

PEER REVIEW HISTORY

BMJ Open publishes all reviews undertaken for accepted manuscripts. Reviewers are asked to complete a checklist review form and are provided with free text boxes to elaborate on their assessment. These free text comments are reproduced below.

ARTICLE DETAILS

Title (Provisional)

Comparative effects of behaviour change techniques using eHealth and mHealth in promoting dietary behaviour: protocol for a systematic review and component network meta-analysis

Authors

Fukuda, Takafumi; Matsuura, Nozomi; Noma, Hisashi; Mihara, Takahiro

VERSION 1 - REVIEW

Reviewer	1
Name	van Sluijs, Esther
Affiliation	MRC Epidemiology Unit
Date	18-Apr-2024
COI	I have no competing interests

This paper describes a protocol for a substantial review and meta-analysis aiming to identify effective BCTs for dietary behaviour change. The paper is generally well-written. The background provides a concise but appropriate justification for the work and the research question is novel and likely to contribute new and useful knowledge to the field. The proposed review methods follow accepted standards. I have a few points for the authors' consideration:

- Carefully check the sentence tense of the methods. While the majority is in future tense, there are some sentences in past tense.
- Please clarify what training reviewers will undertake to perform BCT coding to ensure they are sufficiently knowledgeable about how to score these.
- Please justify use of longest follow-up. I understand the rationale for studying maintenance but if a BCT is able to produce a short-term effect is a different question from whether it is able to support maintenance of the behaviour. If possible, I suggest the authors consider both post-intervention and longer-term effects separately.

- The discussion is very brief. I encourage the authors to consider the strengths and limitations of their proposed methods at this stage, and to elaborate on the potential future utility of the findings for the research field and practice.

Reviewer	2
Name	Ameen, Jamal
Affiliation	University of Glamorgan, Mathematics and Statistics
Date	03-May-2024
COI	None

This is a nicely designed work that will positively contribute to dietary habits and actions across the globe. I have only two minor points to be considered by the authors:

1-The sentence 'Accurately estimating' at the bottom end of page 4 is not scientific. Estimates are not accurate. They have different degrees of reliability.

2- There are a few minor grammatical adjustments that need to be done on for smooth reading.

VERSION 1 - AUTHOR RESPONSE

Please refer attached file.

We sincerely appreciate your constructive feedback on our manuscript (bmjopen-2024-084774), entitled "Comparative effects of behaviour change techniques using eHealth and mHealth in promoting dietary behaviour: protocol for a systematic review and component network meta-analysis." We have carefully considered your comments and made appropriate revisions to address your concerns. Our responses to each of your comments are detailed below. In this text, the editor's and reviewers' comments are presented in black font, while our responses are in red font. In the revised manuscript, revisions are indicated in red font.

- Please include the planned search dates in the Abstract section.

Response:

Thank you for alerting us to this omission; we have added the following to L38 (underlined).

"Searches will be conducted in MEDLINE [PubMed], EMBASE [Dialog], the Cochrane Central Register of Controlled Trials, PsycInfo [Dialog], ClinicalTrials.gov, the WHO International Clinical Trials Registry Platform, and the University Hospital Medical Information Network Clinical Trials Registry on 27 January 2024." (L35-38)

-We noted that you state that your systematic review protocol has been designed using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Protocols (PRISMA-P) guidelines. Please be aware that the PRISMA-P guidelines relate to the reporting of systematic review protocols, not to their design. As such, you may want to consider revising your manuscript to reflect this, for example by stating, 'This systematic review protocol was reported in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analysis Protocols (PRISMA-P) guidelines [14].

Response:

Thank you for your helpful suggestion. We have followed your advice and revised L102-105 as follows:

"This systematic review protocol was reported in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analysis Protocols (PRISMA-P) [14] and PRISMA extension for network meta-analysis [15], and adhered to the Cochrane Handbook for Systematic Reviews of Interventions (Second Edition)." (L102–105)

- Please either revise the first point of the 'Strengths and limitations of this study' section of your manuscript (after the abstract), as indicated above, or remove this point.

Response:

We have revised L51–54 as follows as follows;

"A systematic approach is used to search, screen, assess, and synthesise the literature, including the prior registration of the protocol in PROSPERO and the evaluation of the risk of bias using Cochrane risk of bias tools." (L51–53)

- Please revise the second point of the 'Strengths and limitations of this study' section of your manuscript (after the abstract). This section should contain up to five short bullet points, no longer than one sentence each, that relate specifically to the methods. The expected impact of the study should not be summarised here.

Response:

We apologise for not following the guidelines. We have revised L54 as follows as follows;

"The importance of this study is identifying BCT to promote dietary behaviours through CNMA." (L54)

- Please include the planned start and end dates for the study in the methods section.

Response:

Thank you for your comment. Revised L105-106 as follows. The PROSPERO states that the review is expected to be completed by October, but due to difficulties, we will update the PROSPERO information.

“The start date of the study was January 2024 and the planned completion date is December 2024.” (L105–106)

- Please complete a thorough proofread of the text and correct any spelling and grammar errors that you identify, for example, ‘Quasi-experimental studies will be also excluded.’ and ‘Full database history from the beginning until 12 January 2024.’ and ‘Duplicate papers will be removed and managed using the Rayyan [19].’

Response:

We apologise for the incorrect grammar and typographical errors. We have asked a professional English proofreader to make the necessary corrections and have revised the manuscript. For example, the following revisions were made.

“Quasi-experimental studies will be excluded.” (L112–113)

“Duplicate papers will be removed using Rayyan [19].” (L164)

- Please ensure that the information provided in your protocol article is consistent with that included in the PROSPERO registry. For example, the search dates. Please update the manuscript and/or registry accordingly. The search dates as indicated in the protocol are listed as ‘Full database history from the beginning until 12 January 2024’, whereas the dates listed in the PROSPERO record are There will be no language restrictions, and the search period will run from the respective inception dates of each database until 19 January 2024.)

Response:

The registration information of PROSPERO contained a misleading representation, which we will correct. We do not restrict language, but it is correct to say that the search was done in English. Also, as for the search date, the information “searched on January 27” is accurate, as it took unexpectedly long to register PROSPERO.

Please clarify the following statement. At present, it is unclear: ‘We will use “Bias in the effect of assignment to intervention” with domain 2.’

Response:

Thank you for your important point. We have corrected the wording as follows;

“Because the study aims to clarify the effect of assignment to an intervention, we will evaluate bias on the effect of assignment to an intervention (the ‘intention-to-treat effect’) with domain 2 of RoB 2.0.” (L233–235)

- Please include a Data Availability Statement to include full details of how others can access the data used for your study.

Response:

As this manuscript is a protocol, no dataset has been created at this time. Therefore, it is described as follows;

“Data availability statement

No datasets were generated and analyzed for this study protocol. No data are available.”
(L343–344)

- As well as naming each individual database that you plan to search, please also state the platform you plan to use for each (e.g. MEDLINE [Ovid]).

Response:

Thank you for your comment. I have added the following.

“Searches will be conducted in MEDLINE [[PubMed](#)], EMBASE [Dialog], the Cochrane Central Register of Controlled Trials, PsycInfo [Dialog], ClinicalTrials.gov, the WHO International Clinical Trials Registry Platform, and the University Hospital Medical Information Network Clinical Trials Registry on 27 January 2024.” (L35–38)

“The following databases will be searched: MEDLINE [[PubMed](#)], EMBASE [Dialog], Cochrane Central Register of Controlled Trials, PsycINFO [Dialog], ClinicalTrials.gov, WHO International Clinical Trials Registry Platform (ICTRP), and University Hospital Medical Information Network Clinical Trials Registry (UMIN-CTR). We will search for a full database history from the beginning until 27 January 2024.” (L149–153)

Reviewer: 1

Dr. Esther van Sluijs, MRC Epidemiology Unit

Comments to the Author:

This paper describes a protocol for a substantial review and meta-analysis aiming to identify effective BCTs for dietary behaviour change. The paper is generally well-written. The background provides a concise but appropriate justification for the work and the research question is novel and likely to contribute new and useful knowledge to the field. The proposed review methods follow accepted standards. I have a few points for the authors' consideration:

- Carefully check the sentence tense of the methods. While the majority is in future tense, there are some sentences in past tense.

Response:

Thank you very much. We have carefully reviewed the entire document and made the corrections. In addition, we requested professional English proofreading.

- Please clarify what training reviewers will undertake to perform BCT coding to ensure they are sufficiently knowledgeable about how to score these.

Response:

Thank you for your valuable comment. We will code using the training and previous REVIEWS of BCT taxonomy provided by University College London.

We have added the following text:

“Reviewers will undergo training using the BCT taxonomy v1 online training provided by University College London (<https://www.bct-taxonomy.com/?n=1>) before the coding. Additionally, if the same studies as those included in this research have been used in previous systematic reviews of BCTs, the coding of BCTs in those reviews will also be referenced.” (L200–204)

- Please justify use of longest follow-up. I understand the rationale for studying maintenance but if a BCT is able to produce a short-term effect is a different question from whether it is able to support maintenance of the behaviour. If possible, I suggest the authors consider both post-intervention and longer-term effects separately.

Response:

Thank you for your important comments. As you pointed out, we believe that validation of short-term and long-term effects is necessary. If measurements are taken at multiple time points, we will also extract data at the shortest follow-up time point. Conversely, studies have reported that it takes a minimum of 18 days to develop this habit [1]. We believe that an intervention period of at least three weeks is necessary, and we have made the following revisions:

“If outcomes are assessed at multiple time points, the outcome variables at the shortest follow-up period of more than 3 weeks will also be extracted as secondary data.” (L191–193)

“Additionally, to evaluate the short-term effects of the intervention as secondary outcomes, the primary outcome variables at the shortest follow-up period of more than three weeks extracted from each study will be assessed.” (L227–229)

Ref. 1

Lally, P., van Jaarsveld, C. H. M., Potts, H. W. W., & Wardle, J. (2010). How are habits formed: Modelling habit formation in the real world. *European Journal of Social Psychology*, 40(6), 998–1009.

- The discussion is very brief. I encourage the authors to consider the strengths and limitations of their proposed methods at this stage, and to elaborate on the potential future utility of the findings for the research field and practice.

Response:

Thank you for your important comments. We have added a note to the discussion on the effect of applying the findings of this study to the development of eHealth and mHealth, thereby leading to social implementation. We have also added to the LIMITATIONS and DISCUSSION sections that the heterogeneity of the study is expected to be a limitation of this study.

“As dietary measurements are performed using various methods, a potential limitation of this study is that it is forced to synthesise outcomes using standardised mean differences.” (L56-57)

“Given that rising healthcare costs are a major global problem, it is important to reduce healthcare costs by preventing disease. Deterioration of dietary behaviours has been widely reported as a risk factor for various diseases [33,34]. eHealth and mHealth are powerful tools to promote prevention without relying on human resources [35]. However, improving these habits remains a formidable challenge in disease prevention. In this study, estimating the individual effects of BCTs is vital for designing effective strategies to foster behavioural changes. In other words, by identifying behavioural change techniques that are effective in changing eating behaviour and those that have the opposite effect, this research can be used in the design and development of eHealth and mHealth in the future. This approach not only contributes to the academic understanding of BCTs but also has significant practical implications for public health interventions.” (L313-322)

“The heterogeneity among the studies, particularly in the variety of dietary survey methods, represents a potential limitation of this study. Information from each study will be carefully extracted, and where appropriate, sensitivity analyses will be conducted to thoroughly assess comparability.” (L323-325)

Reviewer: 2

Dr. Jamal Ameen, University of Glamorgan

Comments to the Author:

This is a nicely designed work that will positively contribute to dietary habits and actions across the globe. I have only two minor points to be considered by the authors:

1-The sentence ‘Accurately estimating’ at the bottom end of page 4 is not scientific. Estimates are not accurate. They have different degrees of reliability.

Response:

Thank you for your important comments. We have removed the word “accurately” as follows:

“However, these approaches have methodological limitations when estimating the effect sizes of individual BCTs.” (L93-L94)

2- There are a few minor gramatical adjustments that need to be done on for smooth reading.

Response:

We apologise for the incorrect grammar and typographical errors. We have asked a professional English proofreader to make the necessary corrections and have revised the manuscript.

VERSION 2 - REVIEW

Reviewer	1
Name	van Sluijs, Esther
Affiliation	MRC Epidemiology Unit
Date	23-Sep-2024
COI	

The authors have responded adequately to the editor's and reviewers' comments.