PEER REVIEW HISTORY

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ARTICLE DETAILS

TITLE (PROVISIONAL)	Overweight in Indonesia: an observational study of trends and risk factors among adults and children
AUTHORS	Oddo, Vanessa; Maehara, Masumi; Rah, Jee

VERSION 1 – REVIEW

REVIEWER	Tantut Susanto Universitas Jember, Indonesia
REVIEW RETURNED	01-May-2019

| GENERAL COMMENTS | Dear Authors,
The present manuscript "Overweight trends and determinants among adults and children in Indonesia" have focused on identifying factors that contributed overweight among adults and children in Indonesia. Regarding using secondary data analysis based on cross-sectional study of Indonesian Family Life Survey, this manuscript should be improve for publication. The manuscript was needed major revision.
1.   Abstract
In method: Re-write what is IFLS more detail of components survey?
In results: The increasing of overweight in overtime is 100%, please described the prevalence in the point of time to the end of point time.
2.   Strengths and Limitations
•   Which is the limitation and which is the strengths?
•   This study employ cross-sectional, therefore we didn't know the causal association. Please describe in your discussion? Then point energy dense and physical activity, please explain this limitation in your discussion?
3.   Introduction
a.   I think generally. In introduction part, the sentence was in connection interruptions about the changing of life style Indonesian people which correlated with overweight? so I think introduction part should rewritten simple and concise. Please describe the condition social economic and the regulation changing in health in Indonesian setting that maybe contributed the overweight problems.
b.   The author is failed to explain the topic of research in the first introduction. I think it is better to explain what is the problem, what is solution, and conclusion of your research in this study on the first paragraph. Then you can explain each variables or topic your research in the next paragraph.
c.   Please write restatement of your thesis statement in the last paragraph for your study to make clear of your purpose of study.
4.   Method |

| | a.   Please describe the ethical consideration in this study? Where did you got the IRB? Please describe more, where you got the secondary data? Have you got permission from Indonesian government (Ministry of Health Department of Indonesia)?
b.   Please describe more about IFLS in Indonesian setting, how they got the sample participants in their survey? The authors just mentioned the number of provinces?
c.   Could you add the format checklist of IFLS in supplementary document in this manuscript to clarify the variables of survey?
d.   Some variable in survey question is unfamiliar to understand. What is "decision making"? how to measure "mental health"? How to collect food intake in IFLS in 2000 and 2007?
e.   Children aged more than 11 years were allowed to respond for themselves? It is unclear based on IRB and ethical for conducting research, because they have under 17 years to give consent and making decision? Please describe this issues?
f.   Could you describe about Indonesian condition/characteristic in method section about their condition changing in lifestyle for demography and infrastructure?
5.   Results
No comment
6.   Discussion
In the discussion it is suggested that you do not restate the results. Authors should add their own comments. We think this part should rewritten, what is "good" and "bad" in this study? Please use the lifestyle and social economical Indonesian condition in the time of study for discussion your results?
There are some limitation of your study based on IFLS, please discuss this issues more deeply in your discussion that influenced your finding?
The conclusions presented are quite limited with minimal application to practice that is useful. How to do a multipronged strategy regarding your results study?

7.   References
References should be control blind for the authors references. |

GENERAL COMMENTS	This is a fairly straightforward publication that uses secondary data with inherent limitations that have been adequately discuss. My only reservation even though the information are publicly available IFLS it should have a source (no found in the reference list) and having used them, it should be mention under acknowledgement. It would be good if this paper be look at by a statistician to ensure they are in order.

VERSION 1 – AUTHOR RESPONSE

Reviewer 1

Abstract
1. In method: Re-write what is IFLS more detail of components survey?

   We have added in the following information to the methods section of the abstract:

   "The IFLS is a home-based survey of adults and children that collected data on household characteristics (size, physical infrastructure, assets, food expenditures), as well as individual-level educational attainment, occupation type, smoking status, and marital status. These analyses utilized data on the self-reported consumption of ultra-processed foods and physical activity. Anthropometrics were measured."

2. In results: The increasing of overweight in overtime is 100%, please described the prevalence in the point of time to the end of point time.

   We have edited the abstract to describe the prevalence points rather than the percent increase:

   "Between 1993 and 2014 the prevalence of overweight among adults doubled from 17.1% to 33.0%. The prevalence of overweight among children under-five years increased from 4.2% to 9.4% between 1993 and 2007, but then remained relatively stagnant between 2007 and 2014. Among children aged 6-12 years and 13-18 years, the prevalence of overweight increased from 5.1% to 15.6% and from 7.1% to 14.1% between 1993 and 2014, respectively."

3. Strengths and Limitations: Which is the limitation and which is the strengths? This study employ cross-sectional, therefore we didn't know the causal association. Please describe in your discussion? Then point energy dense and physical activity, please explain this limitation in your discussion?

   In the strengths and limitations section, we've now included a qualifier to make the study strengths:

   - A key study strength is that we are able to compare overweight trends over time among all age groups, explore the consumption of ultra-processed foods and physical activity, and investigate hypothesized risk factors for overweight, using regression-based methods.
   - We use a recent dataset that is nationally representative of Indonesia.

   We also denote key study limitations:
   - A key limitation is that we largely employ cross-sectional data and therefore, we cannot infer any causal associations.
   - Data on the consumption of a select number of ultra-processed foods was only collected in 2014, which limits our ability to make conclusions about the association between ultra-processed foods and overweight.
   - Physical activity levels were based on respondent recall.

   We also note these limitations on page 27.

Introduction

4. I think generally. In introduction part, the sentence was in connection interruptions about the changing of life style Indonesian people which correlated with overweight? so I think introduction part should rewritten simple and concise. Please describe the condition social economic and the regulation changing in health in Indonesian setting that maybe contributed the overweight problems.

Thank you for this comment. We have considerably revised the introduction section, and believe that it is written more simply and concise. While being as concise as possible, we have aimed to briefly describe the conditions that have led to an increase in overweight prevalence in this setting:

"Several factors have likely contributed to the increasing prevalence of overweight in Indonesia. First, economic development, urbanization, and globalization have altered the food environment in Indonesia [4], as these factors result in easier access to and demand for processed foods [5,6]. In Indonesia, food availability per capita has increased by 40% over the last two decades, which is largely driven by an increase in the availability of fats (e.g. palm oil) [7]. Subsequently, poor dietary habits are now common among Indonesians. Data from the 2013 National Basic Health Research Survey indicated inadequate consumption of fruits and vegetables among the majority of Indonesians, and one prior study reported that higher consumption of meat and dairy was associated with a higher prevalence of obesity in Indonesia [8]. Prior evidence from Indonesia and the Southeast Asia region also suggests widespread consumption of ultra-processed foods and a positive association between consumption of processed foods, meat, dairy, and "Western foods" and overweight prevalence among children and adults [7–9]. Second, economic development and urbanization also result in decreased physical activity and the Indonesian population is increasingly adopting a more sedentary lifestyle [10–13]. In part, this is due to changes in technology, which have led to more mechanized agricultural production and shifts away from agricultural-based employment. In addition, Indonesians perceive that increased motorized transport and rapid changes in the built environment have resulted in reduced physical activity [14]. Limited data also suggest that there are few bike lanes, sidewalks, or parks in Indonesia [7]."

5. The author is failed to explain the topic of research in the first introduction. I think it is better to explain what is the problem, what is solution, and conclusion of your research in this study on the first paragraph. Then you can explain each variables or topic your research in the next paragraph.

Thank you for this suggestion. We have revised the introductory paragraph. First, we provide a brief overview of the problem:

"Indonesia is undergoing a nutrition transition as one-third of adults are now overweight or obese. Nutrition transition theory suggests that economic development, urbanization, and globalization result in an increase in the consumption of ultra-processed foods and a decrease in physical activity [2,3], which subsequently lead to a higher prevalence of overweight and non-communicable diseases. Context specific policy, food systems, sociocultural norms, and socioeconomics are also thought to play a role [3]. Mitigating the obesity pandemic through appropriate programs and policies requires a better understanding of setting-specific trends and their underlying determinants. Yet, prior studies provide limited information on the changing prevalence and risk factors for overweight, by age group, in Indonesia."

We then note the solution or objective of this study:

"We aimed to fill this gap in the literature by detailing overweight prevalence over time and investigating the relation between key risk factors and overweight, among all age groups in Indonesia."

We have refrained from noting our main conclusions in the first introductory paragraph, as this is fairly atypical in health journals. However, if the reviewer and editor want us to detail our main findings and conclusions in the introduction, we are happy to revise further.

6. Please write restatement of your thesis statement in the last paragraph for your study to make clear of your purpose of study.

We have aimed to make the study objective clearer by revising the last paragraph of the introduction, which now states:

"The objectives of this study were two-fold. First, we document the changes in overweight/obesity prevalence that have occurred in Indonesia, between 1993 and 2014, among adults (aged $\geq$ 19 years), adolescents (aged 13-18 years), school-aged children (aged 6-12 years), and young children (aged 0-5 years). Second, this study provides a comprehensive examination of risk factors for overweight, by age, using regression-based methods, which better account for confounding."

Methods

7. Please describe the ethical consideration in this study? Where did you got the IRB? Please describe more, where you got the secondary data? Have you got permission from Indonesian government (Ministry of Health Department of Indonesia)?

Thank you for this comment. The use of these data does not require permission from the Indonesian Government. IRB approval was obtained by the University of Gadjah Mada and RAND. Survey data were obtained online (https://www.rand.org/well-being/social-and-behavioral-policy/data/FLS/IFLS/ifls5.html). A link to the data is provided in the "data statement" section.

We have added in a clarifying ethics statement for this analysis (page 11):

"The IFLS was approved by Institutional Review Boards in the United States (at RAND) and in Indonesia at the University of Gadjah Mada. Survey participants provided written informed consent. A parent or guardian (typically the mother) provided informed consent for children younger than age 11 [14]. The data used for this study are retrospective and the authors did not have access to any identifying information. Neither patients nor the public were involved in this secondary data analysis. As such, ethical approval was not required."

8. Please describe more about IFLS in Indonesian setting, how they got the sample participants in their survey? The authors just mentioned the number of provinces?

To the extent feasible (i.e. based on what is available in the user's manual), we have aimed to provide additional detail on how survey participants were included (page 7):

"As described in detail elsewhere [17], the original, multi-stage sampling frame was based on households from 13 out of 27 Indonesian provinces: North Sumatra, West Sumatra, South Sumatra, Lampung, DKI Jakarta, West Java, Central Java, Yogyakarta, East Java, Bali, West Nusa Tenggara, South Kalimantan, and South Sulawesi. These provinces were selected to maximize representation of the population, capture the cultural and socioeconomic diversity of Indonesia, and be cost-effective. The sample represented approximately 83% of the Indonesian population in 1993 [17]. Within each of the 13 provinces, 321 enumeration areas were randomly chosen from the nationally representative sample frame used in the 1993 National Socioeconomic Survey. Urban areas were over-sampled in the original survey; 20 households were randomly selected from each urban enumeration area and 30 households were randomly selected from each rural enumeration area. Original and split-off households were re-contacted in subsequent survey waves. Indonesia now has 34 provinces, as eight have been added since 1999. As individuals moved between provinces within Indonesia over time, additional provinces were represented in the survey. In 2014, 24 provinces were represented."

9. Could you add the format checklist of IFLS in supplementary document in this manuscript to clarify the variables of survey?

In the Supplemental Table 1 (and below for your reference) we now include a list of the related variables available in the survey.

		1993	1997	2000	2007	2014
Household-Level Factors						
Urbanization	Urban/Rural	*	*	*	*	*
Wealth	Asset type	*	*	*	*	*
Expenditures	Soda, snacks, cooking oil, rice	*	*	*	*	*
Family Size	Number in household	*	*	*	*	*
Individual-Level Factors						
Adults						
Demographics	Age, Gender, Marital Status	*	*	*	*	*
Education	Highest education attained	*	*	*	*	*
Employment	Worked in last week, occupation	*	*	*	*	*
Parity	Among ever married women	*	*	*	*	*
Smoking	Ever smoker, currently smoking	*	*	*	*	*
Physical Activity	Vigorous, moderate, walking, last 7d	---	---	---	*	*
Children						
Demographics	Age, gender	*	*	*	*	*
Parental Characteristics	Education, employment, overweight	*	*	*	*	*
Early Life Nutrition[1]	Ever breastfed, exclusively breastfed	*	*	*	*	*
Diet						
Instant noodles	Days per week, mean number days	---	---	---	---	*
Soft drink (e.g. coca cola, sprite)	Days per week, mean number days	---	---	---	---	*
Fried snacks (e.g. tempe, tahu)	Days per week, mean number days	---	---	---	---	*
Fast Food	Days per week, mean number days	---	---	---	---	*
Staple Foods (e.g. rice, eggs, fish)	Days per week, mean number days	---	---	*	*	*
Anthropometry and Health						
Height		*	*	*	*	*
Weight		*	*	*	*	*
Waist Circumference		---	---	*	*	*
Blood Pressure		---	*	*	*	*
Pulse		---	*	*	*	*
Medication Use		---	---	*	*	*
Dried Blood Spots[1]		---	---	---	*	*

* data are available in given year   --- data not available

[1] Queried among ever married women for children they had in the last 5 years

10. Some variable in survey question is unfamiliar to understand. What is "decision making"? how to measure "mental health"? How to collect food intake in IFLS in 2000 and 2007?

We have aimed to streamline this section by only mentioning the questions that were included in this analysis. Thus, we no longer list "decision making" or "mental health" because these variables were not utilized in our analyses. For the reviewer's reference, decision making refers to who in the household makes decisions about expenditures on food eaten at home or children's health, among other factors, and mental health was assessed via the Center for Epidemiologic Studies Depression Scale.

We also have added details regarding how food intake questions were asked and clarified that intake was self-reported by the respondent. On page 8, the paragraph now reads:

"Beginning in 2000, adults were also asked about their food intake in the past week; specifically, respondents indicated whether they ate each food type (e.g. in the last week, did you eat any [....]) and the frequency of consumption (e.g. how many days in a week did you eat [...] in the last week). In 2000 and 2007, self-reported diet questions focused on staple foods (e.g. rice, eggs, dairy) and iron- and vitamin-A rich foods (e.g. meat, green leafy vegetables, carrots, sweet potatoes). Ultra-processed foods (instant noodles, fast food, soft drinks, fried snacks) were added in 2014."

11. Children aged more than 11 years were allowed to respond for themselves? It is unclear based on IRB and ethical for conducting research, because they have under 17 years to give consent and making decision?

Per the user's manual and copy of the survey, children aged 11-19 years old were permitted to provide informed consent themselves. This was approved by the study IRB obtained by the RAND IRB (the company who fielded this survey) and in Indonesia at the University of Gadjah Mada. We have added in the following sentence for clarification: "A parent or guardian (typically the mother) provided informed consent for children younger than age 11 [14]."

12. Could you describe about Indonesian condition/characteristic in method section about their condition changing in lifestyle for demography and infrastructure?

We have described changes in lifestyle in the introduction section (pages 5 and 6). In addition, we have added the following information to the methods section to provide additional context:

"Indonesia is the world's fourth most populous country, home to approximately 260 million individuals, and is the largest economy in Southeast Asia [14]. Indonesia's gross domestic product per capita has steadily risen, from $807 in the year 2000 to $3,877 in 2018 [15]. Over the last forty years, Indonesia has experienced a process of rapid urbanization and industrialization, which have contributed to Indonesia's changing infrastructure. More than half of the population now live in an urban area and urbanization is increasing at a rate of 2.3% annually. Economic development and urbanization are related to changes in diet and physical activity. At the same time, the demographic transition (i.e. the shift from a pattern of high fertility and high mortality to one of low fertility and low mortality) affects and is affected by nutritional change. Indonesia is in the middle phase of their demographic transition, expecting to harness the peak of demographic dividend between 2020 and 2030 [16]."

Discussion

13. In the discussion it is suggested that you do not restate the results. Authors should add their own comments. We think this part should rewritten, what is "good" and "bad" in this study? Please use the lifestyle and social economical Indonesian condition in the time of study for discussion your results?

We have edited the first paragraph of the discussion to provide a very brief overall of the results in such a way that highlights some of the key "bad" versus "good" findings:

"Several aspects of our results paint an alarming picture of obesity-related health in Indonesia. Increases in overweight prevalence were observed among all groups. Between 1993 and 2014 the prevalence of overweight increased by 100% and 88%, among women and men, respectively. Similarly, among school-aged children and adolescents, the prevalence of overweight increased by more than 100% between 1993 and 2014. Over the past two decades, more rural than urban residents became overweight, and in 2014, the proportions of overweight adults were evenly distributed among across wealth quintiles, suggesting that overweight is now prevalent among the poor. Moreover, consuming instant noodles (high in sodium) and fried snacks (high in fat) are now regularly consumed among adults and children in Indonesia and consuming fast food and fried snacks were associated with higher odds of overweight. At the same time, the rate of overweight has remained stagnant among young children, between 2007

and 2014, and being employed in a physically demanding job (i.e. agriculture-based labor) remains protective against overweight.

In addition, as relevant we have added several sentences to the discussion, which note the "condition" of Indonesia. For example, when describing the findings related to education and wealth, we now first note the following:

"Paralleling increased country-level economic development, the within country socioeconomic context has changed in Indonesia. Poverty has dramatically decreased over the last 20-years, while educational attainment has increased; in 2016, approximately 34% of Indonesians had at least completed upper secondary school, compared to only 26% in 2006 [14,35]. Relatedly, we found that higher education was associated with higher odds of overweight among both men and women."

14. There are some limitation of your study based on IFLS, please discuss this issues in your discussion that influenced your finding?

We note the key limitations of the IFLS, beginning on page 27. We also now state that "These inherent limitations in the IFLS and the potential for unmeasured confounding may have attenuated results related to food consumption and physical activity."

15. The conclusions presented are quite limited with minimal application to practice that is useful. How to do a multipronged strategy regarding your results study?

We have aimed to be cautious in our conclusions given the cross-sectional design of this study. We believe that we have extensively noted how our findings relate to practice. Importantly, these findings suggest that in combination, interventions/policies/programs, need to reach all segments of the population and not just women and pre-school aged children who are most often the target population of nutrition interventions. Beginning on page 26 we state the following and try to better connect our findings to practice:

"A recent report by the Economist Intelligence Unit reviewed obesity policies and interventions that are being/have been tested in Southeast Asian countries [7]. Interventions that targeted food intake showed the most promise to reduce obesity. Traditionally, nutrition programs have focused on women and young children. But our findings call for urgent action to mitigate overweight among all age-groups in Indonesia and highlights that need for prevention strategies that also target men and boys, as well individuals in rural areas. A multipronged strategy would include approaches that aim to enhance the food environment, improve the food system, and provide effective social behaviour change communication [50,51]. Fiscal measures, such as food- and beverage-related taxes, to reduce the consumption of unhealthy items and subsidies for fruits and vegetables production and consumption, may be effective in improving the overall food environment and are a feasible approach for targeting most segments of the population in Indonesia [51–54]. Regulatory measures to control warning labelling systems and marketing of unhealthy foods and beverages may also improve the obesogenic environment [51,55,56]. It is also important to address overweight early, as child and adolescent obesity tracks into adulthood [57,58]; interventions aimed at improving nutrition literary and eating and physical activity behaviours through school-based nutrition education and effective social and behaviour change communication to mobilize the support of the entire community also warrant consideration [51,59,60]. Using technology-based platforms, such as social media, to deliver obesity-prevention messages may be a promising strategy in Indonesia given that population is quite young. A multi-pronged strategy that utilizes a number of delivery platforms (e.g. policy, healthcare system, schools) is needed in order to mitigate the obesity epidemic among all age groups in Indonesia."

References

16. References should be control blind for the authors references.

We are happy to make edits to the references, but we are unclear what the reviewer is suggesting with this comment.

Reviewer 2

17. This is a fairly straightforward publication that uses secondary data with inherent limitations that have been adequately discuss. My only reservation even though the information are publicly available IFLS it should have a source (no found in the reference list) and having used them, it should be mention under acknowledgement. It would be good if this paper be look at by a statistician to ensure they are in order.

Thank you for this comment. We now cite the data source, which includes providing the website where all of the data can be downloaded. Although we do not explicitly have a Statistician as a co-author, all of the authors have training in biostatistics and epidemiology. The lead author (Dr. Vanessa Oddo) has published approximately 20 peer-reviewed publications, for which she conducted the analysis.

VERSION 2 – REVIEW

REVIEWER	Tantut Susanto Universitas Jember, Indonesia
REVIEW RETURNED	18-Aug-2019

| GENERAL COMMENTS | Dear Authors,

The manuscript entitled: Overweight in Indonesia: an observational study of trends and risk factors among adults and children is very useful for improving public health policy in Indonesia.
This manuscript is well done to revise based on previous comments.
The results of abstract was improved and the introduction is more clearly to describe the condition of indonesia. The method is definitely improved based on the objective of study which described on the results. The discussion is explained clearly based on the results, although the authors should explain your limitation. Please describe the limitation of your study.
This manuscript could be accepted for publication. |