Author's response to reviews

Title: Weight misperception amongst youth of a developing country: Pakistan - A Cross-sectional study

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Author's response to reviews: see over
Cover letter

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Title: Weight misperception amongst youth of a developing country: Pakistan - A Cross-sectional study

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Date: May 30th 2013

Author response to the reviews: See over
May 30th 2013

The Biomed Central Editorial Team

Object: MS: 6044656239046596- Weight misperception amongst youth of a developing country: Pakistan - A Cross-sectional study. Muhammad Danish Saleem et al.

Thank you for consideration of our manuscript. We have reviewed the above manuscript according to both the reviewer’s comments. For Mr. Duncan we have provided answers to both the versions of his review as per his request. The title of the introduction has been changed to Background. Detailed results along with multivariate analysis have been provided. New tables and figures have also been made.

Reviewer #1: Stepahine Helmer

Major Revisions:

Abstract
1. P.2, Results: The given information about the characteristics of the sample in the results section of the abstract is interesting; anyway as it is not a main finding it is not important for the abstract. I would encourage the authors to give more information about the misperceptions (e.g. over- und underestimation, which kind of misperception is measured …).
   - The results of the abstract have been modified to include more information regarding type of misperceptions that whether they were overestimation or underestimation and which subpopulation had which type of misperception. The subject characteristics have been reduced and results of multivariate analysis have been added.

Background
2. P.4, 2nd paragraph, last sentence: Please provide a citation for this sentence.
   - The paragraph has been rephrased and the sentence has been removed.

3. P.5, 2nd paragraph ‘The CDC national Youth Risk Behavior Survey […]'. Please show more details: Where was the study conducted? What was the age of the adolescents?
   - The relevant details of this study as requested by the reviewer have been added. (P.5, 2nd paragraph)

4. P.5, 2nd paragraph, last sentence: Please give more information about the sample and the findings of the cited study from Turkey [11].
   - The relevant details of this study as requested by the reviewer have been added. (P.5, 2nd paragraph)
Methods
5. P. 7, Data collection: Please explain why the questionnaire was written in English.

- The questionnaire was written in English as it is the medium of instruction in all the colleges and universities of Pakistan. The fact that those students can easily understand it both verbally and written negated the need of translating it into Urdu – the native language. This point has been added in the methods section.

Results
6) P. 10, Demographics: Please provide a more detailed description of the sample (e.g., in terms of gender, study subject, nationality, etc.)? This is important for a comparison of your study with previous and future studies in this field.

- A detailed description of the demographics has been added into the results. This includes additional analysis of the participants on the basis of their faculties (general, medical sciences, engineering and business administration) and type of university (Public-sector or private.) Our study involved data collection only from Pakistan nationals.

- Population ethnicity which is a common demographic variable in most international studies was not added in the final analysis in our study. Even though Pakistani students may fall into different cultural divisions, they all belong to the same ethnicity which is "South Asian" or broadly "Asian". This ethnic group includes people hailing from India, Pakistan and Bangladesh. Including the individual cultural divisions was not appropriate as one may encounter more than 15-20 different cultural subgroups all a bit different on the basis of language but with little significance in the international literature.

- Table 1 has been added which shows the distribution of gender with the other independent variables. P-values have been quoted as well. The previous table 1 has been fused with this new table 1. (page 24)

7) P.10, Weight misperception: The findings are interesting. Anyway, I would like to read a more detailed description of the results. You have found some significant associations. Please give more information (e.g. Females are more likely to underestimate their weight…).

- The results have been modified to include a detailed explanation of weight misperception. We begin by giving the percentage of misperception. We then discuss weight misperception with BMI. We then discuss misperception with gender.

- A new Table 2 has been added which shows the distribution of misperception with the independent variables. P-values have also been quoted. (page 25)

- The old table 2 has been removed.

- The old figure 1 has been removed.

- New figure 1 showing distribution of misperception has been added
Multivariate analysis (binary logistic regression) of weight perception for the independent variables was conducted and this has been added in the results. Results showed significance for age, faculties and type of university. (Page 11)

Table 3 has been added which shows the findings of the multivariate analysis with odds ratio and p values. (Page 26)

A new heading of **types of misperception** has been added. (Page 11) Overestimation and underestimation have been discussed separately here. The significant findings and prevalence of the two types of misperception in the different categories of BMI have been given. Here we also present the gender wise distribution and percentages of which type of misperception is common in which gender.

Multivariate analysis (binary logistic regression) of the type of misperception shows significant association with gender, however failed to show significance for age, faculties or type of university. (Page 11)

A new figure 2 and figure 3 have been made. These show the distribution of overestimations and underestimations respectively.

Lastly we integrate the gender and bmi with misperception to identify which particular subgroups had the higher percentages of misperception and what kind of misperception i.e. overestimation or underestimation.

8) P. 10: Analysis in different misperception subgroups could bring benefit to the analysis. Furthermore a stratified analysis by the field of studies of the participants would be interesting. Did you check if there were different perceptions and over- / underestimations across different subjects?

- The last paragraph of the results gives the different perceptions regarding over/under estimation amongst the participant subgroups.
- The participants were divided into newer subgroups formed on the basis of their faculties and university types. These have been added into the results in the form of table 2. Multivariate analysis is used to determine the difference of perception (if any) amongst the different subgroups.

Discussion:

9) I see problems concerning the main question of your analysis. The question: Do you consider yourself as a) average b) thin c) fat is very subjective and ‘fat’ is a difficult word. Not everyone who is overweight is/or considers him/herself as fat. I would like to read about this issue in the limitations chapter.

- The authors realize that indeed 'fat' is a subjective word. As per the recommendation of the reviewer, this issue has been added in the limitations part.

General:

10) In the abstract there are grammar mistakes. Reading ahead, I see that this is a consistent pattern throughout the manuscript. I suggest submitting the manuscript to an English language editorial service or a native speaker for language revision.

- The article has been reviewed by an English native speaker.

11) Basic terms are spelled inconsistently. The authors should
be ensured that uniform spelling is used, e.g. cross-sectional, misperception…

- A uniform spelling for many frequently used terms such as weight misperception, overestimation, underestimation and cross-sectional have been used throughout the article.

**Minor revisions:**

Abstract:
1. P.2., first sentence/Background: Please replace weight by Weight.

- Done

2. P. 2, l. 8 ff : This sentence is very long and confusing. Please restructure the sentence.

- The background has been restructured as follows:

  "Weight misperception is the discordance between an individual's actual weight status and the perception of his/her weight. It is a common problem in the youth population as enumerated by many international studies. However data from Pakistan in this area is deficient."

Background:
3. P.4, 1st paragraph: Please replace Underweight misperception by underweight misperception.

- Done.

P. 4, 3rd paragraph: You provided a lot details on underweight in the Pakistan population. Similarly, please give more information about overweight in Pakistan.

The section on this issue is comparatively short.

- The details on overweight population of Pakistan have been provided. They have been justified with the reference number 3. The paragraph has also been restructured to make it easier for the reader. We begin with discussing overweight in Pakistan and its adverse effects followed by underweight in Pakistan and its adverse effects. It is as follows:

  "The epidemic of obesity is emerging as a public health problem, which is not only confined to adults but is also finding its way in to adolescents and the youth population. Rehman et al. reported an overwhelming 18% overweight distribution amongst tenth grade adolescents of Karachi. [3] Obesity or being overweight increases the risk of adverse cardiovascular outcomes, type 2 diabetes mellitus, cancers and even death.[4] Similarly, being underweight is also a serious problem especially in a developing country like Pakistan. The nutritional status of Pakistan report states a high prevalence of underweight population in Pakistan majority of whom are women of reproductive ages.[5] Being underweight affects both sexes alike but the effects are more harmful towards the female youth and the young mothers with implications such as anemia, infertility or endangering both the life of the mother and their babies. [6]"

5) P. 4, 3rd paragraph ‘Similary, the effects of being underweight […] in both
sexes’. Please show a citation for this information.
- The sentence has been rephrased to negate the need for an additional citation.

6) P.5, 1st paragraph: On page 4 you mentioned that both sexes have a high risk for being underweight. In this regard, please also show an approach how to reduce underweight in males.
- Reference 6 has been used to address the problem of both sexes.

7) P.5, 3rd paragraph: ‘To date, no comprehensive study […]’. Is the information referring to the youth of Pakistan? Please clarify.
- The statement has been clarified with rephrasing and restructuring of the entire paragraph as follows:

"The youth, at the brink of joining professional life are a country’s major asset and any health problems identified and resolved at this stage would benefit the adults of future years. Weight misperception has previously been identified in the adults of Pakistan. A survey conducted on 493 adults in Karachi, Pakistan demonstrated a poor agreement between self-perception and actual BMI with a 73% and 50% misperception amongst the obese and overweight participants respectively. [12] However no comprehensive survey demonstrating weight perception in the youth of Pakistan has been conducted."

8) P.5, 4th paragraph: The section is very confusing. Please alleviate the complexity of the sentence.
- The entire paragraph has been made easy to understand removing the additional points all which are mentioned in detail in the methods. The new paragraph goes as follows:

"For our sample we targeted the youth population of Karachi studying in various undergraduate universities. The purpose of our study was to obtain weight misperceptions amongst the youth population by comparing their actual weight categories based upon calculated BMI with their self-perception and to explore some gender based relationships of this misperception."

Results:
9) P.10, self-perception: More detailed information on the significant association could bring additional benefit. Which sex shows which kind of perception?
- Additional information about the significant association has been added. The attached table gives further information about the distribution.

"Most of the females (72.8%) self-perceived themselves to be average. Compared to females, more males considered themselves to be either thin or fat rather than being average."

10) P.10, Weight misperception: Please replace mis-perception by misperception.
- Replaced
11) P.10, Weight misperception: ‘[…] was found to be significant;’ Please delete ;
   • Done

12) P. 10, Last paragraph: Please replace Misperception by misperception.
   • Replaced

Discussion:
13) Overall: Please preplace XX et al by XX et al.
   • Done

   • Done

15) P 13, Overweight misperception in Females: Please replace Female by females.
   • Done

16) P 13, Overweight misperception in Females: ‘Over estimating their weights were a less common finding in our setting, nevertheless one group outnumbered the rest. These were the underweight females over estimating their weights.’ Please replace over estimating by overestimating and make sure that terms are spelled consistently in your manuscript.
   • Done.

17) P. 15, solution: ‘Therefore it is important for health professionals to identify both underweight and overweight/obese’ Please replace obese by obesity.
   • Done

Discretionary Revisions:
Discussion:
1) P. 14: ‘Wardle et al. showed that about half of the female students from 22 different countries were trying to lose weight when majority had normal BMI.’ This sentence is not easy to understand, please clarify.
   • The sentence has been rephrased as follows:

   "Wardle et al. showed that about half of the female students from 22 different countries considered themselves overweight and were trying to lose weight despite the fact that majority actually had normal BMI."
Reviewer #2: Dustin Duncun

Version 2:

Major revisions

1. Multivariate analyses (to control for confounding covariates) should be conducted.” (As an example, age and ethnicity can be controlled for in a regression framework, which were collected in the survey.)
   • Population ethnicity which is usually a demographic variable in most international studies was not added in the final analysis in our study. Even though Pakistani students may fall into different cultural divisions, they all belong to the same ethnicity which is "South Asian" or broadly "Asian" This ethnic group includes people hailing from India, Pakistan and Bangladesh. Including the individual cultural divisions was not appropriate as one may encounter more than 15-20 different cultural subgroups all a bit different on the basis of language but with little significance in the international community.
   • New independent variables including faculties and type of university have been added to the analysis. Using these additional variables, binary logistic regression models were formed for both misperception and types of misperception. The significant findings have been mentioned in the results both in the article and abstract. Table 3 has been formed to show these findings.

2. “No chi-square statistics or associated p-values are reported in tables; authors should do so.”
   • p-values have been reported in all the tables. P-values could not be reported for table 2, so it has been removed and its data has been used to make figure 2. Meanwhile new table 1 and 2 have been formulated that report the p-values along with frequencies and percentages.

3. “Authors state, “…There were more male participants than females instead of the ideal 50/50 ratio, but we solved that problem by comparing the two genders separately. This is mainly because females found the concept of the study objectionable.” in the “Strengths and Limitations” section. Did the participants know the objective of the study? If so, this could be a fatal flaw, due to participant reactivity bias etc. When specifically were the participants told of the study objective?” (Also, no N by gender is reported in the updated manuscript.)
   • The reason for the greater percentage of males was that many females refused to have their body weight measured.
   • The word "concept" was incorrectly used by the authors whereas the term "procedure" would have better suited in its place. "... because females found the procedure of the study objectionable." The authors regret this lapse in writing on their part. The statement has been removed from the "limitations" to avoid future confusion and misinterpretation.
The participants gave consent prior to the interview which was followed by the physical measurements. The participants were not told the objective of the study but the procedure to take the measurements was explained during the consent.

N by gender has also been mentioned in the results.

4. “The authors do a good job at describing the sample; however, authors should state the N of all the universities of Karachi. (Knowing that 6 were selected in insufficient.) How many are there in total?” (This is crucial information to know; while the authors have been more transparent and clearer about the sampling design, and address some of these comments, much is still unclear. For example, of the 6 universities, how were people obtained to be sampled? Was everyone at the university sampled? [I assume not, given the last sentence in the “Study Design” section.])

There are a total of 33 universities/degree granting institutes in Karachi as recognized by the Higher Education Commission of Pakistan. Of these 6 were selected by systematic random sampling. The universities were listed in an alphabetical order and a gap of 5 was used between each university. The first university chosen was Baqai (#2) followed by Dow (#8), IBA (#14), KIET (#20), Preston University (#26) and lastly University of Karachi (#32). This information has been mentioned in the study design part of the manuscript.

For Sampling within the universities, the sample size was distributed in proportion of the student population of these universities. This way University of Karachi with the highest student count of approximately 24000 contributed a sample of 600 out of the total 1600.

A detailed inclusion and exclusion criterion has been added in the methods section under the heading of sample population.

Simple random sampling was used to collect the data from each university. The student roll numbers were used for the purpose of the lottery.

Version 1

Major Compulsory Revisions
1. Many, many studies document that weight perception varies by socio-demographics (gender, race, income etc). In fact, this is where the bulk of research has been conducted. A major strength of this study was the unique population. However, it seems that prior similar work has been conducted in Pakistan, as discussed by the authors in the Discussion and elsewhere. Authors should elaborate how this particular study and those previously published on weight misperception in similar geographies (Bhanji et al., 2011; Khan et al., 2011; Stigler et al., 2011) are different. It should be clear to the readers that this particular study advances our knowledge of weight misperception; at this point, I’m not convinced this study does that.
This issue had been addressed in the previous revision. The discussion involves comparison with similar local studies.

2. The main finding (as reported in the Results section) is: “The association between misperception and gender were found to be insignificant. (p-value = 0.406)”. However, this finding was not reported in the Abstract and the authors provide a large part of the discussion discussing gender differences. As framed, it is inappropriate to emphasize the gender differences based on prevalence data only. Importantly, I recommend that the authors stratify results by BMI. For example, compute gender differences in weight misperception among overweight/obese individuals, etc. These findings will be more meaningful for the public health literature and also I suspect there will be strong and interesting gender differences (which are currently being masked).

- The results have been re-computed analyzing both, gender and bmi differences as well as a combination of the two as instructed by the reviewer.

3. It appears that English is the not the first language of the authors. The manuscript needs be proof read for English grammar in a substantial way. There are MANY typos and grammatical errors.

- Errors have been corrected.

Minor Essential Revisions

1. The authors do a reasonable job at explicating the links between weight misperception and deleterious health/behavior. However, the authors miss several seminal studies in the field, including Duncan et al., 2012 and Yost et al.,

- The studies mentioned have been added and discussed, both in the introduction and the discussion.

2. BMI should always be capitalized.

- Done

3. BMC Public Health does not have an “Objectives” subsection for their abstracts—remove.

- Done

4. Introduction—remove “etc” from P. 4.

- Done

5. On Page 6, authors state, “We designed a short structured close-ended questionnaire comprising of the basic variables and demographics.” What is meant by “basic variables”? Remove the word “basic” and describe the variable set.

- All the variables have been described separately in detail in the methods section under the headings of independent and dependent variables.

6. In addition to weight misperception, in several places in the manuscripts the authors discuss body satisfaction (e.g. page 10, 11). While there may likely be some links between weight misperception and body satisfaction, it is believed that some weight misperception may be due to other factors, such as social norms regarding weight (especially in groups with
increased prevalence of overweight/obesity) (e.g., Johnson et al., 2008; Burke et al., 2010). Suggest underemphasizing (or even removing) language on body satisfaction.

- This issue had been addressed in the previous revision by underemphasizing body satisfaction as requested by the reviewer. Parts about body dissatisfaction have been removed from the discussion.

7. Correcting weight misperceptions are important among youth and other populations. However, it is important that the authors recognize that such interventions should be carefully designed to protect against body image disorders, eating disorders, and indicators of emotional distress. These perhaps unexpected deleterious responses may result when weight misperceptions are corrected. When discussing interventions, authors should also explicitly recognize that correcting weight misperceptions could have deleterious (unintended) effects.

- The solutions have been rephrased and made more comprehensive. They also address the reviewer's reservations.

Discretionary Revisions
It would be helpful to see the several tables and figures disaggregated by gender, as that is a focus of the present study.

- Tables and figures have been disaggregated by gender where possible.