eating behavio\*" could be included. There are a lot of studies or nutrition education or promotion to health adults or clinical trials with or without ICTs but these were not included in the review. Similar to this, "physical activity", "stress management", "spiritual growth" all needs to be included. Population included in the search were adult OR workers OR employees. What-if the study is in the general population but they do not include adult in the keywords? Would these studies be excluded. It would be more appropriate if the study population is not adult, these studies would be excluded at the exclusion stage. If the population to be included in the search stage, it will be good to be more inclusive.

Authors indicated there were only 13 research articles and 7 reviews eligible for the study. If the search criteria is more inclusive there would be more articles and the results might be different. Thus, the feedback is mainly on the initial stage of the study. This study included both the actual studies and the reviewed articles. Most reviews in the literature were based on either the research studies or the critical review of reviews but not both.

Response

Thank you for your observation. The above article mentioned (Norman et al. 2007, A Review of eHealth Interventions for Physical Activity and Dietary Behavior Change and other articles) was

excluded at the full article screening stage based on population (healthy adult). Also, the review was guided by the inclusion and exclusion criteria to achieve the aim of the systematic scoping review.

### VERSION 2 – REVIEW

<b>REVIEWER</b>	Khin Than Win University of Wollongong
<b>REVIEW RETURNED</b>	19-Aug-2019

<b>GENERAL COMMENTS</b>	<p>In general, authors have addressed most of the concerns raised. If the search strategy is approved in the protocol before then, it might be the ones that you are following. However, if it is not then, I have a reservation in the search strategy, especially, when you indicate "health-promoting lifestyle profile" OR "health-promoting lifestyle behaviour" as you would miss those articles with behaviour spelt with US spelling, "behavior". You would also like to have the word "health-promoting". How about those articles without the hyphen? Some articles would use the word "health promotion". However, since it is OR with other words, it might pick up some of those articles missed. Authors have added the keyword "diet" in the search keyword after the first review. Are there any differences in numbers of articles found? Did you run the search again or just added the additional keyword because of the reviewers' remarks?</p> <p>There was a conflicting remarks also. Could you clarify the statement, "health-related lifestyle behaviours such as stress management , condom use, breast cancer prevention and sexually transmitted diseases prevention that could have incorporated health responsibility lifestyle behaviour were not a primary research study". Are you stating it wasn't your primary research question or the those were not found as the primary research in the articles that you've analysed. If it is not your primary research then, it would be a conflicting statement as you have included stress as one of your search criteria and included in your study. If it is the latter then, you haven't included these search words such as "condom use", "breast cancer prevention" in your criteria so you might not be able to have that statement.</p>
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### VERSION 2 – AUTHOR RESPONSE

Reviewer: 2

Comment

In general, authors have addressed most of the concerns raised. If the search strategy is approved in the protocol before then, it might be the ones that you are following. However, if it is not then, I have a reservation in the search strategy, especially, when you indicate "health-promoting lifestyle profile" OR "health-promoting lifestyle behaviour" as you would miss those articles with behaviour spelt with US spelling, "behavior". You would also like to have the word "health-promoting". How about those articles without the hyphen? Some articles would use the word "health promotion". However, since it is OR with other words, it might pick up some of those articles missed.

Response

Thank you for acknowledging that we have addressed most of the concerns raised during the first revision and for your observations. We followed the protocol in conducting the study. However, we

included four additional electronic databases in the main study. For the search strategy, articles retrieved include both with US and UK spelling. Examples of such articles are:

- Hingle M., Yoon D., Fowler J., Kobourov S., Schneider M.L., Falk D., et al. Collection and visualization of dietary behavior and reasons for eating using Twitter. *Journal of medical Internet research*. 2013;15;6:e125.
- Dahl A.J., Peltier J.W., Milne G.R. Development of a value Co-creation wellness model: the role of physicians and digital information seeking on health behaviors and health outcomes. *Journal of Consumer Affairs*. 2018;52;3:562-94.
- Watson S., Woodside J.V., Ware L.J., Hunter S.J., Mcgrath A., Cardwell C.R., et al. Effect of a Web-Based Behavior Change Program on Weight Loss and Cardiovascular Risk Factors in Overweight and Obese Adults at High Risk of Developing Cardiovascular Disease: Randomized Controlled Trial. *Journal Of Medical Internet Research*. 2015;17;7:e177-e.
- Laranjo L., Arguel A., Neves A.L., Gallagher A.M., Kaplan R., Mortimer N., et al. The influence of social networking sites on health behavior change: a systematic review and meta-analysis. *Journal of the American Medical Informatics Association*. 2014: amiajnl-2014-002841.

We considered articles without hyphen (health promoting lifestyle profile) during the search (please see supplementary file first row). It was erroneously omitted in the write-up. We have included it. Although, most articles retrieved during the search does not include any form of ICT. Examples of articles retrieved are:

- Casey D. Findings from non-participant observational data concerning health promoting nursing practice in the acute hospital setting focusing on generalist nurses. *Journal of clinical nursing*. 2007;16;3:580-92.
- El Ansari W., Stock C., John J., Deeny P., Phillips C., Snelgrove S., et al. Health promoting behaviours and lifestyle characteristics of students at seven universities in the UK. *Central European journal of public health*. 2011;19;4:197.
- Enjezab B., Farajzadegan Z., Taleghani F., Aflatoonian A., Bokaie M. Health promoting behaviors in a population-based sample of middle-aged women and its relevant factors in Yazd, Iran. *Iranian Journal of Reproductive Medicine*. 2013:30-1.

#### Comment

Authors have added the keyword "diet" in the search keyword after the first review. Are there any differences in numbers of articles found? Did you run the search again or just added the additional keyword because of the reviewers' remarks?

#### Response

During the initial searched, articles on diets was retrieved, also during the updates conducted after the first and second reviewed we run the search and most of articles retrieved were duplicate, hence removed from the study. Below are examples of articles retrieved.

- Carlin A., Perchoux C., Puggina A., Aleksovska K., Buck C., Burns C., et al. A life course examination of the physical environmental determinants of physical activity behaviour: a "Determinants of Diet and Physical Activity"(DEDIPAC) umbrella systematic literature review. *PLoS One*. 2017;12;8:e0182083.



• Seto E., Hua J., Wu L., Shia V., Eom S., Wang M., et al. Models of Individual Dietary Behavior Based on Smartphone Data: The Influence of Routine, Physical Activity, Emotion, and Food Environment. PLoS ONE. 2016;11;4:1-16.

• Artinian N.T., Fletcher G.F., Mozaffarian D., Kris-Etherton P., Van Horn L., Lichtenstein A.H., et al. Interventions to promote physical activity and dietary lifestyle changes for cardiovascular risk factor reduction in adults a scientific statement from the American Heart Association. Circulation. 2010;122;4:406-41

**Comment**

There was a conflicting remarks also. Could you clarify the statement, "health-related lifestyle behaviours such as stress management , condom use, breast cancer prevention and sexually transmitted diseases prevention that could have incorporated health responsibility lifestyle behaviour were not a primary research study". Are you stating it wasn't your primary research question or the those were not found as the primary research in the articles that you've analysed. If it is not your primary research then, it would be a conflicting statement as you have included stress as one of your search criteria and included in your study. If it is the latter then, you haven't included these search words such as "condom use", "breast cancer prevention" in your criteria so you might not be able to have that statement.

**Response**

We have rephrased the sentence. Condom use, breast cancer prevention and sexually transmitted diseases prevention were not our primary research question in the review. What we mean is that they were not found as primary research in the selected articles for the review.

**VERSION 3 – REVIEW**

<b>REVIEWER</b>	KHIN THAN WIN University of Wollongong, Australia
<b>REVIEW RETURNED</b>	03-Oct-2019
<b>GENERAL COMMENTS</b>	Authors have addressed all the concerns raised.