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Alcohol and Tobacco Harm Reduction Interventions

Introduction

Despite their legal status, alcohol and tobacco are two of the most harmful psychoactive substances and have a higher level of morbidity and mortality than opioid use and stimulant use combined.[1-4] Approximately 480,000 and 140,000 people die from tobacco and alcohol related causes every year, respectively, representing the first and third most prevalent causes of preventable death in the United States.[5-7] On an individual level, misuse of alcohol can lead to liver disease, cirrhosis, heart disease, depression, stroke and cancer.[8] Tobacco use leads to cancer, heart disease, stroke, chronic obstructive pulmonary disease (COPD), and many other negative health outcomes.[5] While alcohol and tobacco harm reduction strategies focus on reducing the harms from these substances, rather than focusing on the use itself, this is not at odds with abstinence. Harm reduction recognizes that abstinence is the ideal goal for many, while seeking ways to reduce harm for those who may wish to lessen or control their use, or are in situations where abstinence is not currently possible.

Alcohol Harm Reduction Interventions

Although alcohol is a legal substance in the United States, the distribution and consumption of alcohol is highly regulated due to the associated health risks and other public concerns. Because of this, alcohol harm reduction primarily focuses on policy measures and systemic strategies aimed at reducing alcohol related harms among the general population.[9] Criticism of current alcohol harm reduction strategies highlight the need for additional targeted interventions to reduce harm for people with alcohol use disorder or high-risk alcohol users, alongside the already in-place population level policies intended to encourage moderation.

The three primary goals of alcohol harm reduction are: 1) injury and violence prevention, 2) reduction of alcohol related road incidents, and 3) moderation of consumption.[10] The interventions designed to address these goals can be split into two categories:

- **Environmental, macro-level interventions** are intended to influence alcohol consumption of a population or to broadly reduce alcohol-related harms at a societal level. These environmental interventions use laws, financial incentives, and infrastructure design strategies to encourage the moderation of alcohol consumption.
- **Individual, micro-level interventions** are focused on modifying or adapting a person's behaviors to reduce alcohol-related harms to the individual. Alcohol harm reduction strategies can be applied throughout the developmental spectrum; individual risk reduction techniques are applicable regardless of the age of the person drinking.

Goal 1: Injury and Violence Prevention

Alcohol consumption plays a major role in a wide range of injuries and violence such as falls, drownings, physical fights and sexual assaults.[3]

Environmental, macro level interventions to reduce the risk of alcohol related violence and injury focus on structural changes to the environment where alcohol is consumed to lower the likelihood of violent incidents or injuries. For example, plastic or toughened "shatterproof" glassware is often used in place of regular glassware to reduce the injuries due to bar fights and broken glasses. One study in Glasgow showed that using plastic in place of glassware reduced the occurrence and severity of alcohol-related violence and the risk of injury,[11] and case studies in the United Kingdom have found toughened glass to be a promising harm reduction tool[12] although more rigorous and controlled studies are needed to further evaluate the impact of these types of interventions.

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THE HAZELDEN BETTY FORD FOUNDATION EXPERIENCE

The Hazelden Betty Ford treatment model is a patient-centered and compassionate path to treating alcohol and drug addiction. Our protocols include science-based assessments and evidence-based practices such as Motivational Enhancement and Interviewing. Our use of medication-assisted treatment for opioid dependence with naltrexone and buprenorphine/naloxone is supported by scientific research.

Specialized programs and services are available for adolescents, teens and young adults. Our Family Programs and one-of-a-kind Children's Program help and support the whole family.

Prevention science and practices are at the core of Hazelden Betty Ford's mission to help more people live healthy lives. Our experts are dedicated to providing clinical care, education and research in the field of addiction and mental health prevention, treatment and recovery.

FOR MORE INFORMATION

U.S. Department of Health and Human Services
Review current federal activities that promote harm reduction by increasing the availability of and access to high-quality harm reduction services that decrease negative effects of substance use and reduce stigma related to substance use and overdose.

HHS.gov/Overdose-Prevention/Harm-Reduction

National Harm Reduction Technical Assistance Center
A part of the CDC, the National Harm Reduction Technical Assistance Center provides free help to anyone in the country providing (or planning to provide) harm reduction services to their community. This may include syringe services programs, health departments, programs providing treatment for substance use disorder, as well as prevention and recovery programs.

HarmReductionHelp.CDC.gov/s/

SAMHSA (Substance Abuse and Mental Health Services Administration)
Learn more about the harm reduction approach and harm reduction services, and how it fits into the continuum of care.

SAMHSA.gov/Find-Help/Harm-Reduction

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Alcohol and Tobacco Harm Reduction Interventions

Individual, micro-level interventions to reduce the risk of violence and injury due to alcohol use include bars or nightclubs providing de-escalation trainings to their staff, requiring IDs inside bars and clubs, and strategies to reduce the risk of sexual assault. While the responsibility of a sexual assault always falls in its entirety on the perpetrator, research into protective behavioral strategies (PBS) such as always being mindful of one's drink, has shown that experiences of sexual assault are associated with lower usage of PBS.[13-15]

Goal 2: Reducing Alcohol Related Traffic Incidents

Possibly the most recognizable form of alcohol harm reduction is the reduction of alcohol-related traffic incidents and fatalities.

Environmental, macro-level interventions include mass media campaigns advocating for designated drivers or ride-share services that encourage less-risky alternatives to driving while intoxicated. To encourage the use of public transportation for events or holidays that are known to involve excessive drinking, such as sporting championships or New Year's Eve, many cities implement free public transport programs.[16-18] Simultaneously, DUI checkpoints may be used in high-risk areas or during high-risk events. DUI checkpoints have been found to reduce alcohol involved crashes by 17% and overall crashes by 10–15%.[19]

Individual, micro-level interventions focus on changing an individual's behavior as it relates to driving a vehicle while under the influence of alcohol. These types of interventions include installing breathalyzer (interlock) locks on the cars of previous offenders to prevent a person from driving while intoxicated or utilizing a ride-share service after drinking. Since 2001 the number of states mandating some kind of interlock has increased rapidly; as of 2019, 44 states have some level of ignition interlock laws. Laws requiring all offenders, including first time offenders, to install an interlock are the most effective: all-offender interlock laws are associated with 26% fewer drivers with an 0.08 or higher BAC (blood alcohol content) level and are effective at reducing the number of impaired drivers involved in fatal crashes.[20] Individuals can reduce their risk of being involved in an alcohol related traffic incident by planning ahead to use a ride-share service or having a designated driver, although research into the impact of ride-share services is complex and nuanced. One study found that while having complimentary ride share services reduced the likelihood of driving while intoxicated and slightly reduced the number of alcohol-induced crashes, the amount of alcohol consumed by study participants also increased, indicating a countervailing effect.[21]

> Environmental, macro-level interventions are intended to influence alcohol consumption of a population or to broadly reduce alcohol-related harms at a societal level.

Goal 3: Moderation of Consumption

An important goal of alcohol harm reduction is to reduce the incidence of excessive drinking such as heavy episodic or binge drinking, as much of the harm from alcohol is due to heavy drinking episodes.[22, 23]

Environmental, macro-level interventions and policies can be utilized to limit, control, or decrease the amount of alcohol people consume and the ways in which they consume it. Laws regulating "happy hour" or other time-limited drink specials, wholesale pricing such as volume discounts (i.e., the same price must be charged for products regardless of the amount purchased by individual retailers), and taxes on alcohol and alcoholic beverages are all policies designed to moderate alcohol consumption. While many of these strategies have a strong evidence base to support their efficacy, others have not yet been fully examined. In general, there is a strong relationship between alcohol pricing and alcohol consumption. Higher taxes and prices of alcohol are associated with reductions in binge or excessive drinking.[24, 25] Stronger state alcohol policies and excise taxes are associated with a lower risk of alcohol consumption trajectories among underage youth.[26] On the other hand, while drink specials are known to increase the amount of alcohol consumed, heavy drinking and intoxication, and are associated with increased adverse health outcomes and other alcohol-related harms,[27-30] the impact of laws regulating these drink specials has not yet been fully examined and represents a gap in the alcohol policy literature base.[27]

Another environmental intervention, social norms marketing, is widely used with college and university students, a population shown to have exceedingly high rates of binge drinking.[31] Students often overestimate how much their peers drink. Social norms marketing highlights actual norms of drinking behaviors among college students so that students may accurately compare their drinking behaviors with their peers and, if necessary, reduce their alcohol intake.[32] Despite the widespread use of these interventions the empirical evidence supporting the impact of social norms marketing is mixed. The first national evaluation of social norms[33] found no evidence to support the efficacy of social norms marketing in reducing alcohol consumption, and conversely, that drinking increased at schools that employed these marketing strategies. However, in a more recent systematic review of 89 studies, 75% of included studies reported significant effects of social norms marketing on the reduction of drinking behaviors[34] although these studies mostly relied on self-report measures of behavior change and did not assess change beyond six months.[34] Critiques of the social norms literature base highlight the need for more clearly defined studies that specifically measure the role of misperceptions on behavior, further understanding around the development of normative misperceptions, and more robust evaluations and randomized controlled trials of social norms marketing interventions.[32, 34]

Individual, micro-level interventions to moderate alcohol consumption include PBS and managed alcohol programs (MAPs). Protective behavioral strategies are behavioral adaptations that can occur before, during, or after drinking to moderate the amount of alcohol consumed. Planning ahead to stop drinking after a certain number of drinks, alternating alcoholic drinks with non-alcoholic drinks, or choosing to drink lower alcohol content drinks instead of higher proof alcohols, are all strategies individuals can adopt to reduce the harms of excessive alcohol consumption. Recent research has shown that youth who adopted more PBS reported less binge drinking and fewer alcohol-related consequences than those who did not utilize PBS.[35-37] However, other research has shown an inconsistent effect of PBS on alcohol consumption and insufficient evidence to support PBS as a mechanism for change. Researchers suggest that these inconsistencies are due to variability in measurement, a lack of clear definitions of PBS, a lack of longitudinal studies, and irregularities in study implementation.[36, 38, 39]

MAPs are an individual-level intervention for people with severe, chronic alcohol use disorders who may also be structurally vulnerable (e.g., living in poverty, unstably housed). This population may be driven to consume nonbeverage alcohol such as mouthwash, hand sanitizer, or rubbing alcohol due to financial or structural barriers.[9, 40] The goal of MAPs is to reduce both acute and chronic harms of alcohol consumption by reducing risky alcohol consumption while also addressing sources of structural vulnerability.[9] The implementation of MAPs varies widely, but the key intervention component involves offering limited amounts of beverage alcohol on a daily schedule to people with AUD who are at high risk of using non-beverage alcohol and for whom conventional treatment has not been successful. Generally, this is combined with other social supports such as access to food and cooked meals, primary health care, housing supports, and other social services.[41] Research has demonstrated a significant amount of evidence to support the efficacy of MAPs to reduce both levels of alcohol consumption and alcohol related harms, though these results are nuanced.[42-44] For example, in a study of six MAPs in Canada, participants had more drinking days overall compared to the control group, but on drinking days they drank 7.1 drinks less per day than the control group did. Additionally, long-term MAP residents drank less nonbeverage alcohol than new MAP residents and the control group, and any participation in the MAP was associated with reduced social, safety, and legal problems, indicating a stabilizing effect of the program.[41] Despite promising results of MAP programs, there is a need in the research base for more systemic reviews of the effects of these programs, and further research should be done to identify and standardize best practices of MAP implementation.[43, 45]

Individual, micro-level interventions are focused on modifying or adapting a person's behaviors to reduce alcohol-related harms to the individual.

Tobacco Harm Reduction Interventions

Smoking remains the largest contributor to preventable deaths in the United States, with more than 480,000 deaths annually due to smoking cigarettes. Like alcohol, tobacco products are highly regulated, and have both macro- and micro-level interventions.

Environmental, macro-level interventions to reduce the harms of tobacco use include taxes on tobacco products and policies to regulate pricing. As with alcohol, the efficacy of these policies to reduce smoking is strongly supported.[25, 46] One type of environmental intervention specific to tobacco is to regulate the branding and marketing of tobacco products. For example, the World Health Organization

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advocates for the addition of graphic warning labels on cigarette boxes.[47] Many countries have opted for plain cigarette packaging, or packaging without any trademarks or distinguishing features.[48] These types of interventions decrease tobacco use, decrease positive perceptions of tobacco use, and increase knowledge about the negative impacts of smoking.[49] However, these types of interventions are strongly opposed by tobacco companies[50] and have been difficult to implement in the United States due to these challenges.

Individual, micro-level interventions include alternative tobacco products such as e-cigarettes and snus, and nicotine replacement therapy (e.g., patches or nicotine gum). These products aim to reduce tobacco use harms by removing the combustion element inherent to tobacco products such as cigarettes or cigars. This combustion is the largest driver of tobacco related mortality, not necessarily the nicotine itself.[51] The discussion around alternative nicotine products, especially e-cigarettes or vapes, is complex and the research literature is conflicted. Proponents of alternative tobacco products and nicotine replacement therapy frame these products as harm reduction tools that can facilitate a transition to abstinence by moderating withdrawal effects while reducing the harms due to tobacco combustion, leading to a large public health benefit. Detractors are concerned that these products renormalize nicotine use, especially among youth, and that these products haven't been sufficiently evaluated for efficacy and safety.

Recent studies and systematic reviews of the literature have found strong evidence that e-cigarettes can moderately reduce cigarette consumption, are more effective for smoking cessation attempts when compared to placebo or other treatments and reduce the number of adverse events associated with nicotine use.[52–55] However, other studies emphasize the need for longer-term research before endorsing nicotine replacement products.[56] Nicotine itself is not considered a carcinogen,[57] but some studies have found that nicotine itself may play a role in the acceleration of some cancers and suggest that any consumption of nicotine can lead to negative health outcomes.[58] Analyses of e-cigarettes have found cytotoxic (i.e., can damage or kill cells) effects on lung tissue, impaired respiratory function in e-cigarette users, and other associated health risks.[59, 60] The evidence suggests that e-cigarettes and vapes are likely to be less risky than traditional cigarettes and may be an effective harm reduction tool for those who are already smokers, but it is also clear that these products are not without harm themselves.[61] More research needs to be done on the risks and the long-term effects of these products to better understand where e-cigarette and vape products fall on the tobacco harm reduction spectrum.

Summary

While the primary focus of harm reduction is on reducing the risk from a particular substance rather than on the use of the substance itself, this approach also recognizes that abstinence is the ideal goal for many. Much of alcohol and tobacco harm reduction work happens at an **environmental, macro-level**, focusing on the use of laws, financial incentives, and infrastructure design strategies to encourage the moderation of alcohol and tobacco consumption. **Individual, micro-level interventions** are also utilized, concentrating on modifying or adapting a person's behavior to reduce alcohol- or tobacco-related harms to the individual. As alcohol and tobacco are both legal substances and a prevalent source of morbidity and mortality in the United States, it is critical to expand our understanding of harm reduction as it relates to alcohol and tobacco use and the negative outcomes associated with these substances across the general population.

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Research Scientist, Butler Center for Research

Quyen Ngo, PhD
Executive Director, Butler Center for Research

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