

Alcohol Consumption and Its Health Impact

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Abstract--- *In this paper, the negative and the positive effects of alcohol on health are reviewed. It is first of all established facts that a high alcohol intake implies an increased risk of a large number of health outcomes, such as dementia, breast cancer, colorectal cancer, cirrhosis, upper digestive tract cancer and alcohol dependency. Second, it is justified that alcohol has beneficial effects for some individuals, especially with regard to prevention of thrombosis of the heart. The public health relevance of these results is considered. A broader public health message of the beneficial effects of alcohol does not seem to be of interest in Western societies, where only a very small fraction of the population are non-drinkers and may have very good reasons therefore. Because international differences in drink definitions also exist, comparing studies from different countries is difficult. The development of a universal definition of moderate drinking is hampered further by variations in the way alcohol consumption levels and drinking patterns are being assessed (i.e., the survey methods and assessment modes used). Despite these problems, definitions of moderate drinking and drinking guidelines have been developed in the countries.*

Keywords--- *Alcohol, Body Effect, Drinking, Dangerous Drug, Health Impact, Moderate Drinking, Risk Assessment, Standard Drink.*

I. INTRODUCTION

In recent years, drinking has become a topic of great interest and lively debate as researchers and the media have reported on the health benefits of alcohol consumption. For example, studies have indicated that drinking may be associated with reduced risk of heart attack, atherosclerosis, and certain types of strokes as well as a reduced risk of brittle bones (i.e., osteoporosis) in middle age women. Accordingly, a definition of the terminology drinking is needed to allow an informed discussion of the risks and benefits associated with such a drinking pattern. Many current definitions of drinking are based on a specific number of drinks consumed during a designated time period (e.g., per day or per week). The sensible drinking limits, of a maximum of 21 drinks per week for men and 14 drinks per week for women seem valid. A broader public health message of the beneficial effects of alcohol does not seem to be of interest in Western societies, where only a very small fraction of the population are non-drinkers and may have very good reasons therefore. This article first reviews considerations relevant to defining a drink. It then describes several approaches to determining people's drinking levels and patterns. The public health objective on alcohol of the World Health Organization (WHO) is to reduce the health burden caused by the harmful use of alcohol and, thereby, to save lives, reduce disease and prevent injuries. The hazardous and harmful use of alcohol is a major global contributing factor to death, disease and injury: to the drinker through health impacts[1], such as alcohol dependence, liver cirrhosis, cancers and injuries; and to others through the dangerous actions of intoxicated people, such as drink driving and violence or through the impact of drinking[2] on fetus and child development. The harmful use of alcohol results in approximately 2.5 million deaths each

year, with a net loss of life of 2.25 million, taking into account the estimated beneficial impact of low levels of alcohol use on some diseases in some population groups. Harmful drinking can also be very costly to communities and societies. Alcohol consumption and problems related to alcohol vary widely around the world, but the burden of disease and death remains significant in most countries. Alcohol consumption is the world's third largest risk factor for disease and disability; in middle-income countries, it is the greatest risk. Alcohol is a causal factor in 60 types of diseases and injuries and a component cause in 200 others. Almost 4% of all deaths worldwide are attributed to alcohol, greater than deaths caused by HIV/AIDS, violence or tuberculosis. Alcohol is also associated with many serious social issues, including violence, child neglect and abuse, and absenteeism in the workplace. Yet, despite all these problems, the harmful use of alcohol remains a low priority in public policy, including in health policy. Many lesser health [3] risks have higher priority. The harmful use of alcohol is a particularly grave threat to men. It is the leading risk factor for death in males ages 15–59, mainly due to injuries, violence and cardiovascular diseases. Globally, 6.2% of all male deaths are attributable to alcohol, compared to 1.1% of female deaths. Men also have far greater rates of total burden attributed to alcohol than women 7.4% for men compared to 1.4% for women. Men outnumber women four to one in weekly episodes of heavy drinking most probably the reason for their higher death and disability rates. Men also have much lower rates of abstinence compared to women. Lower socioeconomic status and educational levels result in a greater risk of alcohol-related death, disease and injury – a social determinant that is greater for men than women[4].

I.I Alcohol Dietary Factor and Dangerous Drug:

Health researchers and laymen have, for centuries, known the serious consequences of a high alcohol intake for both body and mind. However, the latest thirty years of research has shown that alcohol has a more complex influence on health than, for instance, smoking and physical inactivity. Smoking and physical inactivity are straight forward. Smoking is bad for health increasingly bad with an increasing consumption. Physical activity is reversely good for health the more the better. Whilst for alcohol it is different; in small doses, there is a beneficial effect, at least for some outcomes and in higher doses, it is detrimental to health (Fig.1).

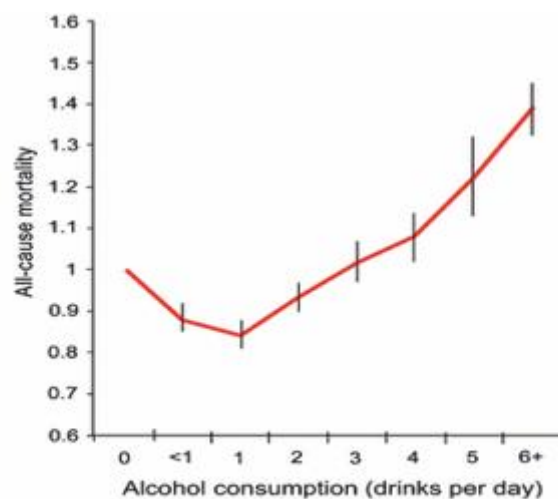


Fig.1: Risk of all causes according to alcohol intake

Alcohol is an organic solvent, which in high doses has both direct and indirect harmful influence on a large number

of organs, and a high alcohol intake during a longer period of time implies an increased risk for developing alcohol dependency syndrome. But a light to moderate alcohol intake is also for many people a natural part of the diet, which increases pal liability of and adds calories to the food. The picture of alcohol as an important risk factor for morbidity and mortality is therefore to some extent complicated of the known positive somatic effects as well as the beneficial mental and social influence of a light to moderate alcohol intake. The present study weigh these positive and negative influences of alcohol on health. It will also try to give advice with regard to the public health implication of these beneficial effects of alcohol.

I.II Increasing Risk of a High Alcohol Intake:

The ascending leg of this U-shaped curve is explained by a large number of somatic and mental conditions. Hence, with an increasing intake of alcohol, many different parts of the body are affected. Starting with the acute effects on the brain, a low blood alcohol concentration (up to 0.1%) will cause euphoria. A higher (0.25–0.30%) will cause sleepiness and confusion and more than that will cause coma and death. A prolonged excessive alcohol intake increases the risk of developing dementia. Many patients with such a high alcohol intake also have a poor nutritional status, which, in some instances, may lead to dementia as well; hence, alcohol abuse can be another contributing factor, as parts of the brain may be damaged by vitamin deficiencies. With an increasing alcohol intake, there is a strongly increased risk of alcoholic cirrhosis. The mechanisms by which alcohol induces cirrhosis has been intensively studied, but sparsely enlightened. The high level of acetaldehyde has been suggested a part of the aetiology. It is quite well documented that women, most likely because of smaller size and different distribution of body fat and water, are at higher risk of developing cirrhosis than men, but other risk factors for alcoholic cirrhosis are not well established. Figure 2 shows relative risk of alcohol-induced cirrhosis according to gender and alcohol intake.

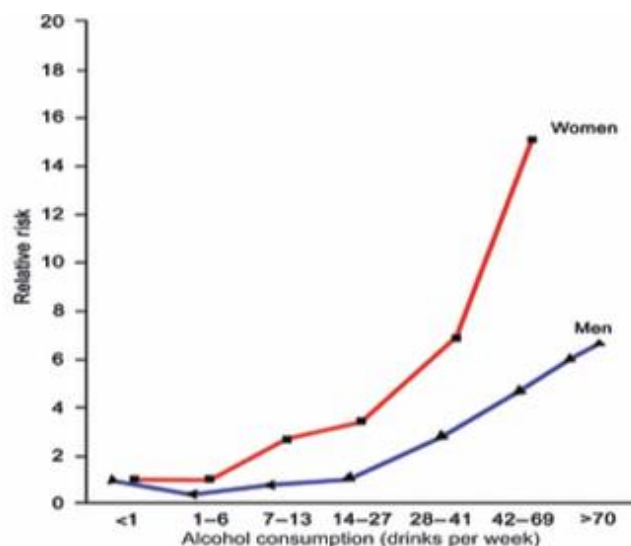


Fig.2: Relative risk of alcohol-induced cirrhosis according to gender and alcohol intake.

There is a strong dose-dependent increase in risk upper digestive tract with increasing alcohol intake. Heavy drinkers of alcohol (5–10 drinks per day) have a 10 to 15 time's risk of these relatively rare cancers. Larger public health relevance

are the more frequent cancers, breast cancer and colorectal cancer, which both quite consistently have been related to alcohol as well. Hence, the risk of breast cancer is doubled amongst heavy drinking women compared to that amongst non-drinking women. Further, and of more public health relevance, is that a small, frequent daily intake implies an increased risk; recent meta-analyses have suggested a 7–9% increased risk per drink per day. The risk of colon cancer is increased amongst heavy drinkers. The relative risk is in the range of 2.00 amongst heavy drinkers compared to non-drinkers, but it is likely that only colorectal cancer risk is affected, and newer studies have suggested that the risk is mainly increased amongst beer drinkers. Without being directly related to somatic diseases, other more frequent causes of death amongst heavy alcohol drinkers, such as traffic accidents, violence and suicides are substantially adding to the increasing leg of the J-shaped curve.

I.II.I Risks of Heavy Alcohol Use:

While moderate alcohol use may offer some health benefits, heavy drinking including binge drinking has no health benefits. Heavy or high-risk drinking is defined as more than three drinks on any day or more than seven drinks a week for women and for men older than age 65, and more than four drinks on any day or more than 14 drinks a week for men age 65 and younger. Binge drinking is defined as four or more drinks within two hours for women and five or more drinks within two hours for men[5]. Excessive drinking can increase your risk of serious health problems, including:

- Certain cancers, including breast cancer and cancers of the mouth, throat, oesophagus and liver
- Pancreatitis
- Sudden death if you already have cardiovascular disease
- Heart muscle damage (alcoholic cardiomyopathy) leading to heart failure
- Stroke
- High blood pressure
- Liver disease
- Suicide
- Accidental serious injury or death
- Brain damage and other problems in an unborn child

I.II.II Body Effects of Alcohol:

Alcohol is classed as a ‘sedative hypnotic’ drug, which means it acts to depress the central nervous system at high doses. At lower doses, alcohol can act as a stimulant, inducing feelings of euphoria and talkativeness, but drinking too much alcohol at one session can lead to drowsiness, respiratory depression (where breathing becomes slow, shallow or stops entirely), coma or even death. As well as its acute and potentially lethal sedative effect at high doses, alcohol has effects on every organ in the body, and these effects depend on the blood alcohol concentration (BAC) over time. After a drink is swallowed, the alcohol is rapidly absorbed into the blood (20 percent through the stomach and 80 percent through the small intestine), with effects felt within 5 to 10 minutes after drinking. It usually peaks in the blood after 30

to 90 minutes, and thus is carried through all the organs of the body. Most (90 percent) of the metabolism, or breaking down, of alcohol from a toxic substance to water and carbon dioxide is performed by the liver, with the rest excreted through the lungs (allowing alcohol breath tests), through the kidneys (into urine) and in sweat. The liver can break down only a certain amount of alcohol per hour, which for an average person is around one standard drink (which raises the BAC about 15 to 20 mg/dL. [6]. However, BAC does not correlate exactly with symptoms of drunkenness and different people have different symptoms even after drinking the same amount of alcohol. The BAC level, and every individual's reaction to alcohol, is influenced by:

- The ability of the liver to metabolise alcohol (which varies due to genetic differences in the liver enzymes that break down alcohol)
- The presence or absence of food in the stomach (food dilutes the alcohol and dramatically slows its absorption into the bloodstream by preventing it from passing quickly into the small intestine)
- The concentration of alcohol in the beverage (highly concentrated beverages such as spirits are more quickly absorbed)
- How quickly alcohol is drunk
- Body type (heavier and more muscular people have more fat and muscle to absorb the alcohol).
- age, sex, ethnicity (e.g. women have a higher BAC after drinking the same amount of alcohol than men due to differences in metabolism and absorption since men have on average more fluid in their body to distribute alcohol around than women do; some ethnic groups have different levels of a liver enzyme responsible for the breakdown of alcohol)
- How frequently a person drinks alcohol (someone who drinks often can tolerate the sedating effects of alcohol more than someone who does not regularly drink).

I.II.III Overall Body Effects:

Alcohol affects all parts of the body including: Blood and immune system, Bones and muscles, Brain and nervous system, Breasts, Eyes, Heart and blood pressure, Liver, Lungs, etc. as well as potentially affecting the physical and mental health of individuals in many ways, chronic and heavy alcohol use can increase the risk of death either directly, for example through acute alcohol poisoning or because alcohol causes a fatal disease such as cancer, or indirectly, such as alcohol being a factor in violent death or suicide. Alcohol contributes to a high burden of disease in society in terms of years that people spend with disability or in poor health because of alcohol-related illnesses or injuries. Unintentional injuries from alcohol use often result from falls, burns, motor vehicle accidents, assaults and drowning[7][8].

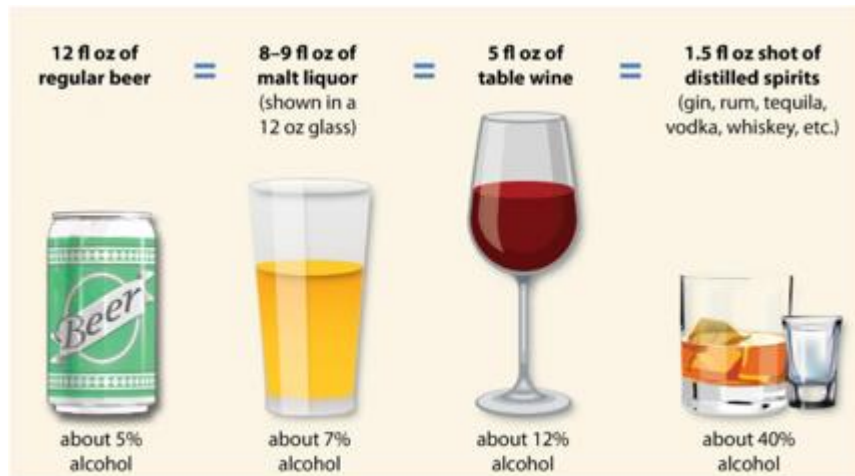


Fig.3: Standard Drinks

Alcoholic beverages are widely consumed throughout the world. While most of the adult population drinks at low-risk levels most of the time or abstains altogether, the broad range of alcohol consumption patterns, from daily heavy drinking to occasional hazardous drinking, creates significant public health and safety problems in nearly all countries. This section examines global and regional alcohol consumption, abstinence from alcohol use and patterns of drinking. It also looks at the use of homemade or illegally produced alcoholic beverages, alcoholic beverage preference and recent trends in alcohol use[9]. The main data source for information presented in this section is the WHO Global Information System on Alcohol and Health (GISAH). Figure 3 shows some standard alcohols.

Each beverage portrayed above represents one standard drink (or one alcohol drink equivalent), defined as any beverage 6 or 14 grams of pure alcohol. The percentage of pure alcohol expressed here as alcohol by pure volume, varies within and across beverage types. Although the standard drink amounts are helpful for following health guidelines, they may or not reflect customary sizes. Figure 4 shows monthly alcohol use.

I.II.IV Liver Damage:

Women who regularly misuse alcohol are more likely than men who drink the same amount to develop alcoholic hepatitis, a potentially fatal alcohol-related liver condition. This pattern of drinking can also lead to cirrhosis (permanent liver scarring).

I.II.V Heart Disease:

Long-term alcohol misuse is a leading cause of heart disease. Women are more susceptible to alcohol-related heart disease than men, even though they may consume less alcohol over their lifetime than men.

I.II.VI Brain Damage:

Research suggests that alcohol misuse produces brain damage more quickly in women than in men. In addition, a growing body of evidence shows that alcohol can disrupt normal brain development during the adolescent years, and there may be differences in the impact of alcohol on the brains of teen girls and boys who drink [10]. For example, in one study, teen girls who reported binge drinking, but not teen boys who reported binge drinking, showed less

brain activity and worse performance on a memory test than peers who drank lightly or abstained. Similarly, teenage girls who drank heavily showed a greater reduction in the size of important brain areas involved in memory and decision-making than teenage boys who engaged in heavy drinking. Women also may be more susceptible than men to alcohol-related [11] blackouts, which are gaps in a person's memory for events that occurred while they were intoxicated. These gaps happen when a person drinks enough alcohol to temporarily block the transfer of memories from short-term to long-term storage known as memory consolidation in a brain area called the hippocampus.

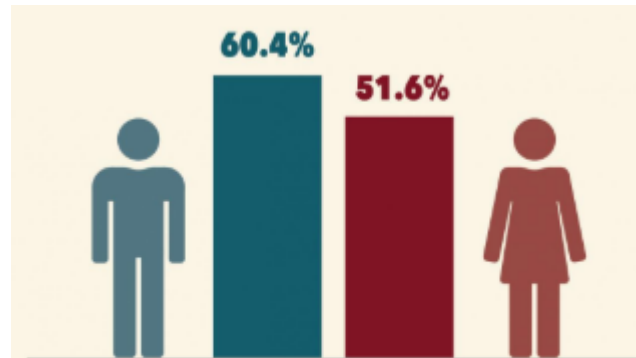


Fig.4: Monthly Alcohol Use

I.II.VII Breast Cancer:

There is an association between drinking alcohol and developing breast cancer. Studies demonstrate that women who consume about 1 drink per day have a 5 to 9 percent higher chance of developing breast cancer than women who do not drink at all. That risk increases for every additional drink they have per day.

I.II.VIII Alcohol and Pregnancy:

Any drinking during pregnancy can be harmful. Prenatal alcohol exposure can cause physical, cognitive, and behavioural problems in children, any of which can be components of fatal alcohol spectrum disorders (FASD).

I.II.IX Some Women Should Avoid Alcohol Entirely, including:

- Anyone who is pregnant or trying to conceive.
- Anyone younger than age 21.
- Anyone who takes medications that can interact negatively with alcohol, such as sedative drugs, sleeping pills, pain relievers, and anti-anxiety medications.

I.III Beneficial Effects of Alcohol:

Both case control and cohort studies have consistently shown that light to moderate drinkers are at lower risk of cardiovascular disease and death than nondrinkers. Most agree that this declining risk curve can be interpreted as a causal relation, although the strength of the apparent protective effect is still disputed. Many studies report a decline in risk of cardiovascular disease in the range of 25–30%. Several plausible mechanisms for the apparently cardio-protective effect of a light to moderate intake of alcohol have been suggested. The largest of the prospective studies have shown that the effect of alcohol and cardiovascular disease may be modified by age and gender. Hence, two

large American studies have shown that the apparent cardio protective effect seems stronger amongst the elderly. Therefore, although the cardio protective effect of a light to moderate alcohol intake is quite well established, based on a large number of epidemiological studies, there are several factors which may influence the strength of the effect. Many heavy drinkers do not have alcohol-related problems yet and can reduce their risk of harm by cutting back. For the nearly 18 million Americans who have alcoholism or related problems, however, it's safest to quit. Figure 5 shows alcohol consumption by adults.

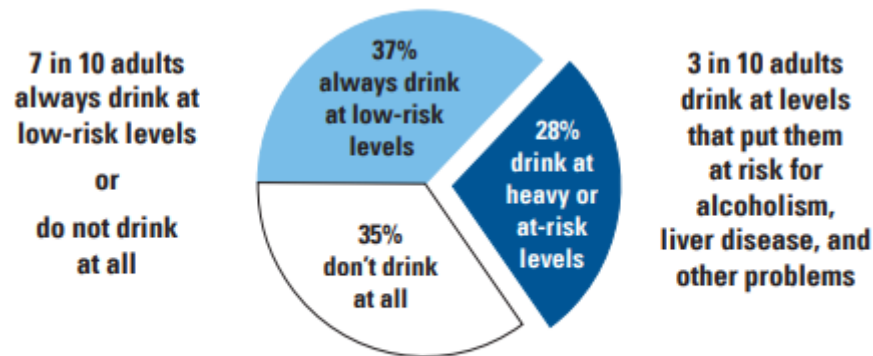


Fig.5: Alcohol Consumption by Adults

It has been discussed whether a causal inference between alcohol and coronary heart disease can be drawn from studies using nondrinkers of alcohol as the reference category as this group could consist of 'sick-quitters', i.e. participants who have been drinking excessively in former times, but stopped as a consequence of ill health.

I.IV Moderate Alcohol Use:

Guidelines for moderate drinking have been set by the US Department of Health and Human Services and the World Health Organization. The US guidelines suggest no more than 1 drink per day for women and no more than 2 drinks per day for men. A drink is defined as 12 oz of beer, 5 oz of wine, or 1.5 oz of spirits. The WHO guidelines suggest no more than 2 drinks per day, and no more than 5 drinking days per week. They recommend 2 non-drinking days. Of course, you can't stockpile your drinks, and have them all at the end of the week[12].

I.IV.I Moderate Drinking Plan:

If you don't have an alcohol problem, you should be able to easily follow a moderate drinking plan. This is a moderate drinking plan to help you decide. Keep an honest journal of how much you drink every day for 6 months, and see if you can stick to moderate drinking. It's important that you do this for at least 6 months, because it's easy to control your drinking for a short period of time. If there are days when you drink more than a moderate amount, make note of the circumstances and identify your triggers. If you're happy with your use – great. But if you're not happy, or if you can't stick to moderate drinking, then that should tell you something. Ultimately, people who are addicted to alcohol decide to quit drinking, because they realize it's easier to not drink, than it is to control their drinking.

- Set a realistic goal for your alcohol use. Decide ahead of time how much and how often you would like to drink.
- Keep an honest journal of your drinking. This helps you become mindful of your drinking.
- Start with a non-alcoholic drink to quench your thirst. When you're at a social event make sure you have a non-alcoholic drink to start. Thirst can make you drink more alcohol than you need. This also helps you become more mindful of your drinking.
- Don't drink on an empty stomach. Make eating part of the experience. Hunger can also make you drink more alcohol than you need.
- Alternate alcoholic and non-alcoholic drinks. Don't have all your alcoholic drinks at once, or you may be tempted to drink more than you planned. Instead have at least one glass of water before each alcoholic drink.
- Avoid heavy drinking situations. Some situations are associated with heavy drinking, and it may be difficult to stick to your plan. Learn to recognize and avoid heavy drinking situations.

I.IV.II Pros and Cons of Moderate Alcohol Use:

Keep in mind that even moderate alcohol use isn't risk-free. For example, even light drinkers (those who have no more than one drink a day) have a tiny, but real, increased risk of some cancers, such as oesophageal cancer.

Moderate alcohol consumption may provide some health benefits, such as:

- Reducing your risk of developing and dying of heart disease.
- Possibly reducing your risk of ischemic stroke (when the arteries to your brain become narrowed or blocked, causing severely reduced blood flow)
- Possibly reducing your risk of diabetes.

I.V When to Avoid Alcohol:

In certain situations, the risks of alcohol may outweigh the possible health benefits. For example, check with your doctor about drinking if:

- You're pregnant or trying to become pregnant
- You've been diagnosed with alcoholism or alcohol addiction, or you have a strong family history of alcoholism
- You've had a haemorrhagic stroke (when a blood vessel in your brain leaks or ruptures)
- You have liver or pancreatic disease
- You have heart failure or you've been told you have a weak heart
- You take prescription or over-the-counter medications that can interact with alcohol

I.VI Deciding About Drinking:

If you don't drink alcohol, don't start because of potential health benefits. However, if you drink a light to moderate amount and you're healthy, you can probably continue as long as you drink responsibly. Be sure to check with your doctor about what's right for your health and safety.

II. CONCLUSION

The results of this study indicate that heavy drinking is associated with a significant drug risk, and moderate drinking is good for health, which suggests that greater attention should be placed on the harmful consumption of alcohol than on smoking. Alcohol is a dangerous use, even if it has not yet caused significant physical or mental ill effects, and it is a high risk of health damage. A rapid increase in alcohol intake would increase the chance that alcohol-related issues will increase over the next few years. A strong emphasis is placed on how certain demographic variables contribute to circumstances with alcohol consumption. Understanding the risks and potential health benefits of alcohol often seems confusing, as there is no certainty about moderate alcohol consumption in the healthy adult. The argument above concluded that moderate alcohol use in healthy adults is likely to present risks or benefits. Nearly all health reports, including food and drugs, are based on people's confirmation and accurate coverage over many years of one's habits. Such experiments may imply that two events can contribute to each other, but that one affects the other not inherently. Adults who are stable may indulge in more welfare and have small amounts of alcohol, but drinking does not mean that they are healthy.

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