

Moderate alcohol consumption – health or poison in a glass?

Questions by Philipp Schwander MW and answers by Prof. em. Dr. med. Joseph Osterwalder, Master of Public Health – translated from a German version

"A half-empty glass of wine is also half full, but half a lie is by no means half the truth." – Jean Cocteau

Part A: Reasons why previous studies on alcohol are considered flawed, leading to new WHO recommendations

Part B: Analysis of the new studies and their conclusions: why the new WHO recommendations are scientifically untenable.

Part C: Who and what is behind the new WHO-campaign?

Part D: Conclusions

A. Why is alcohol now considered harmful at any dose? (point 1 - 4)

Until recently, it was believed that one to two standard alcoholic drinks per day would protect the cardiovascular system. However, several newer studies challenge this assumption and suggest that earlier research findings were affected by systematic distortions – so-called “biases.”

Four reasons have led to paradigm shift:

1. Abstinence bias: A hidden flaw in earlier studies

In 2007, the research group led by Key Middleton Fillmore was among the first to demonstrate this in a meta-analysis – a statistical summary of 54 prospective investigations (1). They showed that the protective effect of moderate alcohol consumption was not caused by alcohol itself, but rather by what is called abstinence bias. In most earlier studies, the health risks of moderate drinking were masked and underestimated because of this bias. Abstinence bias occurs when people stop drinking due to illness or old age. These individuals are then classified as "abstainers," which means this group contains a disproportionately higher number of elderly and sick people. As a result, abstainers appear to be less healthy and at greater risk compared to moderate drinkers – not necessarily

because of their drinking status, but because of the underlying health issues that led them to quit.

2. Further confirmation: the reanalysis by Stockwell (2)

In 2016, another crucial study followed: Tim Stockwell and colleagues published a reanalysis of 87 prospective cohort studies involving around 4 million individuals. A cohort study observes a group of people over many years to evaluate how their alcohol consumption affects their health. The authors found that many former drinkers who had stopped for health reasons were incorrectly placed in the “abstainer” group. When this misclassification was corrected, the positive health effects of moderate alcohol consumption disappeared. In order to minimize bias introduced by former drinkers who quit due to health issues, comparison groups should be restricted to individuals who have abstained from alcohol throughout their entire lives.

These two foundational studies from Middleton and Stockwell were instrumental in shifting scientific opinion.

3. Mendelian Randomization: a new method for better assessment

As mentioned above, the WHO points out that most past observational studies may have incorrectly shown protective effects of low alcohol consumption due to the above-mentioned abstinence bias.

However, comparing drinkers to lifelong abstainers poses problems due to the potential **non-starter bias** too. Non-starter bias refers to the phenomenon where some individuals abstain from alcohol due to factors such as being part of a particularly health-conscious or religious environment, or - as previously noted - due to pre-existing health conditions.

Depending on how the comparison group “life-abstainers” is composed, this bias can either overstate or understate the health risks associated with moderate drinking - independent of the actual drinking behavior. This makes it difficult to reliably assess alcohol’s true health effects.

To avoid such distortions, researchers increasingly use a new method called **Mendelian randomization**. This approach examines how randomly inherited genes associated with alcohol consumption affect health—independently of lifestyle factors or pre-existing conditions.

Several studies using this method have shown: Once both abstinence bias and non-starter bias are ruled out, there is **no evidence** that light or moderate alcohol consumption has protective health effects

4. Larger studies reveal even the smallest risks

Larger datasets enable the detection of even very small risks. However, this also increases the risk of mixing different characteristics—such as age, sex, or health status. If such differences are not carefully accounted for and controlled, the results may be biased or misinterpreted.

The more participants a study includes, the easier it is to detect very small but real effects. This is because increasing the sample size improves measurement precision and reduces the influence of random fluctuations. It is important to understand that a "significant effect" does not mean the observed risk is large or medically relevant - only that the observed difference is very unlikely to be a chance finding. In other words, it is a statistically robust association whose practical significance may nevertheless be minor.

Two often-cited key studies illustrate this relationship:

- **Study 1 – 2018, The Lancet (3)**

This widely cited analysis examined 694 datasets and 592 studies with data from billions of people worldwide to investigate the health impacts of alcohol consumption. Result: as alcohol consumption increases, the risk for overall mortality and cancer rise continuously, while the risk from moderate consumption remains very small. The authors concluded that only complete abstinence from alcohol is associated with no health impairment. This study is cornerstone evidence for the paradigm shift.

- **Study 2 – 2021, The Lancet Oncology (4)**

This study focused on the global cancer burden from alcohol consumption. It showed that alcohol is a significant risk factor for eight of over 100 cancer types. For the year 2020, an estimated 743,000 new cancer cases - equivalent to 4.1% of all global diagnoses – were attributable to alcohol consumption. Moderate consumption caused about 103,000 of these cases, corresponding to a small share of 0.13%.

B. Are these conclusions scientifically valid?

No! After thorough analysis of the most important studies, the claim that only complete abstinence from alcohol is risk-free is not scientifically tenable. The central arguments are presented below.

1. Bias also present in new studies (underreporting)

Just as abstinence bias leads to an underestimation of health risks from moderate alcohol consumption, **recall bias** or information bias is responsible for an **overestimation** of risk – that means the risk is assessed as being too high in many observational studies. New studies, except those using Mendelian randomization, do not sufficiently address this fact.

Recall bias is a persistent systematic error in reporting alcohol consumption. The amount consumed is based on voluntary and subjective self-reports, which are therefore imprecise and often incorrect. Depending on the case, this can lead to a reversal of a causal relationship, i.e. from risk to protective effect or vice versa (5).

Factors include poor memory, misestimations, or even deliberately dishonest answers due to shame. In a large Canadian telephone survey with 43,371 participants, underreporting -i.e. reporting consumption amounts that were much too low -was estimated at a staggering 75% (6). It was highest among young and light drinkers.

Another prospective study involving 127,176 people in the USA concluded that the apparent increase in cancer cases associated with light to moderate alcohol consumption was due to underreporting - that is, reporting consumption amounts that were too low (7) - which leads to an overestimation of the risk.

2. Positive new findings are being overlooked

The positive effects of moderate alcohol consumption, as well as the **nuanced current state of research**, receive **little attention** in public debate, social media, and the press. At this point, four representative examples will be briefly presented.

- *New follow-up study published in The Lancet challenges previous warnings about moderate alcohol consumption*

A follow-up study in the journal *The Lancet* in 2022 (8) contradicts the central findings of the previously presented and widely cited 2018 *Lancet* landmark study (3). The earlier study had concluded that “any amount” of alcohol is harmful - a statement that significantly influenced the WHO’s later policy shift regarding alcohol. However, the new investigation presents a contrary and much more differentiated picture: For people over 40 years of age, the well-known J-shaped risk curve regarding lost healthy life years is confirmed – that is, years impaired or lost due to disease or premature death. The J-curve means that the risk is initially lower with light to moderate alcohol consumption than with complete abstinence, thus exerting a protective effect. Only at higher consumption levels does the risk increase

significantly. The study also shows that the effects of alcohol consumption strongly depend on age. For example, an 80-year-old person, regardless of gender, shows no health disadvantages compared to an abstinent person even with a daily consumption of nearly half a liter of wine (9). Despite these new insights, the blanket warning that “any amount of alcohol is harmful” continues to be spread, often referencing the earlier study. The more nuanced current research remains largely unmentioned in public discussions, social media, and popular press.

- *NASEM Study (11)*

The National Academies of Sciences, Engineering, and Medicine (NASEM) are an independent scientific organization that produces scientific reports for the U.S. government. NASEM was commissioned by the U.S. Congress to conduct a comprehensive study on the health impacts of alcohol, assess the current state of research, and provide public health recommendations. The 2024 report shows that moderate alcohol consumption (about one standard drink per day for women, up to two for men) slightly reduces overall mortality and is associated with a modestly lower risk of cardiovascular disease. At the same time, small amounts of alcohol slightly increase cancer risk, especially breast cancer in women. For type 2 or acquired diabetes, studies suggest moderate alcohol consumption may reduce risk somewhat, probably due to positive effects on glucose metabolism. Regarding obesity, dementia, Alzheimer’s disease, and cognitive decline, there is no clear evidence that moderate alcohol consumption either increases or decreases risk.

- *Scientific statement by the American Heart Association (AHA) on Alcohol and Cardiovascular Disease – July 2025 (10)*

Existing studies show that consuming moderate amounts of alcohol - approximately one to two standard drinks per day—reduces the risk of coronary heart disease, stroke, sudden cardiac death, and heart failure slightly. The American Heart Association (AHA) is the world’s leading institution in the field of cardiovascular research, diagnostics, treatment, and prevention. Its evidence-based recommendations and guidelines have a significant international impact on medical care and public health.

- *Prospective randomized controlled trial*

In a prospective randomized controlled trial, participants are randomly assigned at the start to different groups. One group drinks a moderate amount of alcohol over a defined period, while the other abstains entirely. This allows for a more precise investigation of how alcohol consumption affects health. This method is the gold standard and especially reliable when both groups are comparable from the outset. It helps to exclude other factors and enables the determination of direct cause-and-effect relationships. So far, moderate alcohol consumption has never been directly studied for its health effects in a randomized trial in humans. The UNATI study (9) is the first to use this method to provide clear and reliable results. A similar but much more complex and expensive study in the USA, the MACH15 study (12), had to be stopped after just three months in 2018 due to what I consider questionable concerns raised by journalists: the alcohol industry was said to have influenced the study design (13,14,15). The “University of Navarra Alumni Trialist Initiative” (UNATI) is a landmark study conducted by the University of Navarra in Spain. It started in June 2024 and investigates how moderate alcohol consumption affects health. A total of 10,000 people aged between 50 and 75 years are planned to participate. The participants are divided into two groups: one group abstains from alcohol, while the other group is allowed to drink moderate amounts of alcohol—mainly red wine with meals. The study will run for four years, until 2028. The goal is to determine whether moderate drinking influences the risk of diseases such as heart attacks, cancer, or dementia, and whether complete abstinence is better for health. The study is funded by the European Research Council (ERC) with about 2.5 million euros.

- *Limited validity of Mendelian Randomization*

Mendelian randomization (MR) is a research method used to investigate whether a specific risk factor - such as alcohol consumption - directly causes a disease like heart attack or cancer. As we have learned above, it uses genetic differences (genes) that influence how much alcohol a person typically drinks or how well their body metabolizes alcohol. People with different gene variants are then compared to find out if their disease risks differ -regardless of what they report about their drinking behavior. However, this method has clear limitations when it comes to assessing the impact of moderate alcohol consumption on health (16,17,18):

- **For MR to deliver reliable results, three conditions must be fulfilled:**

1. The genetic differences must influence alcohol consumption.

2. They must have no connection with other factors that also influence disease risk – such as smoking, diet, or socioeconomic status.
 3. They must affect health outcomes exclusively through alcohol consumption and not by other pathways. This assumption is particularly problematic because many genes simultaneously influence multiple processes in the body – a phenomenon called pleiotropy.
- **Not generalizable to all populations:** The genetic variants studied in MR are found with different frequencies in various population groups. A result from an Asian population, therefore, cannot automatically be transferred to European or African populations.
 - **Simplified assumptions about relationships:** Many MR studies assume that risk increases evenly with the amount of alcohol consumed. In reality, the relationship is often more complex – many studies show that much alcohol can be harmful, while low consumption may have no or even positive effects. This is called a U- or J-shaped relationship, which is difficult to detect using MR.
 - **Limited practical conclusions:** MR studies do not provide information on the exact amount of alcohol consumption that becomes truly unhealthy. They also do not inform how short-term changes in drinking behavior affect health – information that is crucial for concrete health advice.

C. What exactly is the WHO's anti-alcohol strategy? Why was it changed? Who are the people behind it?

In contrast to clinical medicine, which focuses on individual patients, the World Health Organization (WHO) aims to combat diseases worldwide and promote the health of the entire world population. Until recently, the WHO mainly focused on curbing harmful alcohol consumption. However, under significant influence from the well-known alcohol opponent Tim Stockwell, it now takes the position that any alcohol consumption is harmful to health, even in the smallest amounts.

While the focus previously was on problematic and abusive consumption, the new strategy now also targets light and moderate alcohol consumption. Since about half of the world's population consumes alcohol, and the majority likely do so in moderation, this new direction of the WHO has significant impacts on the health policies of many countries. The media eagerly picked up the extreme and sensational message – which led to veritable hype and a far-reaching anti-moderate consumption alcohol campaign, targeting all forms of consumption, whether low or high doses. Many people – especially older adults in Western countries – feel unsettled and now even refrain from an occasional glass of wine.

Such far-reaching recommendations should ideally be the result of a broad scientific consensus, supported by an interdisciplinary panel including all relevant disciplines. Not only scientific evidence is important, but so too is the quality and transparency of the consensus-finding process.

The official statement by the WHO that even the smallest drop of alcohol is harmful and that there is no health-safe, let alone beneficial, dose is, from the perspective of many experts, not supported by the entirety of scientific data. Furthermore, it is unclear exactly how these recommendations were developed. The WHO has neither disclosed the composition of the expert group nor the decision-making process transparently.

It is supposed that members of the Canadian “Low-Risk Alcohol Drinking Guidelines Scientific Expert Panel” were involved in the drafting of the new WHO guidelines. These experts are responsible for the current Canadian recommendations, which classify any alcohol consumption as health risky. A central figure in this is Tim Stockwell – an internationally recognized alcohol epidemiologist who has published numerous widely cited studies on the risks of even moderate alcohol consumption. He directly advised the WHO and significantly shaped the current position.

All this fuels the suspicion that the new WHO guidelines are not the result of a broad scientific consensus and current studies, but rather the expression of a one-sided expert group with an agenda and an ideological stance against any alcohol consumption.

D. Nuanced conclusions

- I. Both statements - “Any alcohol consumption is harmful to health” and “moderate alcohol consumption is healthy” - cannot currently be conclusively proven scientifically. However, there is increasing evidence that moderate consumption has a positive effect on the cardiovascular system and overall, on total mortality.
- II. While the WHO acts from a global perspective – where even small risks can have large numerical impacts - individual decisions usually involve very small risks.
- III. Those who seek maximum safety and want to avoid any risk must choose complete abstinence. However, this also means giving up quality of life and potential positive effects.
- IV. Those who consciously decide for moderate consumption could benefit health-wise but should be cautious about excessive or increasing

consumption. Negative effects cannot currently be ruled out with absolute certainty.

- V. Regardless of the choice - abstinence or moderate consumption - the current data show that the health effects on the individual are minimal in both directions. Other factors such as age, diet, health status, lifestyle, and drinking habits are decisive. For example, a 65-year-old, age-appropriately healthy and active person usually need not worry about the health consequences of moderate alcohol consumption. It seems unlikely that a glass of wine during a nice meal or at a celebration will lead to stroke, cancer, or death.
- VI. The possible positive effects of moderate alcohol consumption in a social context - such as during family meals, with friends or at celebrations - have never been systematically quantified. However, there are considerable hints that precisely these social aspects could make a significant contribution to well-being and health.
- VII. Before new, stricter guidelines on alcohol consumption are introduced, the results of the ongoing UNATI study should be awaited. Only on this scientific basis can evidence-based and balanced recommendations be developed.

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