Reviewer's report

Title: Misconduct in research: A descriptive survey of attitudes, perceptions and associated factors in a developing country

Version: 3
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Reviewer: Daniele Fanelli

Reviewer's report:

I appreciate the efforts that the authors made to answer my comments. I think that the paper has considerably improved in how it presents methods and results, but the discussion of results still lacks structure and is insufficiently developed.

Major Compulsory Revisions:

Abstract: the results section should include the datum about awareness of actual misconduct conducted by colleagues, and link these results to the definition given. I would suggest to start this section with something like “half of respondents (50.4%) were aware of a colleague who committed misconduct, defined as “non-adherence to rules, regulations, guidelines, and commonly accepted professional codes or norms” “

If abstract length limitations impose cuts, these should be made in the conclusions section.

Introduction:
the paragraph introducing the authors' previous study (page 3), needs re-writing. For one thing, it announces a list of eight “forms of misconduct” but then breaks the sentence at four. Moreover, given the heterogeneity of the behaviours in question, the authors should talk, here and elsewhere in the paper, either of “misconduct and questionable research practices” or use more generic words. The term wrongdoing, for example, which was used by an independent study cited in that same paragraph, would seem to be more appropriate.

Results:
Page eight, we should remind the reader what the definition of misconduct is: i.e. “Over 88% of researchers were concerned about the amount of scientific misconduct (defined as “non-adherence to rules, regulations, guidelines, and commonly accepted professional codes or norms”, unless differently specified) …”

Discussion:
As previously suggested, the authors should summarize all the results, not just the one that is most “pertinent”. Their main findings seem to be about: 1-concerns for SM; 2-beliefs about occurrence – and in particular the fact that falsification and plagiarism are perceived as the most common infractions;
3-awareness of misconduct occurring in workplace; 4-factors perceived as important.

The section about general limitations (paragraphs 2 and 3) feels a bit out of place, and would need more development anyway. For example, the issue of breadth of definition is relevant to some questions (awareness of prevalence) but not others (beliefs about occurrence).

Therefore, I think it would be clearer to the reader if this paragraph were removed entirely, or perhaps moved, with some cuts, towards the end of the paper.

For each of the four main findings listed above, the discussion section should make first comparisons with other literature, and then discuss possible methodological factors that can explain them away.

When doing this, for each of the four findings, it is crucial that the authors compare similar to similar. I suggested this already previously, and although I appreciate the changes made by the authors, these in my opinion are still insufficient, and omit many important points of discussion.

Based on previous studies and surveys on scientific misconduct, it is both logical and empirically supported to assume that the rate of admission will vary because of a number of factors: 1- whether surveys are about beliefs or actual experience; 2-whether surveys are about self-reporting or non-self reporting; 3-the nature of the behaviours being asked about (e.g. fabrication versus dropping outliers); 4-the wording of the survey itself; 5-who the respondents are: PhD students will have different perceptions from researchers, in turn different from e.g. research coordinators; 6-other methodological aspects such as how a survey is delivered. (note that handing out a survey is NOT a limitation. My meta-analysis suggested that handed out surveys might be MORE RELIABLE, because researchers might feel to have more control over their anonymity).

Some of these factors are discussed in my meta-analysis, but this latter was not about perceptions, so the authors need to consult other, more relevant studies.

When the authors want to make comparisons with other countries, they should: 1- pick previous studies that are as similar as possible to their own (for the particular question of interest), 2-make the comparison pointing out similarities and differences, and then 3-discuss whether any differences between their results and others’ might be explained by differences in methodological factors like the ones listed above or 4-reflect genuine peculiarities of Nigeria.

More specifically, this should be done for each of:

1-concerns for SM.

Are researchers in Nigeria more concerned than those in other countries? As they correctly do already, the authors compare this with other studies using the SMQ-R. However, they don’t discuss whether differences in delivery method or the nature of the respondents might have had an effect.

2-beliefs about occurrence.
A surprising result to me, here, is that falsification is perceived as the most common form of misconduct. As far as I can recall, no other survey in western countries found this. Interestingly, however, other surveys in Africa (one of which independent) did find this, too, even with respect to actual prevalence. So there might be a true pattern here. But, before jumping to conclusions, the authors should compare their results with those of other studies that used the same method, etc...

Another finding that I think worth discussing is the fact, pointed out in the new version of the manuscript, that not all respondents that had admitted to committing misconduct think that misconduct in their work place occurred at all. There is an obvious contradiction here, which could suggest an incomplete understanding of the questions on behalf of respondents. So it would be important to know if other surveys had obtained similar inconsistencies.

3-awareness of misconduct perpetrated by colleagues.

Again, comparing with a few previous studies will not suffice. Some of the studies currently mentioned used other definitions of misconduct. Others used the same SMQ-R, but on a different class of respondents. These factors need to be examined carefully, before concluding that misconduct in Nigeria is higher. As I pointed out before, by the way, my meta-analysis showed that when surveys used broad definitions of misconduct, rates of non-self reports are perfectly compatible with the ones reported here. So, taken alone, this datum would NOT suggest that misconduct in Nigeria is actually higher.

The data on self-reports, previously published by the authors, would suggest higher rates of misconduct in Nigeria. A datum that I find quite baffling, however, is that, in this previously published study, the authors reported that nearly 69% or respondents ADMITTED to at least one misbehavior. In this study, based on the same respondents, only 50% ca of them knows a colleague that committed misconduct. In other words, we have more people admitting to misconduct than people who know of others that did it. This seems to be at odds with all other findings in western countries. It is very important to point this fact out, by making comparisons with other studies.

I cannot think of any methodological factor that could explain this finding away. It could reflect genuine cultural idiosyncrasies of the African context (e.g. a widespread conspiracy of silence), but we should also consider the possibility that such inconsistencies reveal limitations in how respondents understood the questions they were asked about.

4-factors perceived as important. As above.

Having discussed the evidence in detail as suggested above, dedicating at least 1 paragraph to each, the authors might want to point out general limitations of the study, e.g. it's preliminary nature etc...

Note that a call for more attention and initiatives against misconduct, currently present in the discussion, would be justified whether or not this study
conclusively proves that Nigeria is in a worse situation than, say, the US.

Discretionary Revisions
A final overall comment concerns the writing style, which could benefit from some further improvement. The paper reads sufficiently well to be understood, but many sentences seem to lack key words and/or are structured in unorthodox ways. Content is more important than form, but correcting these defects would add further credibility to the work.

**Level of interest:** An article whose findings are important to those with closely related research interests

**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