DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service
Centers for Disease Control and Prevention

National Center for Health Statistics
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July 24, 2017

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Dear Dr. Archer:

This letter is in response to your February 24, 2017 email communication to the Centers for Disease Control and Prevention (CDC) regarding its February 17, 2017 Morbidity and Mortality Weekly Report (MMWR) publication, "*QuickStats*: Percentage of Total Daily Kilocalories Consumed from Sugar-Sweetened Beverages Among Children and Adults, by Sex and Income Level — National Health and Nutrition Examination Survey, United States, 2011–2014" (Vol. 66, No. 6, Page 181). In your email, you state that the methods and data contained in this publication are pseudo-science and invalid and should not be used; thus you request that the MMWR article be retracted or corrected.

The *QuickStats* named above, provides population-based estimates of the percentage of total daily kilocalories consumed from sugar-sweetened beverages (SSB) on a given day among US children and adults. These analyses are from the National Health and Nutrition Examination Survey (NHANES), 2011-2014, and based on a single 24-hour dietary recall, which was obtained in-person by trained dietary interviewers using the United States Department of Agriculture (USDA)'s standardized Automated Multiple-Pass Method (AMPM) (Moshfegh et al. 2008). Nutrient intakes are estimated from these data using USDA's Food and Nutrient Database for Dietary Studies (FNDDS) (ARS/USDA).

The challenges of dietary assessment based on self-reported data are well-recognized (Labonte et al. 2016, Subar et al. 2015). The strengths of 24-hour dietary recall (e.g., requires short-term memory, less burdensome, less likely to alter eating behavior than food records, does not require high literacy, and can be used with diverse populations), as well as the limitations (e.g., measurement error and recall bias), are also well-documented (Berdainer et al. 2008, Grandjean 2012, Willet 2013). Though there is no perfect method for assessing dietary intake (Labonte et al. 2016, Satija et al. 2015, Subar et al. 2015), the 24-hour recall method is recommended for quantifying "actual" intakes, particularly in large scale surveys (Berdainer et al. 2008, Grandjean 2012, Webb et al. 2013). The 24-hour dietary recall data may be used to obtain information about mean dietary intake for a given day at the population or large-group level and to assess trends in dietary intake (Satija et al. 2015; USDA 2015; Wright et al. 1994). Overall, 24-hour dietary recall provides important information on food, beverage, and nutrient intakes as well as dietary patterns that are important to inform nutrition policy and interventions (Ahluwalia et al. 2016, Hebert et al. 2014, Labonte et al. 2016, Satija et al. 2015, Subar et al. 2015).

As noted above, to collect 24-hour dietary recalls, NHANES uses the USDA's Automated Multi-Pass Method (AMPM) - a computer-assisted 5-step dietary interview system. The AMPM includes the multiple pass format interview with standardized probes and memory cues to help respondents remember and describe foods and beverages consumed. It also allows for more accurate reporting of portion sizes with the aid of 3-dimensional food models and a food model booklet. The AMPM is designed to enhance complete and accurate data collection while reducing respondent burden, minimizing misreporting (Raper et al. 2004), and reducing measurement error (Moshfegh et al. 2008). This method has been validated against doubly labeled water (the reference method for energy intake assessment) (Moshfegh et al. 2008), biomarkers (Rhodes et al. 2013), observed "actual" intakes (Conway et al. 2003, Conway et al. 2004), and measured (weighed) true intakes (Kirkpatrick et al. 2014). These studies indicated that, overall, AMPM yielded intakes that are approximately 10% or less of reference methods (Conway et al. 2003, Conway et al. 2004, Moshfegh et al. 2008, Rhodes et al. 2013) and captured 83% of foods and beverages that were "truly" consumed under observation (Kirkpatrick et al. 2014).

It has long been recognized that self-reported dietary intakes (e.g., 24-hour dietary recalls) are associated with underreporting of energy intake (Moshfegh et al. 2008, Subar et al. 2003, Subar et al. 2015, Willett 2013). This has been demonstrated with NHANES data as well (Briefel et al. 1997, Archer et al. 2013). However, methodological issues have been noted with the Archer et al. study (2013) (Hebert et al. 2014, Hebert et al. 2015, Satija et al. 2015). These include the use of a single day rather than multiple days of 24-hour recall data for individual level assessment and analyses (Hebert et al. 2014, Hebert et al. 2015; Satija et al. 2015); use of predictive equations with cutoffs that could be questioned (Hebert et al. 2014, Hebert et al. 2015); and not accounting for the large percent of the US population that is engaged in dieting behaviors (Ahluwalia et al. 2016).

Various approaches to adjust for misreporting of energy intake have been developed involving adjustment using biomarkers (Freedman et al. 2014; Subar et al. 2003) or statistical models (multivariate, energy-partition, nutrient-density, or residual) that include energy intake (Livingstone and Black 2003; Poslusna et al. 2009). Often energy-adjusted food and nutrient intakes may be described by calculating nutrient density, which may be expressed as the intake of the nutrient of interest in relation to total energy intake (Gibson 2005; Willet 2013). This latter approach was taken in the SSB *QuickStats* to describe calories consumed from SSB in relation to total calories consumed on a given day, expressed as a percentage. Adjusting for energy intake diminishes external sources of variation in reported dietary intake, and to some extent reduces systematic sources of misreporting (Hebert et al. 2015, Willett 2013).

In summary, the SSB *QuickStats* reported energy intake from SSB in relation to total energy intake, thereby presenting % energy from SSB consumed, on a given day. This approach, which relies on energy adjusted data, is recognized to help correct for misreporting error (Livingstone and Black 2003, Poslusna et al. 2009, Subar et al. 2015, Willett 2013) and is utilized commonly by researchers and panels of nutrition epidemiologists (e.g., Dietary Guidelines for Americans) (USDA 2015; Hebert et al. 2015). These findings were based on NHANES 24-hour dietary data collected using a standardized, validated tool (AMPM) that minimizes omissions or errors related to memory using specialized cues and multiple passes to obtain complete and accurate dietary information (Moshfegh et al. 2008, Hebert et al. 2015, Raper et al. 2004).

After careful consideration, we respectfully decline to retract or change this *QuickStats* publication. We appreciate this scientific discourse and anticipate that it will continue through future publications in the scientific literature.

If you wish to appeal this response to your request for correction, you may submit a written appeal or electronic request for reconsideration within thirty (30) days of receipt of our response. The appeal must state the reasons why the agency response is insufficient or inadequate. You must attach a copy of your original request and the agency's response to it. Also, clearly mark the appeal with the words, "Information Quality Appeal" and send the appeal to InfoQuality@cdc.gov or to the following address:

Centers for Disease Control and Prevention
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1600 Clifton Road, NE, Mailstop F-07
Atlanta, Georgia 30333
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Sincerely,

/s/

Ryne Paulose, PhD
Associate Director for Science
Division of Health and Nutrition Examination Statistics
National Center for Health Statistics
Centers for Disease Control and Prevention

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