PEER REVIEW HISTORY

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ARTICLE DETAILS

TITLE (PROVISIONAL)	A Cross-sectional Comparison of health related quality of life and other features in people with and without Objective and Subjective Binge Eating Using a General Population Sample
AUTHORS	Li, Natalie; Mitchison, Deborah; Touyz, S.; Hay, Phillipa

VERSION 1 – REVIEW

REVIEWER	Tamas Agh Syreon Research Institute, Hungary
REVIEW RETURNED	06-Jun-2018

GENERAL COMMENTS	The aim of this cross-sectional study was to evaluate differences in sociodemographic profiles (age, sex, educational attainment), levels of distress regarding binge eating episodes, overvaluation and health-related quality of life (SF-12) between people with recurrent objective binge eating episodes (OBEs) only, people with solely recurrent subjective binge eating episodes (SBEs) and people with combined OBEs and SBEs. The topic is interesting and relevant and would make a contribution to our knowledge. Overall, the manuscript is well written. Nevertheless, I have to underline some minor methodological aspects and criticisms: - Based on the methods section it is not clear how study groups (control, OBE, SBE and OSBE) were defined. Please describe. - Questions on OBE and SBE referred to the last 3 months; however, SF-12 measures quality of life for the past 4 weeks. This difference has to be stated as a limitation of the study.

REVIEWER	Francesca Solmi Division of Psychiatry, University College London, UK
REVIEW RETURNED	24-Jul-2018

GENERAL COMMENTS	BMJ OPEN REVIEW Overview In this paper the authors aimed at providing a descriptive overview of demographic characteristics and health related quality of life of individuals with objective and subjective binge eating episodes, or both. They use a general population sample of Australian adults recruited in a community survey. I think the central aim of the paper is interesting and certainly it would be of great value for future diagnostic manuals, although, if I am not mistaken, I believe ICD-11 has now been released; hence this should be amended in the paper. It is also an important question for clinicians. Major concerns

	• However, I have one main concern about this study, which is the definition of objective (OBE) and subjective binge eating (SBE). It is my understanding that, in the literature, most of the time these are taken to define episodes where an individual perceives loss of control and eats an objectively large amount of food (OBE) or perceives loss of control after eating an amount of food which is not objectively large (SBE) (Riccardo et al. 2012; Palavras et al. 2013; Fitzsimmons-Craft et al. 2014). Based on how the authors define their categories it seems to me that the OBE category reflects more an over-eating group (but no binge eating, as there is no loss of control) and the OSBE reflects how currently binge eating is defined in diagnostic manuals (i.e. to include possible objective or subjective binge eating). Previous studies have used this definition (over-eating vs binge-eating) with similar findings re gender distribution (more males with over-eating and more females with binge eating), depressive symptoms (greater depression in binge eating group, but not in over-eating one) and BMI (greater BMI in binge eating group). (Sonneville et al. 2013) The SBE group in this paper represents a group with true SBE, as these are people who say they don't eat much, but they have loss of control. However, I wonder about how many in the OSBE group say they eat a large amount of food, when they really don't (and this might be a central eating disorder cognition), so that they would be better placed in the SBE group. Then the remaining people in the OSBE group would be a true OBE group, and the current OBE group, would be an over eating group. • In the discussion, the authors say "Similarly, there was also no difference between the OBE and SBE groups with respect to health-related quality of life, which is in concordance with prior research", but they do not highlight that these are also not different from the no binge eating group. The fact that neither the OBE nor the SBE group reports lower QoL than the group without binge eating somehow appears to confirm that these two groups might not capture a population with disordered eating behaviours (as opposed to over-eating, which per se I would not consider a disordered eating group). • Why have the authors not used regression models with 95%CI? This would give a better idea of power (I worry that the OSBE and SBE group might be underpowered) and it would also allow to control for socio-demographic characteristics such as gender, age, and education. I would not, however, adjust any analyses of QoL for BMI as this could potentially be on the causal pathway (even though this is difficult to assess in a cross-sectional design). Minor concerns • The sample size and patterns of missing data need to be discussed in results, particularly as Ns change across outcomes. Also in the discussion, the authors note that the SBE group is small (N= 33-36), but it is smaller than this in the actual analyses. This should be highlighted. • The definition of how the OBE and SBE groups were derived needs to be expanded. The possible answers to both questions employed in the creation of the OBE/SBE/OSBE variables include frequency criteria. Where was the cut off drawn? Same question for the distress related to binge eating question.

	• I am not clear as to why nobody in the OSBE group reports distress related to binge eating (Table 1)? Is this what the authors would expect? I would hypothesise that this would be the group with the greatest distress. • Please consider changing the wording 'control group' to 'no binge eating' as this is not a case-control study. • The use of self-reported BMI should be mentioned as limitation. Final remarks Although I don't think that the way in which the variables have been constructed is suitable to answer the research question asked by the authors, I believe these results are nevertheless interesting. They highlight that not everyone who overeats necessarily experiences poorer QoL, but that some (those who binge eat) might. This is a very important message for primary care clinicians, as those who binge eat are often undetected in primary care and referred to weight loss programmes as opposed to psychological services. My suggestion would be to frame the paper around this question instead, given the nature of the data available. References Fitzsimmons-Craft EE, Ciao AC, Accurso EC, Pisetsky EM, Peterson CB, Byrne CE, & Le Grange D (2014). Subjective and objective binge eating in relation to eating disorder symptomatology, depressive symptoms, and self-esteem among treatment-seeking adolescents with bulimia nervosa. . NIH Public Access European eating disorders review : the journal of the Eating Disorders Association 22, 230–6. Palavras M, Morgan C, Borges F, Claudino A, & Hay PJ (2013). An investigation of objective and subjective types of binge eating episodes in a clinical sample of people with co-morbid obesity. . BioMed Central Journal of Eating Disorders 1, 26. Riccardo DG, Calugi S, & Marchesini G (2012). Objective and subjective binge eating in underweight eating disorders: Associated features and treatment outcome. International Journal of Eating Disorders 45, 370–376. Sonneville KR, Horton NJ, Micali N, Crosby RD, Swanson SA, Solmi F, & Field AE (2013). Longitudinal associations between binge eating and overeating and adverse outcomes among adolescents and young adults: does loss of control matter? JAMA pediatrics 167, 149–55.

VERSION 1 – AUTHOR RESPONSE

Author: Completed on Page 1

We have revised the title – A Cross-sectional Comparison of the health related quality of life and other features in people with and without Objective and Subjective Binge Eating Using a General Population Sample

- Can you add the relevant p values to the abstract >> results section to support these statements?

Author: Completed on Page 3:

"Results: No differences were found between the SBE group and OBE group in age, gender, BMI, mental health-related quality of life and overvaluation (all p >.059). However differences were found in the OSBE participants, namely that they were younger, had a higher mean BMI, lower mental health-related quality of life and higher overvaluation of weight/shape than the Non-Binge-Eating participants (all p <.001. Proportions of participants who reported distress related to binge eating in the OBE and SBE groups also did not differ (p =.678). "

- Why was verbal consent obtained as opposed to written consent? Was the use of verbal consent approved by the ethics committee? Please clarify in the methods section.

Author: We have clarified as follows on Page 6**:**

"Due to the pragmatic constraints of large household surveys verbal consent was obtained from all interview participants and additional written parental consent from participants aged <18 years. Ethical approval for the survey including verbal consent was granted by the University of Adelaide Human Research Ethics Committee number H-097-2010."

- Along with your revised manuscript, please provide a completed copy of the STROBE checklist (http://www.strobe-statement.org/).

Author: Completed on Page 20

Reviewers' Comments to Author:

Reviewer: 1

- Based on the methods section it is not clear how study groups (control, OBE, SBE and OSBE) were defined. Please describe.

Author: Agreed, added on Page 7

"For the purposes of this study recurrent OBE and SBEs were defined as occurring weekly or more often over the past 3 months. The OSBE group had both OBE and SBE occurring weekly for 3 months"

- Questions on OBE and SBE referred to the last 3 months; however, SF-12 measures quality of life for the past 4 weeks. This difference has to be stated as a limitation of the study.

Author: Agreed, added on Page 15. *"Fourthly, OBE and SBE participants were characterised by recurrence in the last 3 months, however the SF-12 measures quality of life for the past 4 weeks; thus there was only partial assessment of quality of life over the designated time period."*

Reviewer: 2

I believe ICD-11 has now been released; hence this should be amended in the paper.

Author: To our understanding, the ICD-11 has a pre-release implementation version that has not been officially instated. However we have incorporated the relevant changes in the pre-release version. http://www.who.int/classifications/icd/revision/en/

A binge eating episode is a distinct period of time during which the individual experiences a subjective loss of control over eating, eating notably more or differently than usual, and feels unable to stop eating or limit the type or amount of food eaten.

Reference 18 isupdated.

Major concerns

However, I have one main concern about this study, which is the definition of objective (OBE) and subjective binge eating (SBE). It is my understanding that, in the literature, most of the time these are taken to define episodes where an individual perceives loss of control and eats an objectively large amount of food (OBE) or perceives loss of control after eating an amount of food which is not objectively large (SBE) (Riccardo et al. 2012; Palavras et al. 2013; Fitzsimmons-Craft et al. 2014). Based on how the authors define their categories it seems to me that the OBE category reflects more an over-eating group (but no binge eating, as there is no loss of control) and the OSBE reflects how currently binge eating is defined in diagnostic manuals (i.e. to include possible objective or subjective binge eating).

Author – We thank the reviewer, however our definition on Page 7 agrees with the reviewer's and includes loss of control.

We already included "For both objective and subjective binge eating episodes, the interviewer was instructed to observe that the respondent reported that they could not prevent themselves from overeating, or could not stop eating once they had started." in the manuscript.

To make this clearer, we included the question in full: "I would now like to ask you about episodes of overeating. By overeating, or binge eating, I mean eating an unusually large amount of food in one go and at the time feeling that your eating was out of control."- Interviewer note for prompting: respondent could not prevent themselves from overeating, or could not stop eating once they had started

Similarly the question on subjective binge eating was:

Over the past 3 months have you felt your eating was out of control when others might not agree the amount of food was unusually large (e.g. 2-3 pieces of bread)?. Interviewer note for prompting; Respondent could not prevent themselves from overeating, or they could not stop eating once they had started on smaller or more usual amounts of food.

In the discussion, the authors say "Similarly, there was also no difference between the OBE and SBE groups with respect to health-related quality of life, which is in concordance with prior research", but they do not highlight that these are also not different from the no binge eating group. The fact that neither the OBE nor the SBE group reports lower QoL than the group without binge eating somehow appears to confirm that these two groups might not capture a population with disordered eating behaviours (as opposed to over-eating, which per se I would not consider a disordered eating group).

Author:

We agree it is odd that the OBE and SBE groups did not have lower QoL scores than control. But perhaps we have captured unique subgroups here, since these groups exclude anyone who engages

in both OBE and SBE, who are the more disordered types. Previous studies have tended to just examine people who report OBE and compare them to people who do not report OBE (without excluding people who report SBE and OBE). Also previous research has found OBEs in themselves (without distress) may not be associated with lower QoL and that this may be a recent change in the impact of binge eating (MItchison et al. 2017)

Why have the authors not used regression models with 95%CI? This would give a better idea of power (I worry that the OSBE and SBE group might be underpowered) and it would also allow to control for socio-demographic characteristics such as gender, age, and education. I would not, however, adjust any analyses of QoL for BMI as this could potentially be on the causal pathway (even though this is difficult to assess in a cross-sectional design).

Author: We thank the reviewer, however we decided to retain the ANCOVA analyses in favour of the regressions, as this type of analysis is appropriate for a categorical independent variable with continuous outcomes. On reviewing the Statistical Analysis section we do note that **we erroneously reported that we conducted ANOVAs.** Rather, differences in quality of life were assessed using a MANCOVA, with the MCS and PCS subscales as the dependent variables and the binge eating grouping variable as the independent variable. Several covariates were also added to the model including age, gender, BMI, and educational attainment. We have amended this now (see Page 8). We agree that the SBE group (but not likely to OSBE group) may have been underpowered, and this has been acknowledged in the strengths and limitations (Page 14). Finally, BMI was controlled in the quality of life analyses due to the higher weight often observed in people who binge eat, and the desire to understand physical impairment above and beyond that attributed to high weight. However we agree that BMI could act as a mediator/pathway to reduced physical quality of life, and appreciate the value of knowing how these findings are affected by BMI. Accordingly we re-ran the analyses woithout BMI as a covaritae, and have reported briefly on these in the Results (see Page 14): *" When BMI was removed as a covariate from these analyses, similar results were found, including main effects of group on both mental and physical health-related quality of life scores. The pairwise comparisons findings were replicated, with the exception of two additional effects, namely that the OBE group had poorer physical health-related quality of life than the Non-Binge Eating group (p = .008), and poorer mental health-related quality of life than the OSBE group (p = .004)."*

Minor concerns

The sample size and patterns of missing data need to be discussed in results, particularly as Ns change across outcomes

Author: The rate of missing data were <.5% for all variables with the exception of BMI where it was 8%. This was low and no imputation or adjustment was made. Ns should only have varied in the analyses as a function of missing BMI data and minor fluctuations owing to applications of weights to the data.

Also in the discussion, the authors note that the SBE group is small (N= 33-36), but it is smaller than this in the actual analyses. This should be highlighted.

Author: We thank the reviewer for this point and have clarified that we were referring to the Dalle Grave study not the present results.

The definition of how the OBE and SBE groups were derived needs to be expanded. The possible answers to both questions employed in the creation of the OBE/SBE/OSBE variables include frequency criteria. Where was the cut off drawn? Same question for the distress related to binge eating question.

Author: Agreed, this is now addressed on Page 7 and cuttoff has been clarified as weekly for both OBEs and SBEs according to DSM-5 diagnositc criteria threshold for regular OBEs.

I am not clear as to why nobody in the OSBE group reports distress related to binge eating (Table 1)? Is this what the authors would expect? I would hypothesise that this would be the group with the greatest distress.

Author: We did not mean to imply there was no distress in the OSBE group – we were unable to assess distress related to binge eating in the OSBE group, and have clarified on Page 8 and 9 with the following statement: *"Distress related to binge eating was only compared between OBE and SBE Groups. We did not assess distress related to binge eating in the OSBE group as they were asked distress related to SBE and distress related to OBE, and thus included four groups of people with distress related to OBE, distress related to SBE, distress related to both OBE and SBE, and no distress with either."*

Please consider changing the wording 'control group' to 'no binge eating' as this is not a case-control study.

Author: Agree, changed control to "non-binge eating"

The use of self-reported BMI should be mentioned as limitation.

Author: Agreed, changed on Page 15. *"Fifthly, BMI was calculated from self-reported height and weight, and this lack of standardised measuring may have resulted in data inaccuracies."*

Final remarks

Although I don't think that the way in which the variables have been constructed is suitable to answer the research question asked by the authors, I believe these results are nevertheless interesting. They highlight that not everyone who overeats necessarily experiences poorer QoL, but that some (those who binge eat) might. This is a very important message for primary care clinicians, as those who binge eat are often undetected in primary care and referred to weight loss programmes as opposed to psychological services. My suggestion would be to frame the paper around this question instead, given the nature of the data available.

Author:

See above we agree, but as loss of control overeating was assessed we were able to answer the research question as in the papers below.

References

Fitzsimmons-Craft EE, Ciao AC, Accurso EC, Pisetsky EM, Peterson CB, Byrne CE, & Le Grange D (2014). Subjective and objective binge eating in relation to eating disorder symptomatology, depressive symptoms, and self-esteem among treatment-seeking adolescents with bulimia nervosa. NIH Public Access European eating disorders review : the journal of the Eating Disorders Association 22, 230–6.

Palavras M, Morgan C, Borges F, Claudino A, & Hay PJ (2013). An investigation of objective and subjective types of binge eating episodes in a clinical sample of people with co-morbid obesity. BioMed Central Journal of Eating Disorders 1, 26.

Riccardo DG, Calugi S, & Marchesini G (2012). Objective and subjective binge eating in underweight eating disorders: Associated features and treatment outcome. International Journal of Eating Disorders 45, 370–376.

Sonneville KR, Horton NJ, Micali N, Crosby RD, Swanson SA, Solmi F, & Field AE (2013). Longitudinal associations between binge eating and overeating and adverse outcomes among adolescents and young adults: does loss of control matter? JAMA pediatrics 167, 149–55.

FORMATTING AMENDMENTS (if any)
Required amendments will be listed here; please include these changes in your revised version:

We have implemented an additional requirement to all articles to include 'Patient and Public Involvement' statement within the main text of your main document. Please refer below for more information regarding this new instruction:

Author:

Authors must include a statement in the methods section of the manuscript under the sub-heading 'Patient and Public Involvement'.

How was the development of the research question and outcome measures informed by patients' priorities, experience, and preferences?

How did you involve patients in the design of this study?

Were patients involved in the recruitment to and conduct of the study?

This was a general population study and patients were not involved directly.

How will the results be disseminated to study participants?

We cannot do this directly as data are de-identified and we do not have access to participants names and addresses. By publishing in an open access journal we anticipated participants may have better access to the findings.

For randomised controlled trials, was the burden of the intervention assessed by patients themselves?

This was not a randomised controlled trial.

Patient advisers should also be thanked in the contributorship statement/acknowledgements.

Not applicable

If patients and or public were not involved please state this.

Author: Done page 9