PEER REVIEW HISTORY

ARTICLE DETAILS

TITLE (PROVISIONAL)	The effect of educational interventions on knowledge of the disease and glycemic control in patients with Type 2 diabetes mellitus: a systematic review and meta-analysis of randomized controlled trials
AUTHORS	shiferaw, wondimeneh; Yirga, Tadess; Desta, Melaku; Kassie, Ayelign; Petrucka, Pammla; aynalem, yared

VERSION 1 – REVIEW

REVIEWER	Leung, Siu-wai University of Edinburgh Western General Hospital, Edinburgh Bayes Centre for AI Research in Shenzhen
REVIEW RETURNED	30-Mar-2021

GENERAL COMMENTS	This manuscript reports an interesting and potentially useful study. The following concerns should be addressed in the revised manuscript. (1) The search should be more updated. Current search is claimed up to July 2020. The "non-informative" protocol registered in September 2020 was never updated (including the information of completion date). The search has been a lapse of almost one year. Currently available literature should be retrieved. For instance, the PubMed search item #1 was 183,630 but it is 192,722 as of today (30 March 2020). Item #3 was 59,352 but it is 62,724 as of today. (3) The choice of models (fixed vs. random effects models) should not be based on the heterogeneity test results. Please read the textbooks such as "Introduction to Meta-Analysis" authored by Michael Borestein et al. (3) It is questionable that PRISMA item #11 was marked "NA". Please explain. (4) It would be difficult to understand what does it mean by "no funding". Please clarify. (5) The authorship should be determined by the ICMJE criteria. Please strictly follow and correct the description about the authors' contributions.

	(6) The Risk of Bias assessment used an old version. Please refer to RoB2. Use "High risk", "Low risk", and "Some concerns". (7) Sensitivity analysis was not conducted, against the PRISMA statement. (8) At least the abstract is not fully PRISMA-compliant. Please read into the PRISMA statement and its examples (published together with the statements in leading journals such as PLoS Medicine) for reporting the research.

REVIEWER	Nassar, Carine M MedStar Health Research Institute, MedStar Diabetes Institute
REVIEW RETURNED	22-Apr-2021

GENERAL COMMENTS	This paper addresses a very important question, especially in light of data that continues to show that a large proportion of patients with type 2 diabetes never receive any DSMES during their lifetime. The analysis is well described and looks rigorous and well done. Concerns that should be addressed prior to resubmission for publication: 1- Review entire paper for accurate English writing. There are many grammar issues, use of wrong words etc... that need to be addressed. 2- In the background section, out of 9 references cited for the effectiveness of DMSES in improving outcomes, only 2 are from the last 5 years and the rest are from the early to mid 2000s. There are many excellent and more recent publications that have evaluated the effectiveness of DSMES in improving outcomes including lowering A1C, decreasing readmissions and length of stay and those should be cited and commented on since this subject is a the center of this paper. 3- Include a brief review/citation of the ADA/ADCES joint statement on importance and effectiveness of DSMES (published in 2015) to add strength to the rationale for this review. Also review/cite the Consensus report about the 4 critical times for providing DSMES. 4- Page 5, Line 13: statement "Besides, inadequate knowledge of diabetes is responsible for poor self-care practice and uncontrolled glycemic levels" is overly broad and inaccurate. While inadequate knowledge can contribute to poor outcomes, many other factors such as access to care, comorbidities, access to healthy foods etc... also significantly contribute to high BG levels. 5- With regard to the conclusion, based on the issues identified by the authors in their reviews of the various studies, I believe that the conclusions are overly broad and authoritative. I would suggest rewording to say that this systematic review adds to the body of knowledge that suggests that structured DSMES contributes to improving glycemic outcomes and diabetes knowledge.

VERSION 1 – AUTHOR RESPONSE

Reviewer: 1
Dr. Siu-wai Leung, University of Edinburgh Western General Hospital, Shenzhen Institute of Artificial Intelligence and Robotics for Society

Comments to the Author:
This manuscript reports an interesting and potentially useful study. The following concerns should be addressed in the revised manuscript.

Response: we are very grateful to the reviewer's appreciation of our efforts; and we have just given our respective responses to each of the specific reviewer comments as detailed below. After going through the entire original version manuscript, you forwarded your constructive comments which we think of most relevance. Therefore, we are glad enough to express our heartfelt thanks for your in-depth comments that are helpful to improve the novelty of our effort.

1. The search should be more updated. Current search is claimed up to July 2020. The "non-informative" protocol registered in September 2020 was never updated (including the information of completion date). The search has been a lapse of almost one year. Currently available literature should be retrieved. For instance, the PubMed search item #1 was 183,630 but it is 192,722 as of today (30 March 2020). Item #3 was 59,352 but it is 62,724 as of today.
Response: We truly take into consideration all the point you have mentioned. For clarity initially, Cochrane library, JBI and PROSPERO databases were searched; to confirm whether systematic review and meta-analysis is exist or for the presence of ongoing projects related to the current topic. Then, we have made necessary articles search as per PERRS standards, to obtained adequate information to the address our research question. Along with this process we have submitted the protocol to Prospero however till the protocol is published it has been take long time due to task overlap regarding Covid-19 issues. But, now based on your crucial comments we have updated article search strategy in the revised document; searches were performed in August 20, 2021. All the updated information has been incorporated accordingly. Please you can check the detail from the revised paper which is highlighted.

2. The choice of models (fixed vs. random effects models) should not be based on the heterogeneity test results. Please read the textbooks such as "Introduction to Meta-Analysis" authored by Michael Borestein et al.
Response: We heartily thanks for your update regarding the essence of fixed vs random effect models. Therefore, based on your insightful suggestion, I have revised the ways of model selection to run this systematic review and Meta-analysis. In our case, the random-effects model was selected by assuming that some of that dispersion reflects real differences in effect size across studies.

3. It is questionable that PRISMA item #11 was marked "NA". Please explain.
Response: Thanks so much for your critical and insightful comments. Actually it has been editorial problem, however, in the revised manuscript the issues have been well addressed as per your comment.

4. It would be difficult to understand what does it mean by "no funding". Please clarify.
Response: If I got your point and to make clear this concern, to conduct this systematic review and meta-analysis there is no any funding. In addition, in our country context any systematic review paper has no fund as in general; unless someone has obtained external fund from grant and other awards.

5. The authorship should be determined by the ICMJE criteria. Please strictly follow and correct the description about the authors' contributions.
Response: We have noted your concerns and necessary revision for each author contribution has been documented in the revised manuscript. We have listed each author's contribution individually at the end of the revised manuscript.

6. The Risk of Bias assessment used an old version. Please refer to RoB2. Use "High risk", "Low risk", and "Some concerns".
Response: right you are. Now as per your recommendation we have used the Risk of Bias assessment using revised Cochrane risk-of-bias tool for randomized trials (RoB 2). Here, I would like to make clear that up to this moment all statistical analyses software like Review Manager 5.3 & 5.4 were revealed the data output as high-risk/low risk/unclear risk of bias as provided by the Cochrane Collaboration.

7. Sensitivity analysis was not conducted, against the PRISMA statement.
Response: Despite we have conducted sensitivity analysis as per PRISMA statement; we did not provide its own sub heading. Sensitivity analysis has been done and now we have highlighted on page#15 in the revised manuscript. However, to reduce the number of figures just we have mentioned the finding of sensitivity analysis using text in the revised document.

8. At least the abstract is not fully PRISMA-compliant. Please read into the PRISMA statement and its examples (published together with the statements in leading journals such as PLoS Medicine) for reporting the research.
Response: We strongly agree with the reviewer's constructive comment. To the best of our effort we have attempt to make consistent our study report with PRISMA guideline from the title till the end of the manuscript as per the recommendation; for instance PRISMA for Abstracts recommended to include background (objective could incorporate PICO), methods (eligibility criteria, information sources, risk of bias), results (included studies, synthesis of results, description of the effects), discussion (interpretation, strength and limitation of evidences), and others (funding and registration). Based on the above PRISMA for abstracts criteria we have been included each component as per the standard, but we didn't provide sub heading for each sections.

Reviewer: 2
Dr. Carine M Nassar, MedStar Health Research Institute

Comments to the Author:
This paper addresses a very important question, especially in light of data that continues to show that a large proportion of patients with type 2 diabetes never receive any DSMES during their lifetime. The analysis is well described and looks rigorous and well done.
Concerns that should be addressed prior to resubmission for publication:

Response: We heartily thanks for important comments.

1. Review entire paper for accurate English writing. There are many grammar issues, use of wrong words etc... that needs to be addressed.
Response: right you are. As per your feedback we have made extensive effort to made necessary grammar problems, use of inappropriate words and editorial issues. All correction that we have made has been submitted with track change along clean version.

2. In the background section, out of 9 references cited for the effectiveness of DMSES in improving outcomes, only 2 are from the last 5 years and the rest are from the early to mid 2000s. There are many excellent and more recent publications that have evaluated the effectiveness of DSMES in improving outcomes including lowering A1C, decreasing readmissions and length of stay and those should be cited and commented on since this subject is a the center of this paper.
Response: We well noted your suggestion and necessary revision has been made to the revised manuscript.

3. Include a brief review/citation of the ADA/ADCES joint statement on importance and effectiveness of DSMES (published in 2015) to add strength to the rationale for this review. Also review/cite the Consensus report about the 4 critical times for providing DSMES.
Response: We strongly agree with the reviewer's constructive comment and necessary modification has been made in the revised manuscript as per your comment.

4. Page 5, Line 13: statement "Besides, inadequate knowledge of diabetes is responsible for poor self-care practice and uncontrolled glycemic levels" is overly broad and inaccurate. While inadequate knowledge can contribute to poor outcomes, many other factors such as access to care, comorbidities, access to healthy foods etc... also significantly contribute to high BG levels.
Response: As per your comments, we have replaced the above statement with other evidence in the revised manuscript.

5. With regard to the conclusion, based on the issues identified by the authors in their reviews of the various studies, I believe that the conclusions are overly broad and authoritative. I would suggest rewording to say that this systematic review adds to the body of knowledge that suggests that structured DSMES contributes to improving glycemic outcomes and diabetes knowledge.
Response: Well noted and accepted your suggestion.

Reviewer: 1
Competing interests of Reviewer: None declared.

Reviewer: 2
Competing interests of Reviewer: None