

that there was no effect based on the Toomey *et al.* study was that the outcome involved a single dichotomous measure (served/not served) which may not have been sufficiently sensitive to provide an adequate test of the null hypothesis [7].

Another problem in accepting the null hypothesis when effects do not meet the 0.05 criterion for statistical significance is that many evaluations tend to be grossly underpowered. For example, an analysis [10] of meta-analyses of evaluations of prevention and service programs found an average of 55% of individual studies concluded that the program under study was ineffective when a meta-analysis across the individual studies demonstrated a positive effect. In sum, the 'critical-rational orientation to hypothesis testing' recommended by Gorman is no guarantee of scientific rigour if research power and sensitivity are not adequately addressed.

Finally, Gorman suggests that considering a decision criterion other than $P < 0.05$ will result in a waste of scarce resources. This argument assumes that a strict criterion of $P < 0.05$ will prevent the waste of resources on 'bad' programs. In fact, due to a strong demand for immediate community action, time and money is often spent on programs that are completely unevaluated which means that some of these programs will have unintended negative consequences. For example, breathalysers were implemented in some bar settings in Australia at one time with the idea that patrons could self-test and avoid driving if they were over the legal limit. Instead, patrons used the breathalysers to see who could blow highest [11].

To conclude, given the immediate need for knowledge, I maintain, as in my original commentary, that interpretation and application of research findings should involve weighing the preponderance of evidence regarding the risks, benefits and costs of a particular policy or program against the risks, benefits and costs of current alternatives, including inaction.

Declarations of interest

None.

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IS ALCOHOL THE ONLY CAUSE OF ALCOHOL-RELATED MORTALITY?

Alcohol abuse affects individuals in many ways, ranging from their relationship with their family, their financial, social and occupational status and, of course, their physical health. Heavy drinking causes more problems. The consequences of drinking interact with each other which have a negative impact on life, raising the risk of early and premature mortality. Such mortality is defined typically as alcohol-related, yet it results from a complicated entity of multiple factors. Recent research in the city of Izhevsk has highlighted the significant role of alcohol abuse in mortality in men aged 25–54 years in Russia [1]. However, the relationship between alcohol abuse and alcohol-related mortality in Russia is complex and requires further discussion.

One important recent finding is the identification of non-beverage alcohols (perfumes, eau-de-colognes, tinctures, solvents, abrasives) as a potentially major contributor to mortality. Abuse of these alcohols is widespread in Russia; although often discussed in the mass media this is, however, the first time it has been registered as a scientific fact related to mortality [1].

Leon *et al.* [2] adjusted non-beverage alcohol drinker mortality to education, smoking and marital status. Even after such correction, mortality was a great deal higher compared to usual drinkers; however, some factors for high-risk mortality were left outside the frames of adjustment. Drinking of non-beverage alcohols is not simply an abuse; it is also a feature of deep social degradation and poverty. It leads to unsatisfying deficient dieting, loss of hygienic habits, total adversity with environmental surroundings and negative relations with the police. These factors probably contribute more to the subject's poor health than the high ethanol content of non-beverage alcohols. Non-beverage alcohol drinkers occupy the lowest social position, yet non-alcohol factors change the picture of alcohol-related mortality. Non-alcohol factors are difficult to reveal and even more difficult to weight. However, it is necessary to have large representative samples in order to gain an idea of the effects that real alcohol and its substitutes have on mortality.

Another non-alcohol factor moderating alcohol-related mortality is the quality of medical help available to the drinker. The quality of medical support varies in different countries, and in a large country such as Russia it also varies greatly within different regions. Therefore, different levels of alcohol poisoning and alcohol psychoses can be seen in areas of Russia where drinking patterns are similar. Non-beverage alcohol drinkers also neglect their own health and do not seek medical help, compounding their physical disorders which may lead to

death. This is also true for alcohol poisoning. The majority of deaths after alcohol poisoning occur after the sub-lethal (relatively lethal) doses of alcohol [3].

Thus, while alcohol-related death rates are basically a result of drinking, such deaths are seldom free from non-alcohol factors. Therefore, the alcohol-related death rate depends not only upon the levels of drinking itself but also on multiple additional and sometimes random factors. The challenge here is to identify adequately and compensate for additional non-alcohol factors when describing alcohol-related mortality and morbidity.

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