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### Conceptual and methodological reflections on the article by Schlüssel et al.

The objective of the article by Schlüssel et al. is to study the association between household food security and overweight/obesity based on the life course approach, taking as the empirical base data on children, adolescent girls, and women studied in the 2006 *Brazilian National Demographic and Health Survey*. Reading the article sparked several reflections. I chose to comment on two points in this dialogue with the authors.

The first comment is conceptual and relates to the life course approach. In my view, the proposed use of this approach (as announced in the title and at the end of the introduction and resumed at the beginning and end of the discussion) was not fully achieved. The theoretical reference for the life course approach adopted by the authors is not clear in either the way it is translated in the method or in the analysis of the results.

In the field of health, the life course approach has been used increasingly in studies on the determination of health problems, particularly chronic noncommunicable diseases, with implications for health policy design<sup>1</sup>. This approach has been valued given the following: (a) evidence that risk factors present in childhood persist into adulthood; (b) evidence of “programming” (particularly fetal programming) as a model for explaining disease etiology; and (c) evidence of intergenerational action of certain risk factors<sup>2,3</sup>. Thus, according to the central idea of the life course approach, what happens during one moment in life influences what happens later (including in future generations)<sup>1,2,3</sup>. The prime empirical base for studies that adopt (or provide the basis for) this approach is that from follow-up studies.

The focus of the study discussed here is the presentation of data from a cross-sectional study referring to different age groups. In the discussion, the comments include one referring to the nutrition transition in Brazil and its influences on the effect of household food security in the accumulation of body fat in different life phases. In other words, the focus of this commentary appears to be the interactions/modulations between a context (a stage in the nutrition transition), a condition (household food security), and an outcome (overweight/obesity) during given moments of life and not the idea described above, that what occurs at one moment in life will

influence subsequent moments. It would thus be interesting if the authors specified which concept of life course approach provided the basis for their study.

The second comment is methodological and relates to the variables and cutoff points used to measure the outcome (overweight/obesity) and the target independent variable (household food security) from the perspective of examining the association between them. The performance of a variable or measure at the collective level (e.g. to estimate prevalence) is not necessarily the same as at the individual level in terms of the capacity to identify the presence of a given event. This issue is crucial in studies on association, since in this type of analysis one wants to identify the presence or absence of the target events as accurately as possible at the individual level. This makes the context of the current study even more relevant, since the authors propose to compare the association between two events in different age groups. This raises the following question: what is the sensitivity (the capacity to classify as positive an individual that actually presents the target condition), specificity (capacity to classify as negative an individual that actually fails to present the target condition), positive predictive value (the probability that an individual classified as positive truly presents the target condition), and negative predictive value (the probability that an individual classified as negative truly fails to present the target condition) for the indicators (variables and cutoff points) used<sup>4</sup>?

In relation to the target outcome, can one assume that the above-mentioned attributes are comparable (similar) for the three age groups? If not, what are the implications for the findings as presented? Can one rule out the possibility that the observed differences between the three groups are due at least partially to methodological aspects? I contend that this possibility cannot be ruled out, since the sensitivity, specificity, and positive and negative predictive values for the indicators used to diagnose overweight/obesity differ between the groups<sup>5</sup>. In the case of the first two parameters, this is due to the cutoff points, and for the latter two it is due to the relationship between the diagnostic criteria and the prevalence of the target outcome.

By way of illustration, let us compare the groups of children and adolescents that were studied. While the cutoff point adopted for children was +2 Z-scores (+2Z), for adolescents it was +1 Z-score<sup>5</sup>. Among children, 7.2% presented BMI-for-age greater than +2Z. Considering that in the reference population 2.3% of the children were above this cutoff, the study group showed an excess prevalence of 3.1 times. In other words,

strictly speaking, for every three individuals classified as above +2Z, two would be “true positives” and one “false positive”. Among adolescent girls (15 to 19 years), 21.9% were overweight, assuming as the cutoff point the 85<sup>th</sup> percentile for BMI-for-age in the reference population (P85) for those 15 to 18 years of age and BMI = 25kg/m<sup>2</sup> for those 19 years old (which is very close to the P85 for this age, namely 25.1). Given that in the reference population 15% of the adolescent girls were above P85, the study group showed an excess prevalence on the order of 1.46 times. In other words, for every three adolescents classified as overweight, one was a “true positive” and two were “false positives”, thus displaying a distinct scenario from that observed in children.

Two other issues deserve comment in the case of adolescents. First, for individual diagnosis, the accuracy of anthropometric indicators is lower than for children and adults, given the strong influence of genetic factors on age at onset, intensity, and duration of the growth spurt, especially among younger adolescents<sup>5</sup>. This aspect cannot be overlooked in the context of a study on association in which the target outcome is measured by an anthropometric indicator. Second, the target outcome was overweight for this group, but obesity for adult women. These two events are not fully equivalent, since the latter only expresses more severe nutritional inadequacy.

Based on the above comments, what are the implications of these differences for examining the association between the outcome and the independent target variable in each age group and especially for the comparison of the observed association between the groups?

In short, I believe that a more in-depth reflection on the study's conceptual and methodological aspects could help produce a more mature analysis of the results.

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