

Review of: "Assessing students' attitudes and perceptions towards statistical literacy in a university system in a developing African country"

Andrea Manfrin¹

¹ University of Central Lancashire

Potential competing interests: No potential competing interests to declare.

Peer review (14.01.2024)

General comments: Dear Editor and Authors, thank you for allowing me to review this interesting article titled *Assessing students' attitudes and perceptions towards statistical literacy in a university system in a developing African country*.

I summarised my comments in the following points:

- 1) Define statistical literacy;
- 2) The method section requires redrafting following the suggestions
- 3) The result section includes information that should be moved to the method section (e.g., the use of statistical analysis, etc.). As it stands, the result section is a mix of method results and discussion. This needs to be addressed.
- 4) The paper needs a clear structure. It would be better, for example, to follow the STROBE guidelines even if this is not an epidemiology study; this will strengthen the paper.

A detailed summary is attached below

Section and page	Reviewer comments	Authors reply
Title	Clear	
ABSTRACT		
Background	Statistical literacy is not defined in the abstract. Please address this crucial point	
Aim	The aim is mixed with the results: 185 is part of the result section. A 36-item questionnaire Instead of an instrument?	
	The method section lacks structure	

Method	<p>A 36-item questionnaire Instead of an instrument?</p> <p>In this section, the authors should clarify that this study involved a mixed-method approach: quantitative, explorative, qualitative, and thematic analysis.</p>	
Results	<p>In the result section, the claims need to be supported with facts and figures, and the results obtained with the statistical analysis need to be added.</p> <p>E.g. response rate 185/220=84%</p>	
Conclusions	<p>It entails a diametric paradigm repositioning of the teaching and learning of statistics, emphasising collaborative learning, the intense use of electronic learning and the assessment of statistics,</p> <p>and smaller-sized classes giving individualised attention to benefit weaker students.</p> <p>This paragraph is very difficult to understand: could it be made more accessible?</p>	
Protocol registration	NA	
Introduction	<p>The definition of statistical literacy is not provided in the introduction.</p> <p>This is an essential point around which this paper has been developed.</p> <p>Please include the definition.</p>	
Research questions	Need to be provided. Please consider including the key research questions	
Aim and objectives	Clear	
Materials and methods	<p>This is the most important section in a manuscript but it is not presented in a clear and structured way. Please look at STROBE guidelines even if this is not an epidemiological study.</p> <p>When did you conduct the study? Please add the information.</p> <p>Please provide the information.</p>	
Key research questions?	<p>If they are missing, please add them if they are exploratory questions.</p> <p>Please clearly describe the research instrument.</p>	
Study design	Was it a validated one?	
Research instrument	Questionnaire	

<p>Sample size</p> <p>Stratification</p> <p>Statistics</p>	<p>Not specified</p> <p>Justify the sample size using power calculation or another approach if need be.</p> <p>Did you stratify the sample according to some criteria, e.g., schools, gender, etc.?</p> <p>For statistical analysis purposes, items with negative wordings were transformed into positive wordings.</p> <p>Did you reverse-code the questions?</p> <p>Descriptive statistics: did the authors assess the normality of the data?</p> <p>The statistical section of the method is missing all the information included in the result section.</p> <p>The statistical techniques used to obtain the results should be clearly explained in the method section, while only the results should be included in the result section.</p> <p>As it stands, the result section is a mix of method results and discussion. This needs to be addressed,</p>	
<p>Results</p>	<p>This section should be divided into quantitative and qualitative, and these sections should be clearly signposted.</p> <p>There were significant differences (Chi test, $p < 0.05$) in the age ranges of the respondents.</p> <p>Please provide the exact p-value.</p> <p>Adding a scree plot should help to visualise the values of the FA.</p> <p>In the result section, the authors should list only the results and not compare and contrast their results with other works.</p> <p>The comparison and contrast is part of the discussion section.</p> <p>Table 6</p> <p>Continuous data: the assessment of the normality of the data should address the information provided in the table.</p> <p>If normal: Mean and SD</p> <p>If non-normal: Median and IQR</p> <p>Please review the table, assess the normality, and then present the data accordingly.</p>	

	<p>Furthermore, in Table 6, the number of students included in the analysis was below 185. The reasons for the different numbers need to be clearly explained.</p> <p>Table 7</p> <p>The p-value = 0.000 should be changed to $p < 0.001$ (the general approach for this type of p-value). Please amend accordingly.</p> <p>In the results section, I could not find the qualitative part.</p>	
Discussion	<p>I did not comment on the discussion because the amendments required for the methods sections could impact the results and, therefore, the discussion.</p>	
Missing parts	<p>Inclusion and exclusion criteria,</p> <p>Strengths and limitations</p> <p>And more. I would invite the authors to follow the STROBE guidelines to re-draft the paper to avoid missing parts.</p>	