Reviewer’s report

Title: Lifestyle factors associated with underweight among Japanese adolescents: a cross-sectional study

Version: 0 Date: 21 Feb 2017

Reviewer: S Frayon

Reviewer's report:

General comments

1. Interpretation of odds ratio (OR) value needs correction. An odds ratio is a value to determinate if an event (being underweight in this case) were more likely or less likely to occur in a group compare to another one. In this context, the value of OR cannot 'increase' has mentioned in several occasion in the manuscript. See for example Mary L. McHugh. The odds ratio: calculation, usage, and interpretation. Biochemia Medica 2009;19(2):120-6. Please modify carefully in all sections.

2. Underweight is known to be more common in low income country because of the undernutrition but i think this is not the case in this town in Japan. Even if the socioeconomic profiles of the students is not know, general comment about Japan and this town need to be add. The other factors leading to underweight is commonly the social pressure to be thin and body image perception. However, these points are not discuss in the study.

3. The lifestyles factors used by the authors (snaking, skipping breakfast, eating speed) are commonly associated with overweight and not with underweight. The use of this lifestyles factors in this context is more uncommon and authors should present their hypothesis about that : did they expect that underweight adolescents were less likely to have snacking and less likely to skip their breakfast for example (because this behaviors had been associated with overweight)? Please explain and add references.

4. Same concern regardless birthweight : why the authors used this indicator? There is no reference in background section and no explanation of what the authors expect about this variable. A low birthweight was associated with overweight in some studies : what the authors expect studying this variable ?

5. Concerning factors associated with underweight, a gender effect cannot be found because of the statistics used. However, underweight and desire to be thin are more common in girls than boys and several behaviors were linked to gender in table 1. I recommend to add an
analyze of the whole population in the logistic regression models, including gender as variable.

7. What the authors suggest to take into account their results?

Abstract

The abstract must be improved avoiding repetitions. For example in the first sentence "Because underweight in adolescents poses several health problem, it is important to prevent underweight in adolescence.". In the next sentence, the word 'risk' is repeated 3 times. Please check carefully.

Results section must be rewritten to avoid the term 'increased' when analyzing odds ration as previously notified. For example: 'Girls who did not exercice were more likely to be underweight than those who exercice (OR: ...)' 

Background

Page 5, line 35: The authors argue that BMI in adolescence is a strong predictor of adult BMI. Then, they suggest that underweight adolescents become underweight adults. Is this really the case? This point must be clarified with others references. Please note that in the reference cited, "Tracking was less pronounced or lacking among those who were not yet fully sexually mature at baseline, indicating that tracking is more pronounced after puberty when the growth spurt is over." Because of the age of the participants, another reference may be useful or the affirmation that underweight adolescence become underweight adult must be nuanced.

Page 5, line 45: What is the prevalence of underweight in Japanese adolescents? Is this prevalence higher in Japan than elsewhere in the world?

Page 5, line 51: Please reformulate the sentence because the word 'factors' is repeated 3 times.

Page 5 line 51 to page 6 line 16: In this paragraph, the order of argumentation need some adjustments: I suggest to present in a first step what lifestyles factors are associated with BMI (including eating breakfast, snacking and others variables used in the analyses). In a second time, present what have been previously done by others. Finally, present what this research can add.

Methods

Concerning ages of participants, it is unclear in which format the ages were obtained. Did the authors asked the birthdates and used it to calculate age at the physical examination date? Did
the ages is asked as a single round value? Moreover, ages in tables looked like a dichotomous variable (12 or 13) and not like a continuous variable (age ranking from 12.0 to 13.0). If this the case, age must be analyzed has dichotomous variable and not as a continuous variable.

How many junior high schools had been concerned by the study? How the schools has been selected?

Concerning the questionnaire, it is unclear why the authors asked the birthweight of the participants. In the same manner, why the birthweight has been dichotomized at the 2500 g value point? Which reference has been used?

Results

Page 9 lines 44-51: Please indicate the difference observed concerning anthropometric characteristics (who is taller and heavier than who) and weight status classification.

Page 10, last paragraph: please reformulate avoiding the word 'increase' when analyzing odds ratio value.

Page 11 lines 9-13: How the 'p for trend' was obtained? The dose-response relationship is not clear in my opinion: there is no difference between the 'daily exercise' and the 'sometime exercise' categories (p=0.331).

Discussion

Page 11, lines 35-8: this sentence sound like lifestyles factors could changes underweight status: please modified carefully avoiding causal-effect suggestion. As pointed by the authors, this is a cross-sectional study and no causal-effect should be evoked.

Page 12, lines 3-10: Body composition is not know in the study so it's difficult to discuss this point. Moreover, the fact that there is some anthropometrics difference between boys and girls during adolescence is not a goal of this study. I think it's better to discuss the prevalence of underweight in boys and girls in Japan compared with others countries.

Page 12, lines 35-45: The sentence is too long and difficult to understand.

Page 12 line 54: Is there any reference for that affirmation?

Page 12 lines 25-32: The association found by others is always that eating fast lead to overweight. Please be more precise when discuss results found by others.
The study cited (Rerksuppaphol et al., 2010) doesn't report that poor appetite leading to poor weight gain but only claim that point without reference in the introduction. The work of Rerksuppaphol is not focused on the appetite and weight gain directly. Moreover, the sentence in the author manuscript overlap with this publication ("Poor appetite leading to poor weight gain is a characteristic finding among underweight children without underlying pathological conditions.")

Please find a better reference for that part of discussion.

Page 13 lines 32-36: This sentence doesn't make sense. Please reformulate.

Page 13 lines 36-58: The authors proposed to explain relationship between low physical activity and underweight by the effect of exercise on lean mass. However, there is no arguments for this causal relationship so the authors may proposed alternative suggestion. Underweight may cause several health problems and indirectly less physical activity (for example see (Kantanista and Osiński 2014).)


Tables
In table 1, BMI cannot be compared between boys and girls because of sex-specific cut off: please used percentile or BMI z-score using LMS reference of Cole et al. for gender comparison of BMI. Please precise that p value is for comparison between boys and girls.

Presentation of all models used in the logistic regression add little because ORs and p value were very similar in all cases. Please keep only the third model and then collapse data from table 4 and 5.

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