

An Analysis of the Alcohol Interventions Around the World

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Abstract: Nowadays, global alcohol consumption is expanding rapidly, causing health impacts on global citizens and posing a significant threat to the development of society and countries. Although countries have had relevant policies on alcohol use, it is difficult to achieve the purpose of restriction due to the lack of a unified global convention. This paper emphasizes the focus and direction of alcohol interventions by comparing the different effects of alcohol consumption on different groups of people and puts forward the advantages and disadvantages of the alcohol consumption tax policy, which is now considered the most effective measure in the world, as well as the cognitive blind area that tobacco tax can also intervene in alcohol consumption (synergistic effect of tobacco and alcohol). This paper aims to improve alcohol intervention policies further and make the measures more targeted and implementable according to the corresponding impacts on different groups and the existing defects. Countries are supposed to work together to develop international conventions for alcohol consumption to increase control effectiveness.

Keywords: alcoholism, alcohol interventions, drinking hazards, tax policy

1. Introduction

Excessive drinking harms health and leads to many other adverse consequences like violence and drunk driving. According to the report released by the World Health Organization, the harmful use of alcohol caused more than 3 million death worldwide in 2016, accounting for 5.3% of all deaths [1]. Based on data analysis, a Cambridge University study found that when the amount of alcohol consumed per week was more than 100g, an apparent positive correlation between the amount of alcohol consumed and all-cause death was spotted. The risk of death caused by various cardiovascular events, such as heart failure and other cardiovascular diseases, was positively correlated with the amount of alcohol consumed. Alcohol consumption was also proved to be closely related to life loss. The results showed that the increase in alcohol consumption would shorten life expectancy [2].

A large number of studies have shown that drinking alcohol has no benefit at all to the human body and affects people at all levels. Even a tiny amount of alcohol can cause health losses worldwide [3]. A study published in 2018 by the Lancet found that alcohol consumption is now the leading killer of people aged 15-49 worldwide. Alcohol was only the seventh leading cause of death (early death) and disability worldwide in 2016. Among young and middle-aged people (15-49 years), the top three causes of alcohol-related deaths were tuberculosis, traffic accidents, and

alcohol-related self-harm and suicide. For people over 50, alcohol-related cancers are more common. Through further analysis, the researchers gave the public a safe intake of alcohol of zero, meaning that abstinence is the only way to be healthy, and there is no guarantee of alcohol consumption.

However, the majority of the public still needs to gain awareness of the dangers of alcohol consumption, and global control of alcohol remains weak. As a result, each country ought to recognize the blind spot and call for effective measures to reduce the alcohol impact on people, especially those more vulnerable to alcohol [4].

2. Definition and Scope of Alcoholism

Alcoholism is a concept with no specific standards. Generally, alcoholism includes alcohol abuse and alcohol dependence. Although the World Health Organization defines healthy and reasonable drinking as about 10 grams of alcohol each time, the definition standards of drinking safety vary greatly among countries. A study compared “safe” drinking guidelines of 37 different countries, and found that in Australia, men and women should consume no more than 20 units of alcohol a day; in the US, women can consume up to 42 units a day, but should not exceed 98 units a week in total. However, the safe daily intake for men is 56 units, with a maximum of 196 units a week [5]. Keith Humphreys ,Ph.D., a professor of psychiatry and behavioral sciences at Stanford University, stated that the inconsistent guidelines on safe drinking always cast doubt on the government information, making it confusing for citizens to comply with which kind of guidelines, and the real restraint of these guidelines is little.

3. Different Kinds of People Towards Alcohol Use

To better tackle the serious issue of global heavy alcohol consumption, it is of great significance to target those moderately susceptible groups to alcohol use. It is fair to say that different groups of people are affected differently by alcohol use.

3.1. The Widely-Held Vulnerable Group to Alcohol Consumption

Generally speaking, the most vulnerable group to alcohol use is considered to include young men and low-income people, who should be paid great attention to by governments and countries.

Firstly, poverty is an important risk factor for alcoholism. A Scottish health survey released in 2017 examined the relationship between socioeconomic status and adverse alcohol outcomes from four aspects: education level, social class, family income, and regional differences. It found that lower socioeconomic status was strongly associated with higher alcohol harm, meaning that socially disadvantaged groups were at higher risk of alcohol consumption. Moreover, compared with light drinkers, the risk of death caused by heavy drinking increased sharply (the risk ratio in affluent areas was 6.12 while 10.22 in poor areas), where alcohol consumption level was considered [6]. Generally, people close to the bottom of the social class tend to consume more alcohol. While for rich people usually drink in moderation ,tend to exercise more, and have a healthier diet, said Michael Goffman, director of Clinical Cardiology, American Jewish Health Group, Queens, New York. In addition, for low-income groups, the medical expenses of the devastating diseases caused by alcoholism are always unacceptably high.

Secondly, young men are the highest proportion of harmful drinking.v A report published based on the global burden of disease data of 2020 targeted people aged 15 to 95 in 204 countries and regions to explore the impact of alcohol intake on 22 health outcomes (including cardiovascular disease, injury, and cancer). Significant differences were found in alcohol intake among different age groups. 59.1% of people aged 15 to 39 and 76.9% of men drank excessively (beyond the

recommended consumption level) [7]. Consequently, compared with the elderly, young men aged 15-39 face higher risks of diseases, traffic accidents, suicides, and homicides because of the larger proportion of excessive drinking. The Lancet Oncology released the 2020 alcohol cancer report, which presented that, of all newly diagnosed cancer cases worldwide, about 740000 cases, or 4.1%, were attributed to alcohol consumption, of which 568000 were male patients, accounting for 76.7% of the total [8].

3.2. Urgent Need to the Prevention of Underage Drinking

The problem of underage drinking has always been one of the focuses of global public health. Most countries already have legal restrictions on underage drinking. However, underage drinking is still widespread due to its non-absolute prohibition. According to the global alcohol and health survey conducted by the World Health Organization (WHO) in recent years, more than one quarter (26.5%) of 15-19-year-olds in the world currently drink alcohol (155 million). Take China for example, according to the 2022 Green Book on Prevention of Juvenile Drinking issued by the China Wine Association, 42.73% of Chinese students had a drinking experience in the fixed-point quantitative survey of middle school students in 9 provinces and cities. Besides, a review of 132 studies published between 1960 and 1999 found that the younger adolescents drank, the greater the alcohol-related consequences they suffered, including road traffic accidents [9].

Thus it is effective for all countries to introduce relevant laws to strictly supervise minors and prohibit them from drinking alcohol. Implementation of laws that set a minimum age for the purchase of alcohol to limit the availability of alcoholic beverages is effective and highly suggested by scholars, which can also contribute to a considerable reduction of underage smokers and the risk of them being harmed by smoking. Most countries in the world have set the minimum legal age for drinking and buying alcoholic beverages but do not reach an agreement on the appropriate drinking age, and the legal drinking age limit is between 16 and 21 years old. Globally, although the effective implementation of the minimum legal drinking age law can play a role in protecting adolescents, its implementation is still unsatisfactory. Furthermore, generally many countries have managed to restrict the sale of alcohol products in the market, alcohol products such as ‘alcopops’ and ‘ready-to-drink’ alcoholic energy drinks always cannot be prevented nevertheless. These products widely attract young people (especially minors), who tend to buy them owing to the erroneous impression about their characteristics [10], and such products are associated with heavier alcohol intake and alcohol-related harm among young people [11].

It is a long-term and arduous task to prevent minors’ drinking behavior effectively. Not only do alcohol enterprises and non-governmental organizations ought to guide consumers to drink rationally, and prevent minors from drinking, but the government plays an important role. This needs to mobilize the strength of the whole society, coordinate and participate together to more effectively promote the implementation of the prevention, to better realize the effective intervention of minors’ drinking behavior, and maximize the welfare of the whole society.

3.3. The Rise of Drinking among Women

There has been a new trend worth noticing that more and more surveys have discovered alcohol affects women more than men physiologically. Rates of alcohol abuse have always been higher among men than women. However, the gender gap has progressively narrowed in recent years. Women metabolize alcohol more slowly than men due to the lower levels of alcohol dehydrogenase responsible for breaking down alcohol and the less water and more adipose tissue in the body. Especially during menopause, when women experience multiple effects of body composition and life changes, they always have alcohol-related diseases earlier and more seriously than men [12].

The calculation results of a report showed that drinking a bottle of wine every week would increase the lifetime cancer risk of men who drink but do not smoke by 1%, while increasing that of women by 1.4%, leading to the possibility of 55% of women suffering from breast cancer. The gender difference in cancer risk between men and women even increased as the amount of alcohol consumed increased. Namely drinking three bottles of wine a week, or 240 grams of alcohol, increased lifetime cancer risk by 1.9 percent for men and 3.6 percent for women [13]. Those surveys explained differences in safe drinking guidelines between men and women.

And for pregnant women and women planning pregnancy, 'no drinking is the safest option'. Based on the systematic review of 46 relevant articles targeting at low-moderate levels of alcohol consumption in pregnancy, a search of Oxford concluded that weaknesses in the evidence preclude the conclusion that drinking at these levels during pregnancy is safe [14]. One of the best known adverse effects of alcohol exposure on the fetus is the fetal alcohol syndrome (FAS). It is a permanent birth defect that can be affected by the amount, frequency, and duration of alcohol consumed by the mother. Alcohol can enter the placenta and hinder fetal growth and weight, causing unique facial plaques, damaging neurons and brain structures, and causing physical, mental, or behavioral problems [15]. Other harmful effects include alcohol-related birth defects, alcohol-related neurodevelopmental disorders and increased risks of miscarriage, stillbirth, intrauterine growth restriction, preterm birth and low birthweight. In Australia, over half of women consume alcohol during pregnancy, which is an urgent issue and calls for attention [16].

Even though drinking does so much harm to women, our attention to female drinking is still insufficient. Due to the lack of resources and awareness, as well as the stigma or taboo of the alcohol dependence of women, women's sensitivity and vulnerability to alcohol-related injuries is a significant public health problem. With the progress of society, women have changed from traditional gender roles to pursue more equal rights. Thus young women have begun to show higher frequency, higher alcohol consumption, and more binge drinking, resulting in more significant health outcomes of all-cause mortality, cancer, gastrointestinal diseases, and cardiovascular diseases compared with men. Women, an increasing number of whom abuse alcohol, are less likely than men to seek medical or community help owing to their fear of being stigmatized by society for their alcohol addiction, which results in more women suffering from the harm of alcohol use physically and psychologically and it is more difficult for them to recover from alcohol dependence. Therefore, to alleviate this situation, society must focus more on alcohol abuse among women, protect women's rights and interests and care for their physical and mental health.

4. Effective Tax Policy on Alcohol Abuse

On the other hand, more coordinated alcohol interventions need to be proposed, and their effectiveness is supposed to be appropriately evaluated.

One of the most efficient measures of alcohol control is the high excise tax on alcohol products, which dramatically reduces the risk of alcohol-related harm. Consumers, including alcoholics and young people, are sensitive to changes in beverage prices. A rise in alcohol prices leads to less alcohol-related harm. Although it is said that the demand for alcohol is relatively inelastic to price, indicating the drop in alcohol consumption caused by a rise in alcohol price is relatively smaller than the price increase [17], a meta-analysis of 112 studies, by calculating the price elasticities of three kinds of preferred beverages (beer, wine, and spirits), concluded that elasticities for the above-mentioned preferred beverages are generally lower than for the less preferred beverages and that the impact of an increase in alcohol price tends to be stronger in the longer term [18]. Take Alaska for example, statistically, significant reductions in the number and rates of deaths raised by alcohol-related diseases were spotted immediately after alcohol tax increases in 1983 and 2002 [19]. In particular, for the low-income group, an increase in the price of alcohol can greatly reduce their

frequency and volume of drinking. Higher alcohol prices would improve health and save lives.

However, it is worth mentioning that the existence of many illegal alcohol markets complicates the tax policy considerations of many countries, and raising taxes also meets resistance from consumer groups and economic operators. In this case, efforts must be made to make the illegal and informal markets under the effective control of the government and establish an effective and efficient tax system through appropriate tax administration and enforcement. A specific uniform tax system for alcohol use, supplemented by an effective implementation system could make sense. Besides, it is highly suggested to prohibit sales promotion and discounts and implement a uniform rate for alcohol products, taking into account the alcohol content of the beverage as appropriate while providing price concessions for non-alcoholic beverages.

5. Tobacco Taxes Reduce Alcohol Use

Furthermore, researchers in the United States even found that the rise of tax on tobacco products can reduce alcohol consumption for those above-mentioned vulnerable groups [20]. In analyses stratified by sex, the inverse associations of cigarette taxes with typical quantity and binge drinking frequency were found only for male smokers. Besides, the inverse association of cigarette taxation and alcohol consumption was stronger among hazardous drinkers, young adult smokers, and smokers in the lowest income category. Smoking and alcoholism are closely related, due to complementary pharmacological effects, shared neural pathways and genetic associations, and similar environmental factors. Compared with non-smokers, smokers drink more frequently, consume more alcohol, and are more likely to binge drink and develop alcohol dependence.

Alcohol and tobacco use are highly comorbid and have multiplicative health risks when used concurrently [21].

Firstly, it would aggravate alcoholism. Researchers found that nicotine in cigarettes can significantly reduce the alcohol concentration in the blood, so smokers drink more alcohol on average than non-smokers to get addictive feelings. Though, nicotine cannot reduce the acetaldehyde produced during the decomposition of alcohol, resulting in more toxic effects of acetaldehyde on the brain, liver, heart, and other organs [22]. Moreover, there is a significant synergy between smoking and drinking on the risk of malignancy, especially the risk of head and neck tumors and esophageal cancer [23]. Ethanol, namely alcohol, is an organic solvent that can dissolve certain carcinogens and some other harmful substances in cigarettes. When a person drinks alcohol after smoking, the alcohol would continuously stimulate the esophageal wall and cause mucosal congestion in the body. In contrast, the carcinogens in tobacco will stimulate the esophagus more strongly during swallowing, which can easily cause esophageal cancer. This behavior would also double the harm to cardio-cerebrovascular disease and the liver. When drinking and smoking at the same time, the carbon monoxide in the smoke will be fused with the hemoglobin concentration in the blood (the fusion ability of carbon monoxide and hemoglobin concentration is more than 200 times higher than that of carbon dioxide and hemoglobin concentration), which will seriously weaken the working ability of red blood cells to transport carbon dioxide, significantly causing the lack of carbon dioxide in the blood, and aggravate the damage to heart and brain vessels.

In 2005, the World Health Organization (WHO) formulated the WHO Framework Convention on Tobacco Control, covering more than 90% of the world's population, and in 2008 proposed six measures to reduce the demand for tobacco at the country level: (1) Monitoring tobacco use and prevention policies; (2) Protecting people from the dangers of smoking; (3) Offer help to quit smoking; (4) Warning of tobacco hazards; (5) Ban tobacco advertising, promotion, and sponsorship; (6) Raise the tobacco tax. In the case of tobacco, explicit tobacco control measures have been implemented worldwide, while global awareness of alcohol consumption remains inadequate. Whether in terms of the completeness and implementation of control measures, or citizens'

awareness, countries need to strengthen.

6. Conclusions

This paper first highlights the urgency of alcohol interventions by showing the serious harm of alcohol consumption to global health through data and surveys. Second, alcohol interventions can be better directed and targeted by profiling the different groups of people affected -- the vulnerable groups (male and young adult smokers, and low-income people), women, and minors. Furthermore, this paper lists the effectiveness of alcohol excise taxes, the most effective policy for alcohol intervention, and its shortcomings, which can be improved, and by extension, the effect of tobacco taxes on alcohol consumption. Tobacco and alcohol are among the top three causes of death in the world, Whose synergistic effect deserves great attention. Finally, this paper aims to show that the current global awareness of collaborative control of alcohol consumption is behind, and people are still not enough to understand the harm of alcohol to health and personal safety. The world urgently needs a global alcohol intervention convention to strengthen national control efforts. There have been many in-depth studies and views on the above-mentioned aspects in the literature, whereas it is rather necessary to summarize and reflect on the rhythm and intensity of alcohol intervention. There are many other feasible policies worth implementing, such as regulating the marketing of alcoholic beverages, improving the drunk driving policy, etc. Nevertheless, no matter which measures we take, it requires careful consideration and absolute execution to truly achieve the effectiveness of restricting alcohol use.

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