Reviewer's report

Title: On summary measure analysis of linear trend repeated measures data - A performance comparison using mixed model data

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Reviewer: Mohamed Shoukri

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Re: 'On summary measure analysis of linear trend repeated measures data - A performance comparison using mixed model data'

By: Mehrdad Vossoughi, Seyyed Mohammad Taghi Ayatollahi, Mina Towhidi and Farzaneh Ketabchi

Referee's report:

This paper discusses the use of the Summary Measures Analysis (SMA) as a tool to analyze Repeated Measures data. The paper compares the SMA with the widely used Linear Mixed Model (LMM). Through simulations, the comparisons are made under different types of covariance structures, and the general conclusion is that the SMA performs well, and the LMM may produce inflated test sizes.

Discretionary Revisions: None

Minor Essential Revisions: 1- The notations in the Methods Section, should be clearly described.
2- The second line in the bottom of page 5 (Methods Section), the manuscript states that N-K> m is necessary!!. It should be stated clearly, necessary for what.
3- Near the end of the second paragraph (LMM), the manuscript uses the REML to construct F-statistics, since it often gives more precise estimates of the variances. The meaning of precise is not clear here. It is a bit confusing to use REML, and then use the F-statistics. There should be an explanation, why not use the likelihood methods for testing as well.

Major Compulsory Revisions:
1- The focus on the MANOVA as a method of analysis should be adequately justified.
2- Why the maximum likelihood of estimation and the likelihood ratio tests are not used as well.
3- A comparison and description of the analyses done under two programs (SAS, STATA), or (SAS, SPSS), or (SAS, R) should be described to guide the
practicing statistician to the most reliable software that should be used to analyze this type of data.
4- A discussion on the possible applicability of the results to non-normal data.
5- A brief discussion on the sample size requirements would be briefly described as well.

**Level of interest:** An article of importance in its field

**Quality of written English:** Needs some language corrections before being published

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

'I declare that I have no competing interests'