Reviewer’s report

Title: Validation and findings of a food environment survey in three urban environments of Kunming, China

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Reviewer: Håkan Källmén

Reviewer’s report:

This manuscript has its background in the problem of increasing child and adolescent obesity rates in China. This is proposed to be due to the westernization of the food environment. The authors state that China has no established databases to characterize the food environment why it is necessary to develop a survey to be used in empirical assessments of the restaurants and stores in an area.

Together with local collaborators the authors developed two instruments one for assessing stores and one for assessing Food establishments. As study area they selected Kunming, China due to its increasing rates of adult overweight and child obesity. One stretch of 1 km of a street in each of 3 neighborhoods was selected and the restaurants and stores along this stretch were assessed by one pair of raters for each instrument. They then calculated the inter-rater reliability as the agreement of their ratings. The inter-rater reliability expressed as proportion of agreement and Cohen’s Kappa was reported as high.

The construct validity of the instruments was assessed by using BMI of 575 students in a local high school situated in the Centre of city but with a catchment area covering all the studied stretches. BMI data could be connected to the selected stretches and the association between different kinds of restaurants/stores in this area and BMI of students living in that area could be calculated.

The result showed that the prevalence of overweight or obesity was highest within the Centre (1st ring) and lowest outside the 2 ring. Even if the differences in BMI was small and probably not statistically significant, the proportion of overweight or obese was, according to my calculations, significantly higher within the first ring than within the second ring and significantly higher within the 2nd ring than outside the 2nd ring. According to the instrument the restaurants and shops within the first ring offer the unhealthiest food and the availability of healthy food was highest outside the second ring. This indicates that living in an area with high availability to unhealthy food is associated to overweight or obesity.

The research questions posed by the authors are clear and the method is appropriate. According to my opinion the manuscript is balanced and well written and refers to earlier research of importance. The study is interesting and it parallels the relation between alcohol and drug availability and alcohol consumption. However, I have some remarks that should be commented before publishing.
Major compulsory revisions

1. BMI is a measure that not indicates the distribution of fat, only if a person is high enough given the weight. This result only appears if proportion of overweight or obese is related to food quality. If BMI is used as a continuous variable there are no significant differences between areas. Could the result depend on the loss of statistical information due to the tricotomization of BMI?

2. Add information about how the 1 km stretch of street in each neighborhood was selected

3. The result shows an association between the food environment and overweight. There is no information or discussion of other intervening variables whatever they are.

4. The authors conclude that these instruments should be used to assess changes in food environment but there is no evidence on the sensitivity of the instruments for changes in the food environment.

Minor Essential Revisions

5. What is a take-out store?

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

Quality of written English: Acceptable

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