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Circulation letter to editor: response to Autier et al.

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Autier and colleagues suggest that disease burdens attributable to individual dietary factors, such as sugar-sweetened beverages (SSBs), are unquantifiable. Decades of robust research have established methods to evaluate population-health impacts of modifiable risk factors as diverse as air pollution, smoking, blood pressure, and poor diet.[1] We agree that such factors often cluster: like any other cause of disease, SSB consumption combines with multiple factors to characterize individuals' lifestyles and population health. Yet, the multifactorial nature of disease does not preclude reasonable estimation of impact of any single factor, and well-designed prevention strategies are unattainable without knowledge of individual risk factors' contributions to disease.

Due to clustering of risks, we agree that crude correlations of exposure and disease often result in biased inference on health effects. Thus, in our analyses,[2] we did not evaluate such unadjusted comparisons. Global SSB intakes were quantified through an extensive multi-year data collection effort. Effects of changes in SSB consumption on weight were determined from multivariable-adjusted analyses of large prospective cohorts – with direct effects on obesity confirmed by randomized trials.[3] Effects of adiposity on chronic diseases were obtained from major international pooling projects and supported by evidence from clinical interventions. Uncertainty from all data sources was propagated into final estimates, thus avoiding exaggeration and reflecting the most plausible breadth of attributable mortality and disability.

Autier's suggestion that our findings imply a reductionist approach to prevention efforts is puzzling given our discussion that "SSBs are but one contributor to the obesity epidemic, which is also related to multiple additional factors such as refined carbohydrates, other dietary sugars, inadequate physical activity, genetics/epigenetics, and psychosocial/environmental factors." We further specified that the 184,000 SSB-attributable deaths represent <1% of all deaths from diabetes, CVD, and cancers, highlighting both the

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magnitude of this global epidemic and the need for multi-pronged solutions. Yet, the multifactorial, stochastic nature of these conditions does not obviate the ability or necessity of quantifying the role of individual components, among which SSBs and other poor dietary habits rank highly. Autier's assertion that diet plays little role in disease compared with "clustering of unhealthy behaviors," is peculiar, when diet quality/quantity are principal components of these unhealthy clusters. Their assertion contradicts fundamental biology and is reminiscent of tobacco apologists' decades-old claims about the role of smoking in disease. Such arguments contradict scientific evidence and promote denialism of the role of diet in human health.

Progress in public health is made by modest, steady improvements in individual population risks. Reducing SSBs, a single dietary component with no nutritional value, is one "low-hanging fruit" that is part of a multi-component solution. SSBs cause predominant proportional impact on youth, with great danger of steeply rising future burdens if current generations continue high intakes as they age.[2] In the words of Geoffrey Rose, "The burden of ill-health comes more from the many who are exposed to a low inconspicuous risk than from the few who face an obvious problem."[4]

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