Moderate alcohol consumption and total mortality risk: Do not advocate drinking for 'health benefits'

Counterviewpoint

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Can the public cope with public health scientists having disagreements? Should researchers reach consensus to make messages and advice palatable? Can the average person on the street understand more nuanced public health information when 'one-size doesn't fit all'? In their recent viewpoint, Constanza and colleagues, claim there is a danger that conflicting messages creates "confusion and, worst case, disbelief in science among the public at large" [1].

The authors argue that moderate alcohol drinkers have a reduced risk of all-cause mortality than both abstainers and heavy drinkers, and that the J-shaped curve stands up to "incessant" scrutiny. At the risk of creating confusion, I would respectfully disagree with Constanza et al. on several points.

Firstly, I challenge their focus on all-cause mortality as the outcome of interest. In doing so, too many complex and diverse mechanisms are conflated [2]. Clearly risk of death is an important personal and public health consideration, but by masking cause-specific relationships we are sending out a misleading message. When broken down by cause-specific risks there is much more to learn about causality. The reduced risk of alcohol on all-cause mortality is largely driven by the possible protective effect of alcohol on cardiovascular disease (CVD). But even the latter is too broad as an outcome. This was demonstrated recently by Bell and colleagues in a study of nearly two million men and women where heterogenous associations were found for twelve common manifestations of CVD [3].

Furthermore one-size doesn't fit all [4]. The ubiquitous J-shaped curve shown by Costanza et al. in their paper is a modelled average over all people of all ages. In a recent updated meta-analysis of studies on alcohol and coronary heart disease mortality, Zhao and colleagues showed that a reduced risk was not found in studies of those age 55 years or younger at baseline [5]. Other modifying effects were found for gender, ethnicity, and co-morbidity. It would therefore seem disingenuous, and even dishonest, to suggest that everyone benefits from the possible health benefits conferred by moderate drinking.

Secondly, I continue to challenge the robustness of the evidence on purported health benefits of drinking moderate amounts of alcohol. Constanza and colleagues outline some of the criticism of observational data such as confounding and selection bias and thankfully the alcohol epidemiology field has, on the whole, moved on from the days of conflating sick quitters with non-drinkers and more robust adjustment for confounding is standard. But there is always more to be done to keep challenging the methods and interpretation from all observational studies [6]. Selection bias remains a particular thorn. For example, the

average age at enrolment in cohort studies was over 50 years in recent meta-analyses [5,7] and therefore participants had to have survived to that age in order to be included in the cohort studies. We recently found that more than one third of deaths caused by alcohol occur among individuals younger than age 50, whereas the vast majority of 'deaths prevented' accrued to those over 50 [8]. It is little surprise, therefore, that this type of selection bias results in J-shaped curves. This is just one example of selection bias; a comprehensive overview of other biases is given by Naimi et al elsewhere [9].

Leaving aside critiques of observational data, new information from mendelian randomised studies needs careful consideration. In a study of over half a million Chinese men and women, Millwood et al, compared the alcohol dose-response findings from conventional observational evidence with genetic evidence for risk of stroke. The epidemiology methods revealed J-shaped relationships whereas there was no evidence of any protective effects of moderate alcohol intake in the genetic epidemiological analyses [10]. Mendelian randomisation is the optimal non-experimental design to minimise confounding and therefore such findings cast serious doubt on the causal link between moderate drinking and reduced risk of death.

Costanza et al. end their viewpoint by claiming that 'more definitive and solid answers… will be provided by large, controlled and long-term intervention trials.' Whilst I agree with the sentiment, the reality is looking unlikely. The US National Institutes of Health abruptly terminated the Moderate Alcohol and Cardiovascular Health Trial (MACH15) after inappropriate interactions were uncovered with the alcohol industry [11]. Even if independent, unbiased funders were found, it would be unethical to randomise people to drink alcohol or not. The 2016 Global Burden of Disease summarised evidence from 694 data sources on individual and population-level alcohol consumption, along with 592 prospective and retrospective studies on the risk of alcohol use [12]. The collaboration found that the risk of all-cause mortality rises with increasing levels of drinking, and the level of consumption that minimises health loss is zero, leading to headlines that there is 'no safe level of alcohol'. This, surely, is a death nail in any trial comparing alcohol and abstention.

Finally, if a position statement were needed (as called for by Costanzo and colleagues), it should be to put our debate in context with all consequences of alcohol consumption, health and social, to the individual and wider society, and to send out a public health message that if you wish to drink moderately, do so, but not for health reasons. Unlike Costanzo and colleagues, I think debate, discussion, and disagreement can be used to inform the public and NOT doing so, may lead to disbelief in science.

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