Author's response to reviews

Title: Inverting the pyramid! Extent and quality of food advertised on Austrian television

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Author's response to reviews: see over
We thank the reviewers for the insightful comments to our manuscript. The manuscript has been modified by taking into account all of your comments and thereby, we believe, increasing the quality of the manuscript profoundly. Below you can find the itemised responses to the reviewer’s suggestions and comments.

Moreover, corrections to the English were performed by a native English speaker throughout the ms; we accurately reviewed the manuscript ourselves, identified and corrected occurring spelling and wording issues.
Reviewer #1: Kendra Kattelmann

1. Line 175--Please add author and year of the method that you are referencing.
Thank you for this comment. We added the author of the method and a sentence to clarify our statement. The lines now read as follows (line 190-193):

“In a second step, we identified if food advertisements were targeted at children. This was conducted according to a dichotomous categorization scheme adapted from Chapman et al (2006) (Table 1).”

2. Line 189-190--To ease reading, please add that the list is the categories of food or that the list is the Austrian categories of food with the additional category. Also, remove the extra comma.
We added the sentence for clarification of the list of categories for better comprehension and removed the extra comma for the category ‘other food not further specified’ throughout the ms, tables and figures. The lines now read as follows (line 208-220):

“In addition, we added one extra category called ‘other food not further specified’ to complement the categories of the Austrian Food Guide Pyramid. All discrepancies emerging during the categorization process were discussed within the research team and conflicting food categorizations were resolved in consensus. Hence, we analyzed the video material according to following eight food categories:

- Fatty, sweet and salty snacks (e.g. cakes, fast-food products, chips)
- Fats and vegetable oils (e.g. olive oil, nuts, butter)
- Fish, meat, sausages and eggs (e.g. tuna, salami, processed meat)
- Milk and dairy products (e.g. yogurt, cheese, milk)
- Cereal products and potatoes (e.g. bread, granola, rice)
- Vegetables, legumes and fruits (e.g. beans, salad, tomatoes)
- non-alcoholic beverages (e.g. water, tea, coffee)
- other food not further specified (e.g. convenience food, baby food)”

3. Lines 198-199. Is there something missing? You state that you rank them for frequency, then you describe categorizing for type. Please clarify why you categorized and ranked.
Thank you for this comment on the method description. In our previous version of the ms, the approach was only poorly described, thank you for pointing this out. We rephrased this part of the methods section to make our approach more reasonable. Please find this revised version of the methods section from line 221ff:

“We assessed the on-air frequency of the advertisements by counting the total number of advertisements. We interposed this step to analyze the dataset according to the Austrian Food Guide Pyramid to assess how the foods depicted on TV match with the national dietary recommendations.
In a second step, the displayed products were analyzed according to the EU Pledge Nutrition Criteria. This was conducted to assess how the foods depicted on TV match with the EU Pledge Nutrition Criteria. According to the EU Pledge Nutrition Criteria 9 different food categories are defined. For this we re-coded the displayed advertisements accordingly and conducted nutrient profiling analysis with those foods who initially passed the category criteria (exclusion criteria: food groups such as soft drinks, sugar and sugar-based products and misleadingly declarated foods; see supplementary material, additional file 1).

For further analysis, the nutritional information of the food products was obtained directly from the nutrition information on the label of the promoted products during supermarket visits or online. When nutrition information was not readily available, manufacturers were contacted. The data was then compared with the nutrient threshold limits and the food components that should be encouraged as defined by the EU Pledge Nutrition Criteria by the first and second author of this study.”

We added the level of significance accordingly to the statistical analysis section (line 243-244).

5. Lines 230-236. Are you describing all food advertising or just those targeting adults?
Thank you for this comment. In this section we refer to all food ads, this was not well described in the previous version of the ms, whether we are referring to all advertisements or just those targeted at children. We clarified this section in the revised version of the ms (please now see line 265 and 271):

“According to the Austrian Food Guide Pyramid, 49.1% of all the displayed food were for fatty, sweet and salty snacks, 18.8% for convenience food and 15% for milk and dairy products. Displaying frequency of vegetables, legumes and fruits and non-alcoholic beverages was 4.5%, while 4.1% of the food advertisements were for fats and vegetable oils. Fish, meat, sausages, and eggs were addressed in 2.7% of the food advertisements and cereal products and potatoes were displayed the least frequent (1.3%) (Figure 2).”

6. Line 376--You state that the ads did not conform to the newly established EU guidelines in the conclusion. But you told me in the methods that the you did the analysis before the required date of implementation of the guidelines. Why would you expect the ads to meet the EU nutrition guidelines before the required date of implementation? Are the EU nutrition guidelines required or only a suggested guideline?
Thank you for this comment. The EU Pledge Nutrition Criteria are based on self-regulation of the main advertising food companies in Europe (representing 80% of the advertised food). Thus, there is no legal requirement for the companies to fulfil the advertisement restrictions and follow the criteria. So to speak, suggested guidelines, but originally co-shaped by the participating companies which were involved in formulating the criteria throughout the process. There is clear evidence that the self-regulation system of these pledges do only
work mediocre as shown by Kunkel (2015) for the US interventions on food marketing for children; and additionally a review of all worldwide existing self-regulation schemes by Ronit and Jansen (2014) showed that self-regulation schemes seem to be ineffective in reducing advertisement of unhealthy food (in general and not only for children). Because there is no good monitoring system, it is important to analyze the impact and implementation of the EU Pledge Nutrition Criteria. There are annual reports on the progress of the reports, but these are not based on scientific assessment methods (please, see the reports on this webpage: http://www.eu-pledge.eu/content/annual-reports). It was our initial impulse to design this study to provide baseline values and establish a method on how to assess advertisement for children.

We fully agree with your statement that there would be no need to implement guidelines prior to the required date of implementation of these guidelines. We conducted the analysis prior to the date of implementation (prior to 31st of December 2014). The EU Pledge Nutrition Criteria were first published in 2012 and companies were encouraged to implement the criteria until the end of 2014. Therefore, the reasoning for our study was to assess a status quo prior to this deadline. In the revised version of the manuscript we address your raised concerns in following sections and hope this makes it more reasonable for the reader (please see line 73-80; and in the conclusion section: line 436-437).
Reviewer #2: Tanya Horacek

Abstract
1. line 25 - are sure you want to use the word screening
Thank you for pointing this wording issue out. Indeed, screening frequency is not a good description. We changed this expression to displaying frequency throughout the ms, the table and figures.

2. line 27 you actually did not categorize the non-food items
Thank you for indicating this erroneous description. You are totally correct, we omitted this line. It now reads (line 29 -30):

“Promoted food products targeted at children or adults were identified.”

3. line 34 Sentences should not start with a # 92.4%
We modified the sentence accordingly (see line 37 – 39):

“Of all food advertisements targeted at children, 92.4% was for fatty, sweet and salty snacks, while no advertisements for vegetables, legumes or fruits were shown.”

4. line 38 this does not make sense “64.7% of the displayed food (missing the word advertisement??) featured ... confusing does not match what you convey in your results (line 257... so is this in general – all adds) really only 10% passed
Thank you for pointing out this important and conflicting issue. Bad wording on our part may be responsible for a misunderstanding. We changed the wording in the abstract accordingly to make our point more clear. The EU Pledge Nutrition Criteria define thresholds for nutrients to limit and components to encourage (which are different depending on the food category). The following line as copied from the EU Pledge Nutrition Criteria:

“The common nutrition criteria are based on a set of “nutrients to limit” and “components to encourage” (nutrients and food groups). A system taking into account both is more in line with the core objective of the EU Pledge – to foster innovation, reformulation and competition for a shift towards advertising of better-for-you products – than a system based solely on “nutrients to limit” (EU Pledge Nutrition Criteria, p 4).”

From our perspective, it is important to report data for nutrients that need to be limited as well as desirable components, because this is in the sense of the basic concept of the EU Pledge Nutrition Criteria. For example when analyzing Milchschnitte (milk slice in English), the high amount of saturated fatty acids (16.6g/100g) and total sugars (29.5g/100g) are above threshold limits for these nutrients as defined in the EU Pledge Nutrition Criteria but at the same time it contains high amounts of protein (7.9g/100g). This makes Milchschnitte a food that should not be advertised according to the pledge criteria but contains components
to encourage as well. We analysed our data according to both criteria as propagated by the EU Pledge (nutrients to limit AND components to encourage) to provide the full picture of the advertised foods in our sample. If we would have left out the reporting on the desirable components, for us it would be one-sided reporting and our very important main results (the high frequency of unhealthy food advertisement for children) probably more vulnerable for critique.

To address this issue in our ms, we changed the wording in the referred lines of the abstract (line 43-45) and added more precise description of the EU PLEDGE (please see 113-140)

- (line 257... so is this in general – all adds) really only 10% passed

You are totally correct. Only 10% of the advertisements that passed the criteria for category also passed all criteria for nutrient-based threshold analysis. Which makes only for 4.1% of the total advertisement targeted at children. Therefore 95.9% did not pass the criteria check.

We believe that our data reporting was not very comprehensive in the previous version of the ms and therefore we revised the whole section „Nutrition Quality of the Advertised Food Targeted at Children” (please see in the results section: 281-309).

5. line 41 rewrite – don’t use “we showed.... To causal

We modified this sentence accordingly. It now reads as follows (line 47-49):

“The present research suggests that the majority of advertised food for children do not conform with the pledged criteria as defined in the EU Pledge Nutrition Criteria and almost all advertisements would be prohibited.”

6. line 42 you say permitted don’t you mean prohibited?- contradicts what you said regarding the 95.9%

Thank you very much for pointing out this profound error. We corrected as suggested (see point 5 above and according reference in the ms, line 49).

**Background**

Good use of literature to support your study

Thank you very much. This is an important basis for our research.

7. Line 49 “character?”
We modified the sentence accordingly, see line 56:

“Food marketing holds double-edged characteristics.”

8. Line 59 The effect of TV on eating habits was shown
We modified the sentence accordingly (see line 66-67):

“The effect of TV on eating habits was shown in both laboratory [1] and epidemiological
The primary goal of our study was to assess a status quo of food advertisement targeted at children prior to the date on which the suggested EU Pledge Nutrition Criteria came into force (prior to December 2014). We believe that this is important, especially because the EU Pledge Nutrition Criteria are not compulsory for the participating companies and no in-depth monitoring for the implementation is designated. Therefore the development in this field should be examined regularly to detect how the system of self-regulatory and voluntary participation works out after all. Our study provides a baseline finding. We modified the section for better understanding of the study aims and changed the wording accordingly (see line 73-83):

“The present study aims to identify the extent of food marketing and the nutritional quality of the advertised food targeted at children on Austrian TV. To assess the current status quo of food advertisements for children, we analyze the food quality based on the suggested guidelines for nutritional criteria in the European Union (EU Pledge Nutrition Criteria). We analyze advertisement data before the guidelines came into force (prior to the 31st of December 2014) to set a starting point for future analysis of the potential impact of the EU Pledge Nutrition Criteria on food advertisement targeted at children.

To date, there is no study analyzing the Austrian TV landscape based on the recently established criteria and only a few international studies describe the status quo before the voluntary commitment for the new criteria came into force.”

We corrected the wording, see point 9 above and spelling issue, see line 127.

The current study

We corrected this issue throughout the ms and improved the description of the EU Pledge summary you are referring to (please see line 113-140).

Lines 134-136 (ii and iii) might be assumed given your purposed but you should make it more clear in your purpose how you compared your data to the EU Pledge Nutrition Criteria not just the Austrian dietary guidelines and Food Guide Pyramid (reference needed)

We rephrased points (ii) and (iii) and inserted the reference for the Austrian Food Guide Pyramid. The final passage of the Background section now reads as follows (line 145-152):
The aim of this study is threefold: we (i) analyze a set of advertisements broadcasted for children on six different TV stations. We split the advertised food into eight food categories based on the Austrian dietary guidelines as defined by the Austrian Food Guide Pyramid [5]; (ii) we provide data regarding the nutritional quality of food advertisements targeted at children by comparing the displayed food with the pledged EU Nutrition Criteria, and (iii) we discuss the results and their implications in a broader context of public health nutrition.

Methods

13. Line 141 Did both coders do step 2?
The first and second author of the study conducted the second step of analyzing the displayed foods according to the EU Pledge Nutrition Criteria. We added this in the referred section, this now reads as follows (please see line 236ff):

“The data was then compared with the nutrient threshold limits and the food components that should be encouraged as defined by the EU Pledge Nutrition Criteria by the first and second author of this study.”

Page 8

14. line 158 (cite studies)
Thank you for this comment, we included a references for studies which did analyzed segmented recording times and those studies that solely reported data from kids programs to make our point more clear. The section now reads as follows (please see line 174-178):

“We recorded full days of television screening (6am - 9pm) to get a complete and consistent dataset of recordings. Previous studies reported segmented recording times (e.g. morning, after-school hours) [6] or solely recorded kids programs [7, 8] which may have led to incomplete datasets for the analysis. In this study, full days from 6am to 9pm and all types of programs were recorded to reduce the chance of missing data. All stations broadcasted their program in German.”

15. line 175 sentence hanging method adapted from...
Thank you for this comment. We added the author of the method and a sentence for clarification. The lines now read as follows:

“In a second step, we identified if food advertisements were targeted at children. This was conducted according to a dichotomous categorization scheme adapted from Chapman et al (2006) (Table 1).”

16. line 177-180 so IRR is only for categorization of commercial and audience orientation?—not for the food categorization???
Thank you for this comment. You are absolutely right about this. The Inter-coding reliability check was only conducted for the audience orientation and not for the food categorization.
We adapted this standard procedure from Huang et al (2006) to ensure that the correct advertisements were picked from the raw material (with very good inter-coding reliability of 95.8%). The food categorization was not considered to be vulnerable for possible erroneous categorization and therefore only one coder (the first author of the study) conducted this step. We added a sentence for clarification in this section, this now reads as follows (please see line 194-200):

“The video material was reviewed by two coders fluent in German (author 2 and 3). Initial coding of the video material was performed by one coder, a second coder was given the same coding form and instructions to code a 10% sample of the total duration of recordings (36h). Inter-coder reliability was calculated using the following formula: number of agreements*100 / number of disagreements. This reliability check was only performed for audience orientation and not for the food categorization procedure.”

17. Line 197—would these other foods fall into a category or mix of categories? What happens to foods of mixed categories?
We categorized all displayed foods according to the food categories provided by the Austrian Food Guide Pyramid. Because the Austrian Food Guide Pyramid does not contain convenience products in their recommendations e.g frozen pizza, instant noodle soup or baby food, we added this very important category “other food not further specified”. As you pointed out correctly, for some foods, categorization was not always straightforward, but conflicting food products were discussed within the research team. We added one sentence in the methods section for clarification (line 209 -2012):

“All discrepancies emerging during the categorization process were discussed within the research team and conflicting food categorizations were resolved in consensus. Hence, we analyzed the video material according to following eight food categories:“

18. Line 198-199 so you only ranked or categorized the commercials with the most frequent online air time? Line 200 How do you pass a category criteria? Line 201 How were the products analyzed by “means” of nutrient profiling?
Thank you for this comment on the method description. We rephrased this part of the methods section addressing your raised questions. The description of this section is now more comprehensible in the revised version of the ms 221 ff:

“We assessed the on-air frequency of the advertisements by counting the total number of advertisements. We interposed this step to analyze the dataset according to the Austrian Food Guide Pyramid to assess how the foods depicted on TV match with the national dietary recommendations.
In a second step, the displayed products were analyzed according to the EU Pledge Nutrition Criteria. This was conducted to assess how the foods depicted on TV match with the EU Pledge Nutrition Criteria. According to the EU Pledge Nutrition Criteria 9 different food categories are defined. For this we re-coded the displayed advertisements accordingly and
conducted nutrient profiling analysis with those foods who initially passed the category criteria (exclusion criteria: food groups such as soft drinks, sugar and sugar-based products and misleadingly declarated foods; see supplementary material, additional file 1). For further analysis, the nutritional information of the food products was obtained directly from the nutrition information on the label of the promoted products during supermarket visits or online. When nutrition information was not readily available, manufacturers were contacted. The data was then compared with the nutrient threshold limits and the food components that should be encouraged as defined by the EU Pledge Nutrition Criteria by the first and second author of this study.”

19. Line 210 – screening frequency—don’t you mean air-time. What stats did you use to compare nutrient values?

- We changed the wording screening frequency throughout the ms (see question 1).

- Thank you for the comment on the statistical analysis. For the statistical analysis of the nutrient values, we compared the content of nutrients in a food product with the defined nutrient thresholds from the EU Pledge Nutrition Criteria (see EU Pledge Nutrition Criteria, Annex II). Therefore we only assessed whether or not the food’s nutrient content is conform or is not conform with the defined nutrient thresholds. Our goal was not to assess how much the nutrient content deviates from the defined thresholds but to analyze conformity/nonconformity of the product with the thresholds. Therefore, no sophisticated statistical method was necessary.

20. Results-if you picked channels that were really geared toward children- it seems very unusual that only 15% of the ads would be oriented toward children.

Thank you for this comment. We agree that 15% of the ads oriented at children is rather low, but as stated in the method section (line 172 - 178) we screened the complete program and not only the program for children. In a very large prospective study by Boyland et al (2011) who recorded 14 different TV stations from 6am to 10pm for a complete year, they found that from all advertisments (n=18.888), 21.8% were targeted at children (n=4.114). Therefore, we believe that the numbers presented in our study are allegeable for this type of study design. We addressed your raised concerns and revised this part of the ms (line 172 – 178):

“In total, 360 hours of broadcast material was recorded, spread equally over all six TV stations. We recorded full days of TV screening (6am - 9pm) to get a complete and consistent dataset of recordings. Previous studies reported segmented recording times (e.g. morning, after-school hours) [6] or solely recorded kids programs [7, 8] which may have led to incomplete datasets for the analysis. In this study, full days from 6am to 9pm and all types of programs were recorded to reduce the chance of missing any data. All stations broadcasted their program in German.”
21. Line 241- How did you decided upon the 290 food advertisements to be included in the nutrient analysis?

Thank you for this comment. Two coders identified advertisement orientation, this resulted in a total number of food advertisements targeted at children (290). At the beginning of the results section (line 247ff), we state that in total there were 1919 food advertisements, 290 of them were targeted at children (15.1%). Those 290 advertisements were further analyzed.

Line 297-300 confusing—make this statement more clear

Indeed, the statement was poorly explained in the previous version of the ms. We revised this section and explain why we believe that the double strategy of nutrients to limit and components to encourage should be interpreted with caution (see line 339-357):

“Notwithstanding the presented data about the displaying frequency of food with negative health effects, our study also showed that 64.7% of the advertisements targeted at children contain desirable food components according to EU Pledge Nutrition Criteria (e.g. high protein content, calcium, vitamin D, vitamin B). The pledge consortium’s reasoning for taking desirable food components into account was to foster innovation, reformulation and competition in the EU. The proclaimed goal of the pledged nutritional criteria is to shift advertising towards improved products [9]. However, by taking a closer look at the food that contain desirable components, almost all of them also contain nutrients to limit. This approach may be an advantage for producers to identify good or problematic formulations of their products. On the other hand, self-regulatory nutrient guidelines were shown to be ineffective in reducing unhealthy food advertisement targeted at children worldwide [10]. As most members of the EU Pledge Nutrition Criteria consortium are mutlinational companies, no pioneering efforts have been made so far [11]. Additionally, the time until a reformulated food (compliant with the pledged criteria) becomes market-ready may take another generation of children watching TV with unhealthy food advertisement. Thus, the finding that 64.7% of the advertisements targeted at children contain desirable food components according to the pledged nutritional criteria should be interpreted with caution.”

Figure 3 should convey how well foods met nutrient criteria.

Thank you for this suggestion. In Figure 3, we used a general visualization to give the reader a complete overview about the conformity and nonconformity with the pledged criteria from EU pledge members compared to non-members. We believe this is an important figure because it shows that there is no difference between member states and non-member states to this date. To see how well single food products meet the defined nutrient criteria, please see supplementary material, additional file 2.

Very odd- given the number of commercials—less than 20 foods were nutrient analyzed.

Thank you for this final comment, this is totally correct. Indeed, we analyzed the nutrient content of 20 foods according to the EU pledge criteria. Those 20 foods were advertised with different frequencies compiling up to 290 food advertisements during the recorded time.
From our perspective the number of advertisements targeted at children is the important number, because the repeated exposure of ads are responsible for a lasting impact on a behavioral level. Therefore, in our analysis we did not refer to the absolute number of different displayed food products but reported the number of broadcasted advertisements (total number of advertisements).
REFERENCES


