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Longevity and moderate wine consumption – Can guidelines provide practical advice?

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Abstract. Conflicting messages about the consumption of alcoholic beverages – including wine - continue to dominate the media, causing increasing uncertainty among consumers and health professionals. Public health policies are often shaped by the "no safe level" narrative, which promotes abstinence as the healthiest choice. As a result, national guidelines on alcohol consumption have progressively lowered the upper limits of what is considered acceptable intake. In the ongoing revision of the *Dietary Guidelines of Americans (DGAs)*, the National Academies of Sciences, Engineering and Medicine (NASEM) conducted a comprehensive review of the scientific evidence published since 2010. They concluded that individuals who consume alcohol in moderation have lower all-cause mortality and a reduced risk of death from cardiovascular disease – the leading cause of death worldwide – compared to non-drinkers. In contrast, at the same time, the US Surgeon General released a report which supports the view that no level of alcohol is safe, citing an increased cancer risk starting with the first drink. This discrepancy between public health messages and scientific findings will be explored and discussed. Furthermore, the latest scientific evidence on the prevention of lifestyle-related diseases and the secrets of healthy aging, including moderate wine consumption, as presented during the 2nd International Lifestyle, Diet, Wine and Health Congress will be reviewed. We will also examine inconsistencies in the scientific literature, explore research methodologies that yield the most reliable evidence, and consider how to develop more pragmatic health advice for the general public.

1. Introduction

Conflicting messages about the consumption of alcoholic beverages – including wine - continue to dominate the media and rather than providing clarity, they are causing increasing uncertainty among consumers and health professionals. Since the publication of major population studies in 2018 [1, 2], public health communications and policies have increasingly embraced the narrative of "no safe level" promoting abstinence as the healthiest option due to associated cancer risks. As a result, more than 40 years of scientific evidence supporting the potential health benefits of moderate wine and alcohol consumption are being overlooked, and the concept of the J-shape curve is being dismissed. National and international low-risk alcohol drinking guidelines have progressively lowered the upper threshold for acceptable consumption. At the same time, several prospective studies suggest that moderate consumption of wine and other alcoholic beverages is one of the lifestyle factors – alongside not smoking, maintaining a healthy diet, engaging in regular physically active and keeping a normal body weight – that are associated with longer life expectancy, lower incidence of chronic diseases and improved physical and mental health [3-6]. The purpose of this paper is to critically examine the current scientific evidence, explore how trustworthy drinking guidelines can be developed based on that evidence and consider what practical and balanced advice can be offered to wine consumers seeking to live longer, healthier lives.

2. Recent reports with mixed messages

2.1. NASEM report confirms J curve

The Dietary Guidelines of Americans (DGAs) are currently under revision. As part of this process, an expert

committee of the U.S, National Academies of Sciences, Engineering and Medicine (NASEM) reviewed and summarized the scientific evidence published since 2010 regarding the associations between moderate alcohol consumption and various health outcomes [7]. The scope of the review extended beyond cancer, encompassing all-cause mortality, neurodegenerative and cardiovascular outcomes, maternal alcohol consumption, and impacts on body weight. The committee specifically focused on data related to moderate consumption of alcoholic beverages, defined as up to two drinks per day (28 grams of alcohol) for men and one drink per day (14 grams of alcohol) for women, consistent with the existing DGA recommendations[a]. A critical methodological requirement for this review was the use of a comparison group that distinguished between never drinkers and former drinkers to avoid "abstainer bias." Abstainer bias can cause the comparison group to appear less healthy overall, potentially leading to under- or over-estimation of the health differences between groups.

Regarding overall mortality, the experts reported a 16% lower risk of mortality from all causes among males and females who consumed moderate amounts of alcoholic beverages compared to those who had never consumed alcohol. In examining the relationship between moderate alcohol consumption and cancer risk, they found insufficient evidence to support a statistically significant association between moderate alcohol consumption and cancer risk, except for the case of breast cancer. This limitation was attributable to the small number of studies directly comparing moderate drinking with lifetime abstainers.

2.2. US Surgeon's General Advisory

Just 3 days later, in January 2025, the outgoing U.S. Surgeon General (SG) released an advisory, a 20-page report, which focused exclusively on cancer risks associated with alcohol consumption [8]. The evidence presented in this report was based on a limited number of peer-reviewed publications. It concluded that scientific evidence supports a causal relationship between alcohol use and an increased risk for at least seven different types of cancer, including breast, liver and esophageal cancers. The report identified alcohol as the 3rd leading preventable cause of cancer in the US, following tobacco and poor diet. Therefore, the advisory called for updated alcohol consumption guidelines and the implementation of warning labels on alcoholic beverages to raise public awareness of the associated cancer risks. Notably, the report did not distinguish between excessive or binge drinking and moderate drinking, instead, it referred to alcohol consumption in general.

It is important to note that observational studies, such as those referenced in the SG advisory, can only show associations between alcohol consumption and cancer risk, but cannot establish causality [9].

These two reports - the NASEM review and the SG advisory - reached different conclusions, likely due to differences in scope and methodology. The NASEM review was a consensus-based, systematically peer-reviewed evaluation of the evidence on alcoholic beverages and their associations with cancer as well as five other health outcomes. In contrast, the SG advisory was neither a consensus document nor peer-reviewed and focused only on cancer risk, without considering other health outcomes.

Together, these publications highlight the ongoing, longstanding debate on how to weigh the potential risks and benefits of alcohol consumption. While the NASEM review acknowledged both harms and benefits associated with moderate drinking, the SG advisory concluded that even small amounts of alcohol -less than one drink per week- could increase cancer risk.

Although the SG's advisory is not intended to inform the revision of the DGAs, it will likely influence the outcome of the 2025-2030 update. Similarly, other governments may also use the revised DGAs as reference when developing and updating their own national drinking guidelines. To establish sound and evidence-based drinking guidelines, it is essential to consider all relevant health outcomes -including total mortality- as well as potential confounding factors. A comprehensive approach, such as used in the NASEM report, which includes systematically assessment and grading of the latest scientific evidence, offers a more objective and reliable foundation for public health recommendations.

3. Longevity and factors contributing to healthy aging – 2nd Lifestyle, Diet, Wine and Health Congress 2025

The impact of lifestyle habits, drinking and dietary patterns, and beverage-specific components on health risks and longevity has also been a central topic at the 2nd Lifestyle, Diet, Wine and Health Congress in Rome 2025.[b] Leading international experts presented the latest scientific evidence on lifestyle factors that can contribute to healthy aging and increased life expectancy.

3.1. Cardiovascular disease, the leading cause of death and modifiable lifestyle factors

Despite major advances in biomedical research, cardiovascular diseases remain the leading cause of mortality worldwide, surpassing all cancers, according to the Center of Disease Control and Prevention and other global health agencies [10]. Globally approximately 18.5

[a] Moderate alcohol consumption is defined as up to 150 ml of 12% vol wine per day for a woman (equivalent to 14 g of alcohol) and up to 300 ml of 12% vol wine per day for men (equivalent to 28 g of alcohol)

[b] https://lifestyle-wine-congress.com/

million people die from CVD each year[c]. In the United States, CVD and stroke are the most common causes of death and are associated with significant morbidity, impaired quality of life, and considerable healthcare costs [11]. There is also emerging evidence of worsening trends in adverse levels of the health factors and health behaviors contained in the American Heart Association's (AHA's) Life's Essential 8 [12]. These include maintaining healthy blood pressure, body weight, blood sugar, and blood cholesterol levels; getting adequate sleep and physical activity; abstaining from smoking; and following a healthy diet, all of which are fundamental for preventing CVD and stroke [13].

In Europe, the statistics reflect a similar reality. Cardiovascular diseases remain the leading cause of death, exceeding even cancer-related mortality. According to the European Statistical Office (Eurostat), one in three deaths is attributed to CVD. The more recent comprehensive set of data from 2022 showed that 32.8% out of the 5.16 million deaths were due to CVD[d]. In comparison, an estimated 741,300 cancer cases worldwide were attributable to alcohol consumption, nearly half of which were linked to excessive intake [14].

The importance of identifying effective and accessible preventive strategies was also emphasized. Modifiable lifestyle factors, such as a healthy diet, engaging in regular physical activity, obtaining adequate sleep, and practicing moderate consumption of alcoholic beverages can significantly reduce the risk of developing cardiovascular disease and related risk factors, including type 2 diabetes, dyslipidemia, and hypertension. Epidemiological studies conducted in the last four decades have consistently shown that light-to-moderate consumers of wine/alcoholic beverages [15-17] have a lower risk of CVD and all-cause mortality compared to both abstainers and heavy drinkers. The well-documented J-shaped association indicates that light to moderate drinkers tend to live at least as long as abstainers and former drinkers, and often longer than heavier drinkers. Specifically, moderate consumption of red wine has been associated with a significant and consistent reduction in cardiovascular events, including myocardial infarction and ischemic stroke [18, 19], These observations have been supported by plausible biological mechanisms that provide a scientific basis for the cardioprotective effects of moderate wine consumption [15, 16].

3.2. Mediterranean Diet and Green Med Diet

With increasing age, there is a gradual rise in oxidative stress and oxidative damage in the body, both of which are associated with the development of major chronic diseases. Preventing or delaying this age-related oxidative stress and the resulting inflammation may significantly reduce the risk or progression of these conditions. Inflammation is a critical biological mechanism in the development of both CVD and cancer [20]. The inflammatory response contributes to the onset of related conditions such as obesity, diabetes, and metabolic syndrome, which are established risk factors for both diseases [21, 22].

The Mediterranean Diet (MD) is rich in foods that are natural sources of polyphenols, bioactive compounds known for their anti- inflammatory, antioxidant, and antitumor properties. The MD emphasizes whole, nutrient-dense foods such as legumes, vegetables, fruit, fish, whole grains, lean proteins, and healthy fats along with moderate consumption of wine. It also minimizes the intake of processed foods, added sugars, and pro-inflammatory components such as trans fats. Numerous epidemiological studies have demonstrated a protective association between the intake of polyphenol-rich foods and the prevention of age-related chronic diseases [23, 24]. A large meta-analysis investigating the relationship between adherence to the MD and various chronic diseases, including all-cause mortality, cancer, cognitive decline, CVD, and type 2 diabetes, found that this dietary pattern significantly reduced the risk for such conditions. Moreover, the protective effects were even more pronounced when this diet was combined with other healthy lifestyle behaviors, such as regular physical activity, smoking avoidance and limiting excessive alcohol consumption [25].

The positive impact of the MD, particularly its emphasis on polyphenol-rich foods such as fresh vegetables, fruits, extra virgin olive oil and moderate wine consumption was a central theme throughout the congress. Adherence to this dietary pattern, coupled with reduced intake of processed foods, is clearly associated with improved health outcomes. The benefits have been observed not only in adults but also in younger populations [26]. Therefore, it is essential to educate the younger generation about the health-promoting qualities of MD and its impact on health. Notably, research has demonstrated that the MD can slow down the biological age, which reflects the functional condition of the body's cells and organs, as indicated biomarkers and metabolic processes, in contrast to chronological age which is fixed. Conversely, a diet rich in ultra processed foods has been shown to accelerate aging [27, 28].

These observational findings have been confirmed by randomized controlled trials conducted in Israel and other countries. Collectively, the evidence emphasizes the importance of reducing systemic inflammation to promote healthy aging. Studies have shown that both the traditional Mediterranean diet and the "green-MED" variant enhanced with polyphenols, can support weight loss, improve cardiometabolic health, and reduce liver fat (hepatic steatosis) [29-33]. Polyphenols, including those found in red wine, have been identified as bioactive

[c] https://ourworldindata.org/causes-of-death

[d] https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Causes_of_death_statistics

compounds capable of positively modulating metabolic key metabolic pathways [32, 34]. When combined with regular physical activity, these dietary patterns can also enhance mental aging, modulate the gut microbiota and exert beneficial effects on gene expression (epigenetics) [35, 36]. Together, these effects contribute to more graceful aging and the maintenance of long-term health and well-being.

3.3. Wine consumption in the context of Mediterranean diet and cancer

The MD is widely regarded as one of the healthiest diets in the world. A substantial body of scientific evidence supports its role in preventing and managing diet-related chronic disease promoting longevity [24]. Moderate wine consumption, particularly when consumed with meals is a traditional and important component of this dietary pattern [37, 38]. Both epidemiological and clinical trials have demonstrated the protective effects of moderate wine consumption on various health outcomes [15, 16, 18, 19, 31, 39-42]. These health benefits may be partially attributed to the polyphenols found in wine and other MD foods. However, it is important to remember that wine also contains ethanol which is categorized as a Group 1 carcinogen for humans by the International Agency of Research on Cancer (IARC). The overall health impact of alcohol appears to depend on several factors, including the amount and type of alcoholic beverage, drinking pattern and the context of the diet. Large meta-analyses demonstrated that greater adherence to the MD is associated with a reduced risk of cancer [43-46]. Notably, wine, unlike other alcoholic beverages, has not been consistently linked to an increased cancer risk. On the contrary, some studies suggest that its non-alcoholic components, such as polyphenols, exert anti-inflammatory, and anti-oxidative effects that may lower the risk of certain cancers [43]. Specifically, red wine has been associated with a decreased risk of select cancer types, and a meta-analysis found no significant increase in overall cancer risk among wine drinkers [45]. Unfortunately, many alcohol-related studies do not distinguish between the effects of wine and those of beer or spirits. When moderate wine consumption is examined within the context of the MD, cancer risk appears to be reduced [43, 47, 48].

New data presented at the congress further support this view. Preliminary findings suggest that moderate wine intake, when consumed as part of a Mediterranean diet, does not increase overall cancer risk and may even help to reduce the risk of certain cancers, likely due to the protective role of polyphenols (Ramon Estruch, unpublished data). It was emphasized, however, that these benefits are context-dependent: without adherence to the MD or when wine is consumed outside meals, even moderate alcohol intake may be associated with increased risk - particularly for breast cancer. This underscores the importance of evaluating wine consumption in relation to the overall quality of diet and lifestyle habits.

There is growing evidence that moderate wine consumers may have a lower cancer risk compared to those who consume other types of alcoholic beverages. This may be partly explained by typical wine-drinking behaviours: moderate quantities, spread throughout the week and with meals.

3.4. Physical activity and sleep – a neglected behaviour

When considering lifestyle habits that positively influence health and longevity, the importance of regular physical activity, quantity and quality of sleep is often underestimated. Researchers at the congress highlighted that even modest daily improvements in physical activity and reductions in sedentary behaviour can have a significant impact on health outcomes [49, 50]. It was also emphasized that a good-quality sleep is not a luxury or a waste of time, but rather as essential to well-being and longevity as diet and exercise [51]. The congress repeatedly underscored the need to adopt a holistic perspective, viewing lifestyle as a combination of interconnected factors rather than isolating simple behaviours. This comprehensive approach is key to promoting healthy aging and improving overall physical and mental well-being.

3.5. Inconsistencies in scientific evidence

Discrepancies in research findings and inconsistencies in scientific evidence are often due to methodological issues, confounding factors and data analyses approaches. The congress illustrated various research designs [52], highlighting their respective strengths and limitations, as well as the constraints of epidemiological data. It was also shown how the conclusions of nutritional epidemiological studies can vary significantly, even when based on the same original data, depending on the analytical methods used [53, 54]. Scientists emphasized the importance of using the highest quality of evidence and assessing the certainty of that evidence with the GRADE approach when developing trustworthy guidelines and nutrition recommendations [55, 56]. Furthermore, there is a clear need to train health professionals in assessing and interpreting study results to effectively practice and apply evidence-based nutrition [57].

3.6. Largest randomized controlled intervention - UNATI study

Most scientific evidence regarding moderate wine consumption and health is based on epidemiological observational data, which is subject to the well-known limitations. Previous studies investigating the effects of moderate wine consumption on (cardiovascular) health have produced inconsistent results. This inconsistency may be partly due to the reliance on self-reported data regarding wine consumption. Recently, researchers have identified tartaric acid as a biomarker, which can be measured in participants' urine and is considered an objective and reliable indicator of wine consumption [58].

Furthermore, there are very few randomized controlled trials investigating wine consumption and health outcomes [59]. The European UNATI study (University of Navarra Alumni Trialist Initiative), funded by the European Research Council (ERC) aims to provide definite answers to the ongoing debate about the health effects of total alcohol abstinence versus moderate wine consumption within the context of the Mediterranean diet. This is the largest randomized controlled intervention trial of its kind and will involve more than 10,000 adults aged 50 to 75. The aim is to deliver scientifically validated evidence on whether the complete elimination of alcohol is truly healthier than moderate wine consumption as part of a Mediterranean Diet and lifestyle [60].

4. Conclusions - Do drinking guidelines provide practical advice?

In summary, the scientific evidence presented at the congress reaffirmed that health is not determined by any single food or lifestyle factor, but rather by the combination of healthy food choices and lifestyle habits. It was emphasized that the most effective tools for healthy aging may not be pharmaceutical interventions but rather personal lifestyle choices, such as not smoking, maintaining a healthy body weight, engaging in regular physical activity, and ensuring good quality sleep. These are all modifiable factors that can significantly contribute to better and longer-lasting health. Polyphenol-rich diets, such as the Mediterranean diet, which includes moderate wine consumption, have shown potential benefits for biological aging. Even small, consistent lifestyle improvements can enhance physical and mental well-being. The results of the UNATI study are anticipated to shape future dietary guidelines and reinforce the importance of the Mediterranean diet, and moderate wine consumption, as key components in public health promotion. Treating all forms of alcohol consumption as equal in public guidelines, without distinguishing between excessive and moderate intake, may do a tremendous disservice to the public. A more practical recommendation for wine consumers, grounded in current scientific evidence rather than ideology, would be to enjoy wine in moderation with healthy meals and to avoid binge drinking.

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