Reviewer's report

Title: Water and beverage consumption among adults in the United States: Cross-sectional study using data from NHANES 2005-2010

Version: 2 Date: 26 August 2013

Reviewer: Brenda Davy

Reviewer's report:

This manuscript addresses a timely and important topic – water/fluid consumption among US adults – using a large, nationally representative sample (NHANES data 2005-2010). The methods used were appropriate to achieve the objectives of the investigation; the results are presented clearly and interpreted appropriately. The limitations of relying on self-reported dietary intake data are acknowledged. The major strength of this analysis is that it provides updated information (i.e., a prior 2009 publication [Kant, AJCN] on this topic used 1999-2006 NHANES data-although different methodologies were used to obtain water intake data in these two analyses) on water/fluid consumption trends across socio-demographic factors; additional strengths are a comparison to the DRIs and data on contributions of beverages/food sources to total fluids and energy intake.

Minor essential revisions:

Background, paragraph 1, second sentence – please add citations for original research articles (two RCTs: Tate 2012, Dennis 2010) and/or a systematic review (Muckelbauer 2013) to provide stronger evidence to support this statement.

Background, paragraph 5, first sentence – please clarify if there is just one prior investigation on this topic (ref 12) or if others exist (i.e., “With some exceptions…”). Additional justification for the importance of the present investigation would be a helpful addition to the Introduction section, for example, what new/important information does the present paper add to the body of literature on this topic, or what limitations exist in currently available publications?

Results, first paragraph under the “Water intake from plain water, beverages and foods” subheading – were differences across age ranges assessed, for the data presented in Tables 2-3, and Figure 1? Trends are discussed (i.e., “declined with age,” “age-related trends”), but it is not clear if these were simply observations or actual statistical analyses.

Discussion, second and third paragraphs – additional discussion points could be added which address the apparent discrepancy between indicators of whether or not we are/are not meeting the IOM DRIs. It is very important to address inadequate fluid consumption particularly with older adults, who are at risk for dehydration and have impaired thirst sensations, compared to younger adults. Yet when fluid intake is expressed relative to total energy, it appears that on
average, intakes are adequate. If underreporting of dietary intake is likely, this could affect the interpretation of the water density results. Which indicator is more valid to determine adequacy? Also, are hydration biomarkers included in NHANES data and if so, could they be included in the present analysis?

Discussion, paragraph beginning with “Future guidelines on beverage consumption...” – there has been a major emphasis on reducing sugar-sweetened beverage consumption in recent years. Yet this does contribute to total fluids, as much as 5-10% for younger adults. Messages to reduce SSB consumption could be accompanied by a recommendation to drink water, which is consistent with one of the seven key selected messages for consumers in the 2010 USDG.

Figure 1 – perhaps the shortfalls could be represented differently, to emphasize the point that total fluids fall short of that recommended. For example, rather than being a solid part of the bar graph as with the other beverages, the shortfalls could be depicted using dotted lines with no fill, so readers can clearly see what is consumed vs recommended. Also, abbreviations for some small sections of the bar graph are included with the ml amount, while others are only expressed as numbers. A more consistent formatting could help the reader to more clearly see/interpret the results.

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

I have no competing interests.