Comments from Referee:

**Referee:4 General comments**

The main aim was the description the relationship between food groups and the time of day when they were consumed, and how such relationships may vary by the status of

type 2 diabetes

1. The importance of the topic should be justified in the introduction part.

**RESPONSE**: Thanks for the suggestion. We have added description on diabetes prevalence in the NDNS RP sample. It was reported that 3.4% of men and 2.3% of women aged 19-64 years were found to have glucose concentration above 6.9 mmol/L. The proportion of men with undiagnosed diabetes increased with age to over 20% but not in women (2.1%) [1].

[1] Almoosawi, S., Cole, D., Nicholson, S., Bayes, I., Teucher, B., Bates, B., Mindell, J., Tipping, S., Deverill, C. and Stephen, A.M., 2014. Biomarkers of diabetes risk in the National Diet and Nutrition Survey rolling programme (2008–2011). J Epidemiol Community Health, 68(1), pp.51-56.

1. Which tools did you use for collecting the data about the food intake of participants?

**RESPONSE**: Food records diary is used in the NDNS RP to collect food intake data. We have added explanation about the food diary method between lines 61 and 73.

1. What were the inclusion and exclusion criteria?

**RESPONSE**: This is a nationally representative survey that includes all children and adults living in UK who are aged 4 years and above. There are no specific inclusion and exclusion criteria as this is a survey designed to be representative of the UK population. However, for our specific question we restricted the food diary recordings to those aged 19 years or older (adult population).

1. More relevant and updated papers should be discussed in the discussion part.

**RESPONSE**: Thanks for the suggestion. We have added some more recent studies on unhealthy food, eating late, chrononutrition and the potential association with diabetes in the discussion section (lines 197-200 and 215-220).

1. Why you selected some food groups and assess the relationship between them and diabetes?

**RESPONSE**: Through CA we identified unhealthy foods that appeared to be consumed more at night . Additionally we thought that it would be of interest to see if associations of such unhealthy foods with late eating differed according to diabetes status. Correspondence analysis is the graphical technique that allowed us to select a subset of the 60 food groups that we later investigated more in depth through logistic regression. The latter technique also allowed us to quantify the odds of the association and provide a confidence interval. while the earlier use of the CA step allowed us to reduce the impact of multiple testing in the logistic regression analysis step.

1. Time of the day was categorized into 7 slots. However, these categories did not use in the analysis. Why you select these categories.

**RESPONSE**: We used all 7 time slots in the CA step (exploratory step) while in the logistic regression analysis step, we focused on the evening/night slots vs day time, as our primary interest was to contrast those two periods (night/day) with regards to unhealthy foods. Besides collapsing the 7 time slots into 2 allowed us to maximize power to detect effects by reducing the number of parameters in the logistic model.

1. In the method part, it is written that 60 standard food groups were used. However, in table 1, 37 food groups were analyzed. What is the reason for these differences?

**RESPONSE**: Food groups that contributed cumulatively >= 90% calories were listed in table 1. There were sorted by increasing cumulative percentages of total calories. To avoid misunderstanding we have updated the title of Table 1 as “The top 37 food groups sorted by increasing cumulative percentages which contributed to 90% of the total calories consumed by the UK adults. (NDNS RP 2008-2017).”

1. More analysis should be used for obtaining the main aim of the study. The result part is very week and should be improved.

**RESPONSE**: Thanks for the suggestion. Additionally, we have re-run the logistic regression models with GEE further adjusted for BMI in the revised manuscripts as suggested by the other reviewer and found that the OR were similar.

1. The main aim was “to describe the relationship between food groups and the time of day when they were consumed, and how such relationships may vary by the status of type 2 diabetes” however the results were not related to the main aim.

**RESPONSE**: We used CA as a tool to generate hypotheses. CA showed that healthier foods tended to be consumed earlier in the day. Unhealthy foods appeared to be mostly associated with night consumption (sugary/energy dense foods, snacks, alcoholic beverages) .. We did describe the associations between food groups and the time of consumption in the first step when searching for potential unhealthy foods in the CA step. We must apologize that the previous figures were difficult to read and have been replaced with newly produced figures according to the requirement of the journal. We hope the revised paper and the figures are able to show what was conducted and studied more clearly.

1. You should explain the ethical statement.

**RESPONSE**: The NDNS-RP, funded by Public Health England and the UK Food Standards Agency, is registered with the ISRTCN registry under study ID ISRCTN17261407 and received ethical approval from the Oxfordshire Research Ethics Committee. This has been added in the text.