Author’s response to reviews

Title: Dietary intake in undernourished adults living in Guinea-Bissau; a cross-sectional study

Authors:

Cecilie Patsche (ceciliepatsche@live.dk;patsche@ph.au.dk)
Frauke Rudolf (frauke.rudolf@clin.au.dk)
Antonio Mendes (tboni17@gmail.com)
Idalina da Cunha (clinpoctoni@gmail.com)
Victor Gomes (victorfranciscogomes@yahoo.co.uk)
Christian Wejse (wejse@dadlnet.dk)
Charlotte Jeppesen (charl.jeppesen@gmail.com)

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Author’s response to reviews:

Point-by-point response (R=reviewer comment, C=comment from author) #2:

Jennifer K. Frediani, PhD, RD (Reviewer 1): I think this was a very interesting article describing the nutrition of an understudied population. Below are my comments and recommended edits:

R1.1. My first concern is the description in the methods section of the 24 hr recalls. It is unclear to the reader in this section how many recalls are being analyzed and from when. We see later in the discussion that there is 1 recall per person, but in the methods section it needs to be made more clear and also describe the distribution of the recalls over time to talk about seasonality, if the diet is in fact seasonal.

C1.1. We have rephrased the sentence, explaining how many recalls were conducted and analyzed (please see ll. 120-121 and the abstract ll. 43-45). We furthermore added more information on seasonality, see ll. 123-125. Please note that all proposed changes have been made in the CLEAN manuscript version submitted previously during the review process.
R1.2. And what about protein? This macronutrient is not discussed in the conclusion, as an important determinant of macronutrient deficiency I feel you need to comment on this.

C1.2. We have elaborated on it in the discussion l. 260 and in the conclusion ll. 340-341 as well as in the abstract (ll. 62-63).

R1.3. What were the results of the anthropometrics? You don't comment on these results compared to any norms.

C1.3. We have added this on ll. 233-235.

R1.4. For data presentation, Table 1 - BMI categories can be combined between 16-18.49, it seems awkward to split it in 4.

C1.4. We have changed this accordingly on p. 18.

R1.5. In Table 2, you can combine columns of mean and SD i.e. mean(SD) and therefore n(%) etc. I think the fluid variables should either be cut from this table or addressed in the methods (how did you calculate these), the results and discussion, what are the impact of these measurements. Then in Table 2, you will have room to add dietary norms for comparison. And possibly add micronutrient diversity to this table or in its own table.

C1.6. Columns of mean and SD have been combined in Table 2 (p. 19). As suggested, fluid variables have been cut from the table. Besides dietary diversity scores, which is already included in table 2, micronutrient diversity was unfortunately not assessed due to lack of data. Instead of ADER and MDER we now use EE as reference (given your valued comment labelled R1.7.), which we have added in table 2.

Because fluid variables have been deleted, the statistical handling of non-normally distributed data is obsolete and have been deleted (ll. 214-215 as well as in the abstract on l. 48).

R1.6. I don't think Table 4 adds anything, this can be summarized in a sentence in the results.

C1.6. Table 4 has been deleted, and a sentence has been added on l. 249.

Because table 4 has been deleted, we have also deleted the methods section regarding the categorization of food groups which is now indifferent (ll. 171-179), and deleted the mention of food groups in the objective of the study (ll. 92-93) and in the abstract (l. 41).
Minor edits (lines from the clean version)

R1.7. Line 135- What was the physical activity coefficient?

C1.7. Going through the references for the calculations of ADER and MDER it became clear that it was not obvious which PAL was used. We have therefore decided to abandon the use of ADER and MDER, and have instead calculated total energy expenditure for a moderately active lifestyle (PAL of 1.75) as reference. These changes are reflected several places in the manuscript: the abstract (ll. 37-38, 50-53), the objective of the study (ll. 88-89), calculations of BMR and EE with new references (ll. 154-161) in the methods section, the removal of ADER and MDER (especially ll. 162-170), power calculations (ll. 198-206), statistical analyses (l. 210), results (ll. 244-247), and table 2 (p. 19).

R1.8. Lines 185-187- I don't think you need to include these

C1.8. They have been deleted (ll. 222-225).

R1.9. Lines 251 and 267 - these both have awkward sentences using the same error

C1.9. Line 251 (now 310) has been rephrased according to reviewer 2’s suggestion (see R2.8. and ll. 303-309). Line 267 (now l. 329) has been deleted.

Jeanne De Vries (Reviewer 2): This manuscript presents interesting information on the diet in Guinea-Bissau. However, there are some important methodological issues that ask for a more careful interpretation of the data and drawing the conclusion. I will explain these flaws in the paper in more detail and in addition provide my comments by section.

Abstract

R2.1. - the summing up of the different statistical tests used is not very informative

C2.1. The sentence has been changed, please see ll. 46-47.
R2.2. - Conclusion:"both men and women ... had inadequate nutrition intake. This is unclear. I think the only conclusion that can be drawn is that the mean energy intake is below the requirements. See also results and discussion.

C2.2. We have changed the conclusion as suggested, see ll. 59-60 and ll. 337-338.

Background

R2.3. - line 96: there may be other reasons than insufficient intake

C2.3. Absolutely right, we have added a sentence and rephrased the subsequent sentence to make this clear-er, please see ll. 73-77.

R2.4. - line 99: this line does not read well

C2.4. The sentence has been rephrased and moved a few lines down in the introduction, see ll. 84-85.

R2.5. - line 101: on what type of measurements was the 28.3% based?

C2.5. The definition on which the measurement was based was mentioned on ll. 71-72. But to make it even easier for the reader to understand, we have now incorporated the definition in the sentence on ll. 79-83.

R2.6. - line 104: the review by Vila-REal of 2017 in Crit Rev in Food Science and Nutrition may be helpful here.

C2.6. Thank you for mentioning this review! We have now used the reference in the manuscript and substitut-ed the study from Ghana with a study from Benin (identified in the review) for comparison and discussion in the discussion section, see ll. 266-283.

Methods, participants

R2.7. - Why do people come to these health centres?

C2.7. They are seeking medical attention for multiple reasons. This has been added on l. 112.
Dietary assessment

R2.8. - It is a pity that only one single 24-h dietary recall was used. Because of this the within person variation of intake cannot be determined and the distribution of intake cannot be assessed well. Because of this only the population mean intake can be compared to the requirements. This is an important limitation of this study that deserves more attention in the paper.

C2.8. Above have been added on ll. 303-309.

R2.9. - why was the survey not performed over a period of 12 months and would that have improved the cov-erage of the seasonal variation?

R2.9. Participants of this study were enrolled in a 30-day nutritional supplementation pilot trial, and because the nutritional supplement expired in April 2015, inclusions were stopped at the end of February 2015. Ideally, the study would have started before May 2014, but the ethical committee approval was delayed due to political instability. Being a pilot study, the 10-month inclusion period was considered sufficient. We have chosen not to comment on this in the manuscript, but we noticed that we did not once mention it was a pilot study, which we have now added on l. 97. Furthermore, we have addressed the issue of seasonality on ll. 123-125 according to reviewer 1’s comment (R1.1).

R2.10. - Line 148: what is meant by "strikingly similar"?

C2.10. We wondered if base recipes would vary between families, which is why we asked 4 independent women from different suburbs to supply recipes. Because all base recipes were all almost exactly the same, we realized this was not the case. The only variation in the recipes were the seasonal vegetables added, and we therefore asked participants to specify these if they had consumed the local dishes. We have deleted the word “strikingly” and added a sentence to explain the above, see ll. 134-137.

R2.11. - Line 153: how large was the range in portion sizes; was three enough for an accurate estimate? (svt l. 125)

C2.11. Portion sizes did not really vary because all portion sizes were estimated from quantifiable local uten-sils, which the interviewers brought along to each interview (e.g. cups, spoons etc). We can see now that the sentence is more confusing rather than explanatory, and we have decided to delete it (ll. 138-141)
R2.12. - Line 160: was there no need to take alcohol and dietary fibre into account when calculating energy intake?

C2.12. None of the participants responded that they consumed alcohol during the 24-h, which is normal in our study setting. We have briefly mentioned this on l. 147. We did not take dietary fibres into consideration, which we have added as a limitation on ll. 308-309.

R2.13. - Line 172: can ADER and MDER be given per gender?

C2.13. In the reference ADER and MDER was not given per sex. Given a comment from reviewer 1 (R1.7) we have abandoned the use of ADER and MDER and calculated age and sex-specific total energy expenditures.

R2.14. - Why were the food groups regrouped?

C2.14. Reviewer 1 (R1.6.) has suggested that calculations of commonly consumed food groups does not add anything which has not already been presented in table 3, and therefore the table and the definition of the food groups have been removed from the manuscript.

R2.15. - Is the Women's Dietary Diversity Score appropriate for men?

C2.15. According to the FAO “Guidelines for measuring household and individual dietary diversity” the Women's Dietary Diversity Score can be used on other sex- and age groups than the score was originally developed for. We have added an explanation of this on ll. 180-182.

Study size

R2.16. - What SD was used for the power calculation?

C2.16. The SDs used for power calculations are from table 2, and are mentioned on ll. 198-201.

Statistical analyses

R2.17. - Histograms and QQ-plots were used to EVALUATE WHETHER THE DATA WERE NORMALLY DISTRIBUTED and not to assess normal distribution, right?

C2.17. We have rephrased the sentence on l. 212.
Results

R2.18. - Please explain why one participant was mistakenly included in the study

C2.18. One of the inclusion criteria were BMI<20 which said participant did not have. However, reviewer 1 (R1.8) has suggested that this sentence does not need to be included in the manuscript, and we have therefore deleted it.

R2.19. - what were the criteria for under- and or overreporting and excluding participants?

C2.19. Over-reporters were identified by excess kJ intake, now stated and referenced on ll. 148-149.

R2.20. - Dietary intake: so for 27% it was an atypical day? Have you done a sensitivity analyses so see whethehr these days influenced the results?

C2.20. Due to the low sample size we decided not to perform any sensitivity analyses, as these may be mis-leadig. We have added this on l. 218 and on ll. 325-327.

Discussion

R2.21. This data only allow the comparison of mean intake with mean or median requirements. Therefore the first line should be changed into: men and women in this study had a lower MEAN energy intake.

C2.21. Have been changed throughout the manuscript and on l. 252.

R2.22. Because of the fact that only one single 24hr recall was applied the distribution cannot be assessed accurately and comparison with requirements must be done with care. Also the conclusion should be formulated more carefully e.g. by changing had into seem to have inadequate nutrition intake. This point is especial-ly important for the conclusion on micronutrient intakes because these have a larger day to day variation than energy intake. This limitation of the study should be mentioned clearer in the discussion section

C2.22. We have elaborated on the limitations of this study in the discussion section ll. 303-309. We have changed micronutrient inadequacy to “seemingly low dietary diversity” in the conclusion (l. 338), as well as rephrased the first sentence according to comment R2.2. (l. 337).