Reviewer’s report

Title: How does weight affect utility-based quality of life? Evidence from the UK WAVES randomised controlled study

Version: 1 Date: 24 June 2015

Reviewer: Gang Chen

Reviewer’s report:

This paper investigated the association between weight status and health related quality of life (HRQoL) of a school children sample in the UK. It’s an important research and has several strengths (i.e. weight and height of students were measured rather than self-reported; a novel children and adolescent specific preference based HRQoL instrument (the CHU9D) has been adopted in addition to a more widely used non-preference based instrument PedsQL). Overall speaking the manuscript has been well written and research questions been addressed properly with suitable statistical methods. There are a few areas where I think the authors could further enrich to the current version.

Major Compulsory Revisions

1. SAMPLE. The WAVES study may have been introduced in detail elsewhere; however, the readers of this paper may still be benefited if the authors could enrich the following information: (1.1) When were the data collected? (1.2) Is this a representative data, e.g. how was the overweight/obese rate of this data compare to the national data of this age range in the UK? (1.3) Is there any potential sample selection issue in the data collection (considering 57% eligible students involved in the research) and if yes, how will that impact on the results of this study? (1.4) Has the sample weight from study design been used in the empirical analysis?

2. INSTRUMENTS. (2.1) Which version of PedsQL has been used in this study? At what age range is this version of PedsQL recommended to be used? Should also briefly introduce the scoring of PedsQL. (2.2) Since the association between weight status and HRQoL is the key research question of this study, the authors should justify the choice of instruments in the research design. The CHU9D is a new instrument that has not been validated for these younger age group children. So the choice of the other HRQoL instrument would be essential. Why a generic HRQoL (PedsQL), rather than an obesity-specific QoL instrument been adopted? Are there evidence suggesting that PedsQL has been validated to study obesity issue in the literature? (2.3) Whether the way that HRQoL questionnaire was administrated (i.e. the items and possible responses were read out) could potentially impact on the (insignificant association) result that the authors have found. I agree that this approach would be easy to administrate for younger children respondents; however, there could also be some concerns that since the survey is not anonymous, children could potentially hide their true feelings?
Discretionary Revisions

3. ANALYSIS & RESULTS. (3.1) Whether younger children can self-complete the CHU9D instrument is also an important question (e.g. what proportion of respondents has missing items in the questionnaire). (3.2) Generally speaking it might not be suitable to pool underweight and healthy weight together in the analysis. The authors maybe worry about the small sample size of underweight group? (3.3) Are there any specific PedsQL functions significantly associated with weight status? (3.4) Page 8, line 196: agreement should be correlation? They are different concepts. (3.5) Table 5: it might be better to present correlation matrix between each CHU9D dimension and each PedsQL functioning score so that researcher could also identify whether there exists potential unexpected relationship. (3.6) Table 6: why PedsQL score was not studied in the regression analysis? (3.7) I think it would be better to explain the results between weight status and HRQoL in purely association relationship rather than using words (e.g. “affect”, “impacts on”) that may reflect causal relationship throughout the paper and title.

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

**Quality of written English:** Acceptable

**Statistical review:** Yes, and I have assessed the statistics in my report.

**Declaration of competing interests:**

I declare that I have no competing interests.