Author’s response to reviews

Title: Gender difference on the association of dietary patterns and metabolic parameters with obesity in young and middle-aged adults with dyslipidemia and abnormal fasting plasma glucose in Taiwan

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We appreciate the time taken by the reviewers and editors to review our paper. Thanks for your helpful comments. We have incorporated them all into our manuscript and this has greatly improved our paper. During our revision we have added one additional references [33, 34] to the paper in response to the reviewers’ suggestions to strengthen parts of the paper.

Reviewer #1:

&lt;Introduction&gt;

1. Line 59-60 and 92-94 are very similar. Perhaps combined them at the beginning of the introduction to prevent repeating similar content.

REPLY: Thank you for the comment. We have combined the sentences at the beginning of background section to avoid repeated content throughout the manuscript. (lines 60-62). We also deleted lines 93-95 to avoid repetition.
1. Line 136-137. Does the FFQ have a specific name? If so recommend stating "patterns were analyzed using the XXX a standardized and ...."

REPLY: Thank you for the comment. We have confirmed with MJ Health Resource Center and unfortunately they do not have a specific name for this FFQ they designed. They just call it the “Semi-quantitative FFQ”.

2. Line 165-167. This sentence has major methodological flaws. Waste circumference should not be measured at maximum point of the buttocks, that would be hip circumference not waist circumference. The waist measurement should have be taken at the level of the belly button.

REPLY: Thank you for the comment and we absolutely agreed with you. Indeed, there was a mistake in describing the procedure for measuring waist circumference. We have re-written the description for waist circumference according to the WHO STEPS protocol for measuring waist circumference as follows: The waist circumference (WC) measurement was made at the approximate midpoint between the lower margin of the last palpable rib and the top of the iliac crest. In addition, hip circumference measurement was taken around the widest portion of the buttocks (lines 166-169).

3. Line 192-194. Why tertiles vs quartiles? This is a fairly large sample and quartiles/quintiles may be more appropriate in assessing linear trend. Additionally, recommend performing a test for trend across quartiles/quintiles of exposure.

REPLY: Thank you for the comment. We have taken the suggestion and divided the subjects into quartiles for analysis this time and updated Tables 3-5 accordingly. Please refer to the manuscript for details.

1. Line 211-212. For dietary patterns using principal component analysis, why would you only use 11 of the 22 food items to create each pattern? Wouldn't you use all 22 food items to create your dietary patterns with the understanding that the food items that that loaded the highest (>0.30) on a particular pattern would be more representative of that pattern?

REPLY: Thank you for your comment. Please refer to lines 150-153 (Methods Section), lines 227-231 (Results Section), and Table 1 for clarification. Principal component analysis was used to derive the two uncorrelated patterns from the 22 food items in the FFQ. Therefore, we did use all 22 food items to create the two dietary patterns. When it comes to name the dietary patterns, we selected the food items that had the highest factor loadings as they were more representative of that particular dietary pattern. In addition, we removed the sentence “The western or prudent dietary pattern consisted of 11 food groups individually” to avoid misunderstanding.
1. Table 1: Recommend placing an * by the food groups loading above (0.30) with a footnote that explains the significance.

REPLY: Thank you for your suggestion. We have placed an * by the food groups with factor loading above 0.30 and added a footnote that explains the significance.

2. Table 4 and 5: Recommend a test for p-trend.

REPLY: Thank you for your comment. A test for p-trend is included for Tables 4 and 5 as suggested by the reviewer. Please refer to the manuscript for detail.

Reviewer #2: -you have done a good job indeed and I would like to say congratulation and keep it up but I have some comments which is important for the improvement of your paper;

1. Make your title smart enough so as to understand easily for layman in subject matters.

REPLY: Thank you for your suggestion. We have modified the topic to “Gender difference on the association of dietary patterns and metabolic parameters with obesity in young and middle-aged adults with dyslipidemia and abnormal fasting plasma glucose in Taiwan” for simplicity.

2. Revise your BMI classification specially BMI &lt;23 categorized as under weight/normal weight is not appropriate.

REPLY: Thank you for your suggestion. We have changed the naming for BMI &lt;23 category to the “non-overweight”. This “non-overweight” group consisted of underweight and normal weight subjects. Since the number of underweight subjects were only 299 and there were 4004 subjects with normal weight, we decided to combine these subjects and call this group of subjects “non-overweight” (BMI &lt; 23 kg/m2) (lines 161-164).

This naming method was similar to two other articles, “The effects of yoghurt containing a novel fat emulsion on energy and macronutrient intakes in non-overweight, overweight and obese subjects” and “Diabetes among non-overweight individuals: an emerging public health challenge”, where they categorized the “non-overweight” individuals as BMI 20-24.9 kg/m2 and BMI &lt; 25 kg/m2. We also added the reference for lines 161-164 (References 33 & 34).