**Reviewer’s report**

**Title:** Effectiveness of a Community Program for Older Adults with Type 2 Diabetes and Multimorbidity: A Pragmatic Randomized Controlled Trial

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**Reviewer:** Liliana Baptista

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Review paper; Effectiveness of a Community Program for Older Adults with Type 2 Diabetes and Multimorbidity: A Pragmatic Randomized Controlled Trial

A- Summary

This randomized controlled trial evaluated the effect of a community-based intervention versus usual care on physical functioning, mental health, depressive symptoms, anxiety, self-efficacy, self-management, and healthcare costs in older adults with T2DM and 2 or more comorbidities. Authors recruited participants in 3 Primary Care Networks in Alberta, Canada and participants were enrolled in a 6-month intervention versus usual care treatment. The primary outcome was 6-month change in physical functioning. Secondary outcomes included mental functioning, anxiety, depressive symptoms, self-efficacy, self-management, and the cost of healthcare service use. Data was analyzed according to the intention-to-treat principle using ANCOVA modeling adjusted to baseline differences. Authors concluded that there were no significant group differences for physical functioning although, the 95% CI for mental functioning (MCS) favored the intervention once exceed the minimally important difference (3).

B- Strengths

1- The major strength of this study is the underlying question of this study. As the authors clearly address in the introduction section the effectiveness of self-management programs for older adults with T2DM and multimorbidity is currently unknown, particularly in aging population and given the increase on the prevalence of T2D, multimorbidity and healthcare expenditures.

2- The inclusion of the exploratory stratified analysis comparing the mean differences in the groups for different MCS baseline values is also a positive point to consider.

3- The manuscript is also clearly written, data is well summarized and nicely presented.
C- Concerns

1- As the authors stated in the limitations of the study, the lack of objective measurements for physical functioning is a major drawback particularly because the literature supports that male and female self-report different health perspectives, despite the real health status. Women tend to see themselves having worst perceived health status than male. As a result, in this study there was an uneven sample randomization scheme in terms of gender (intervention had 63% female while usual care only included 45%) which may have contributed to this lack of statistical significance seen in the intervention group. As a result because no sub-group analysis were performed we don’t know the effect of this confounder in the final results.

2- In addition, there was also lacking the control of several important covariates such as baseline physical activity and nutritional intake. Important lifestyle covariates that influence physical functioning, mental health, T2D management and consequently, healthcare costs.

3- Moreover, this study has 3 different sites, with different geographical areas and with different recruitment numbers. Thus, my question is, did the authors perform any statistical weighted procedure to account for this difference. Were there any differences in the total sessions attended by each site across the different sessions (educational, exercise)? Further, was the "site" taking in consideration as a covariate when performing the ANCOVAs because this may have also contributed to the results.

**Are the methods appropriate and well described?**
If not, please specify what is required in your comments to the authors.

Yes

**Does the work include the necessary controls?**
If not, please specify which controls are required in your comments to the authors.

Yes

**Are the conclusions drawn adequately supported by the data shown?**
If not, please explain in your comments to the authors.

Yes

**Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?**
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I recommend additional statistical review
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