

The Gathering Storm: Alcohol Abuse among the Chinese in Asia, and the Public Health Response

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Abstract

The purpose of this article is to describe from a public health perspective the effects of alcohol consumption on population rates of alcohol problems in China, Malaysia and the broader Asia Pacific region. The current situation in China and, to a lesser extent in other countries of Southeast Asia with large Chinese minorities, can be described as ominous. Strong pressures toward modernization of the consumer economy and the normalization of alcohol use portend increased drinking in the Asian region. After reviewing the possible contributing factors to alcohol-related epidemics, the article then evaluates the policy responses that are appropriate to the prevention of alcohol problems in the region. It is concluded that policies that limit access to alcoholic beverages, discourage driving under the influence of alcohol, reduce the legal purchasing age for alcoholic beverages, limit marketing exposure and increase the price of alcohol, are likely to reduce the harm linked to drinking.

Key words: alcohol, public health, policy, alcohol problems

Introduction

In many ways, trends in alcohol consumption in Southeast Asia are similar to the trends in climate change and global warming. Both are leading to man-made epidemics of disease and disability. Both will lead to extreme conditions in many countries, with floods and typhoons in the case of climate, and binge drinking and drink-driving fatalities in the case of alcohol. Both are partially attributable to the activities of large corporations, which often minimize the extent of the problem and oppose meaningful action. And both will require global solutions that are implemented at a national level.

The purpose of this article is to describe from a public health perspective the effects of alcohol consumption on population rates of alcohol problems in China, Malaysia and

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the broader Asia Pacific region. The article then evaluates the policy responses that are appropriate to the prevention of alcohol problems in the region.

This review of epidemiological and policy research is based in part on the book, *Alcohol: No Ordinary Commodity*, which was first published in 2003 and was substantially revised in 2010. It has been translated into Korean, Thai and Chinese. The book was written by an international group of alcohol policy experts under the sponsorship of the World Health Organization. The main theme of the book is that because of its myriad effects on health and well-being, alcohol is not an ordinary commodity, and alcohol policy needs to recognize this fundamental fact.

Alcohol Use and Misuse in Chinese Populations

With approximately 20 per cent of the world's population, China is not only the most populous country, it is also the world's largest economy. In addition, there are over 50 million ethnic Chinese, most living in the Southeast Asian nations of Thailand, Malaysia, Indonesia, and several other Pacific Rim countries.

The Chinese have had a long history with the production and use of alcoholic beverages, especially wine. In many Chinese societies, drinking together is an essential part of socializing and camaraderie. "A thousand cups of wine is not too much when bosom friends meet" according to an old Chinese saying. Throughout history, social drinking has been governed by strictly prescribed rules of social conduct. Those rules set expectations for who may drink, when drinking is permitted, how much should be consumed on the occasion, how to participate in a toast, and how to behave after consuming alcohol.

In antiquity, wine taxes and other measures prohibiting wine-making suggest that alcohol was not considered an ordinary commodity. Today, the production and sale of alcoholic beverages generate profits for farmers, manufacturers, advertisers, and investors. Alcohol provides employment for people in bars and restaurants and tax revenues for the government. Despite these benefits, there are enormous health and social costs associated with the consumption of alcohol that often outweigh its economic benefits.

The current situation in China and, to a lesser extent in other countries of Southeast Asia with large Chinese minorities, can be described as ominous. Strong pressures toward modernization of the consumer economy and the normalization of alcohol use portend increased drinking in the Asian region. The high abstinence rate (81%) and low per capita consumption (1.3 litres per person) are good signs for predominantly Muslim countries like Indonesia and Malaysia, where the substantial non-Muslims populations provide good targets for the alcohol industry, which is interested in converting non-drinkers into drinkers, and occasional drinkers into regular drinkers.

Despite low per capita consumption of commercial alcohol, unrecorded alcohol consumption is increasing in Malaysia, and heavy episodic drinking is high among

people who do drink (WHO, 2014). Young persons and women are being targeted by alcohol marketers through the development of new products and sophisticated marketing techniques (Centre for Social and Health Outcomes Research and Evaluation, 2006). These developments are leading to alcohol problem epidemics in Thailand, Korea, and China (Tang *et al.*, 2013; Hao, Chen and Su, 2005; Cochrane, Chen, Conigrave and Hao, 2003).

Table 1 shows indicators of alcohol consumption for China and several countries in Southeast Asia. It may be noted that the per capita consumption is increasing in China, Malaysia and Singapore, and is either stable or declining in the remaining countries. The countries with the lowest per capita consumption are predominantly Muslim (Malaysia and Indonesia) or Buddhist (Myanmar), nations that also have high proportions of lifetime abstainers. The per capita consumption of drinkers differs markedly across nations with China and Thailand showing higher average levels of drinking than the other countries. The prevalence of heavy episodic drinking, especially among males, is highest in Indonesia and China. These data suggest that by most indicators alcohol consumption and heavy drinking are high in China and Thailand, and low in the predominant Muslim countries. In comparison with Europe and the Americas, alcohol consumption is lower in Asia, but the trends suggest that consumption is increasing in the growing economies such as China and Thailand.

Table 2 shows recent statistics for alcohol-related health consequences in Asian countries with large Chinese populations. The alcohol-attributable fraction is the proportion of a given health condition caused by alcohol. In China, for example, 73.0 per cent of the liver cirrhosis in males and 59.8 per cent in females are attributable to alcohol. China, Thailand and the Philippines lead all of the other countries in alcohol-attributable fractions for cirrhosis and traffic accidents, as well as prevalence rates for alcohol use disorders, such as alcohol dependence and harmful drinking.

Beyond the aggregate statistics, little is known about the drinking patterns of ethnic Chinese in countries with large Chinese minorities. The Chinese overseas vary widely as to their degree of assimilation, their interactions with the surrounding communities, and their relationship with China. Thailand has a large Chinese community and is one of the most successful cases of full assimilation. On the other hand, in Malaysia, Singapore, and Brunei, the Chinese have maintained a distinct communal identity in the local multicultural societies.

What Factors Account for the Gathering Storm?

In the view of public health professionals, three important mechanisms explain alcohol's ability to cause medical, psychological, and social harm (Babor *et al.*, 2010; Room *et al.*, 2011). They are physical toxicity, intoxication, and dependence. Alcohol

Table 1. Alcohol Consumption in Asian Countries with Large Chinese Populations (≥ 1 million)

	China	Malaysia	Thailand	Indonesia	Singapore	Myanmar	Philippines
Alcohol per capita (15+) consumption (in liters), 2008-2010							
Recorded ^a	5.0	0.3	6.4	0.1	1.5	0.1	4.6
Unrecorded	1.7	1.0	0.7	0.5	0.5	0.6	0.9
Change from 2003-2005	↗	↗	→	→	↗	→	↘
Total alcohol per capita (15+) consumption, drinkers only (in liters), 2010	15.1	10.5	23.8	7.1	3.9	8.9	12.3
Prevalence of heavy episodic drinking ^{b,c} (%), 2010							
Males	24.3	3.4	4.7	42.8	12.8	1.5	6.3
Females	2.5	0.4	0.5	6.2	1.3	0.1	0.8
Lifetime abstainers (15+) (%), 2010							
Males	25.8	73.1	42.5	74.2	14.3	76.5	21.5
Females	52.3	89.2	75.5	90.0	54.0	91.1	46.2

Source: Adapted from World Health Organization, *Global status report on alcohol and health 2014*

Note: ^a Tourist consumption deducted when at least as many tourists as inhabitants

^b Drinkers only

^c Consumed at least 60 grams or more of pure alcohol on one occasion in the past 30 days

Table 2. Alcohol-related health consequences in Asian countries with large Chinese populations (≥ 1 million)

	China	Malaysia	Thailand	Indonesia	Singapore	Myanmar	Philippines
Alcohol-attributable fractions (AAF) (%), 2012							
Liver cirrhosis, males/females	73.0/59.8	30.8/28.6	67.2/40.5	16.0/30.7	32.2/37.6	20.0/29.2	66.7/49.6
Road traffic accidents	22.2/4.4	1.3/0.1	24.9/1.4	3.6/0.2	3.7/0.8	0.5/0.0	9.9/2.0
Years of life lost (YLL) score ^a , 2012	4	2	5	2	2	2	3
Prevalence of Alcohol use disorders (%), 2010 ^b							
Alcohol use disorders ^c	4.9	2.4	5.0	0.8	0.9	1.5	4.6
Alcohol Dependence	2.4	1.1	1.8	0.7	0.5	0.7	2.9

Source: Adapted from World Health Organization, *Global status report on alcohol and health 2014*

Note: ^a Scored 1-5, with 1 being the least and 5 being the most. Based on alcohol-attributable years of life lost

^b 12-month prevalence estimates (15+)

^c Including alcohol dependence and harmful use of alcohol

is a toxic substance in terms of its direct and indirect effects on a wide range of body organs and systems. It contributes to as many as 200 health conditions. Acute alcohol intoxication impairs psychomotor functioning, speech, behaviour and decision-making, increasing the chances of accidents, injuries and interpersonal problems. With chronic drinking and repeated intoxication, a syndrome of interrelated behavioural, physical, and cognitive symptoms develops, called alcohol dependence.

The mechanisms of toxicity, intoxication, and dependence are related to the ways in which people consume alcohol, called “patterns of drinking” (See Babor *et al.*, 2010 for review). Drinking patterns that lead to elevated blood alcohol levels result in problems associated with acute intoxication, such as accidents, injuries, and violence. Drinking patterns that promote frequent and heavy alcohol consumption are associated with chronic health problems such as liver cirrhosis, cardiovascular disease, and depression. Sustained drinking may also result in alcohol dependence, which impairs a person’s ability to control the frequency and amount of drinking. For these reasons, alcohol is not considered an ordinary consumer substance from a public health perspective.

According to one theory of disease causation (Babor and Robaina, 2013), these mechanisms can be considered part of an epidemiological cascade of various causal factors that results in alcohol-related disease, disability and mortality. Religious beliefs, culture, economic development, alcohol availability, alcohol control policies and the alcoholic beverage industry are all part of a complex causal chain that affect alcohol problem rates in different countries. These factors operate in complex ways to influence long-term trends in alcohol consumption as well as short-term epidemics.

Religious beliefs can have profound effects on alcohol consumption rates, as reflected in World Health Organization (WHO) statistics demonstrating that the countries with predominant Muslim populations have the lowest per capita consumption rates (WHO, 2014). Malaysia’s predominant Muslim religion and culture, for example, seem to have a protective effect on drinking problems, but economic development and increasing alcohol availability are factors that may change the country’s risk profile, particularly in Malaysia’s non-Muslim Chinese and Indian populations.

Cultural factors also play an important role, particularly in the learned patterns of drinking that are manifested in different population groups (Babor, 1986), including youth, women, and people living in wine drinking countries. These patterns range from periodic binge drinking to regular consumption of moderate amounts of alcohol.

Regarding economic development, it is well established that alcohol consumption increases with income (Gallet, 2007) and drinking declines during economic recessions (Kruger and Svensson, 2008).

In addition to disposable income, the physical availability of alcohol, as determined by the number of sales outlets, has been implicated in the development of conditions that promote regular and excessive drinking (Babor *et al.*, 2010). Physical availability

refers to the accessibility or convenience of obtaining and consuming alcoholic beverages. When alcohol is easy to obtain, low in price, and socially acceptable, people tend to drink more. In general, the greater the amount and frequency of drinking, the higher the rates of alcohol-related problems. Beyond physical availability, the concept can be broadened to include other mechanisms that control or facilitate access to alcohol, including economic, subjective and social availability. Economic availability refers to the affordability of alcohol. Subjective availability refers to a person's impression of how accessible alcohol is to them, and it affects their willingness to expend energy to obtain alcohol as well as their response to alcohol marketing. Finally, social availability is the way alcohol is affected by the informal access to alcohol provided by a person's key social groups, such as family, friends, sports clubs, and business associates.

Within this model of alcohol availability, corporations involved in the production and distribution of wine, beer and spirits are being increasingly implicated in the creation of heavy drinking cultures and related disease conditions (Freudenberg, 2014). The nature of the alcohol industry has been changing dramatically through the globalization of production, trade policies and new marketing procedures to promote alcohol products throughout the world (Jernigan, 2009). The brewing, spirits and wine industries have promoted the development of new products (e.g., alcopops, light beer) targeted at women and young drinkers, marketing them to young people using sophisticated advertising techniques, and they have become actively engaged in policy development in ways that do not respect public health needs (Anderson, 2009; Hawkins, Holden and McCambridge, 2012). One of the most novel aspects of the industry's international reach is the growing use of social media and traditional marketing techniques to associate alcohol with sports, recreation, pleasure and Western lifestyle (Mooney, 2011; Rhoades and Jernigan, 2013; deBruijn, 2011).

The Public Health Model

The public health model of alcohol-related problems proposes that in modern economies alcohol epidemics are increasingly being caused by the interaction among the agent (alcohol), the environment (including alcohol availability and affordability), and the host (e.g., the people who are vulnerable to develop alcohol-related problems). In this model, the agent is not just the substance, ethyl alcohol, but also the alcohol industry, which is responsible for promoting alcohol as an ordinary commodity.

Public health concepts provide an important vehicle to manage the health of populations in relation to the use and misuse of beverage alcohol. Public health concepts can help communities and nation states design better preventative and curative services. Ultimately, the value of approaching alcohol problems within a public health framework is that it draws attention to the "upstream" sources of the damage as opposed to attributing alcohol-related problems exclusively to the personal behaviour of the individual drinker.

Upstream sources of the damage include affordable prices, easy availability, a culture of universal drinking supported by aggressive marketing and the lack of regulatory controls. Many of these sources of damage are attributable to the lack of appropriate government policies, and they are also the result of the activities of the alcoholic beverage industry to influence government policies and to increase the sales of its products through marketing and design features.

Evidence-based Alcohol Control Policy

Evidence-based alcohol control policy is a way to rise above the gathering storm. Fortunately, the Pacific Rim countries in Asia can take action to prevent alcohol-related problems by strengthening evidence-based policies. One way to do this is to implement on a national level the WHO's Global Strategy to Reduce the Harmful Use of Alcohol (WHO, 2010), which recommends many of the policies reviewed in *Alcohol: No Ordinary Commodity*.

Most of these strategies and interventions have been investigated using systematic research methods in a variety of different countries. Reviews of the research evidence from hundreds of studies conclude that the most effective policies, and the ones that are the least expensive, are the ones that address alcohol problems upstream: regulating physical availability, pricing policies that prevent the sale of cheap alcohol, and regulating alcohol marketing. These are the three "Best Buys" recommend by the WHO to reduce global impact of non-communicable diseases (WHO, 2011). In addition, drink-driving countermeasures, such as laws that specify a blood alcohol concentration of 0.05% for impaired driving, and regulations that require people who serve and sell alcohol to be trained to provide a safer context or environment for drinking, are midstream policies that are also effective. The most expensive interventions are treatment and prevention. They may be effective as downstream alcohol policies, but they only reach small numbers of people. The following paragraphs summarize what the scientific evidence reveals about the effectiveness of each of these general strategies and interventions.

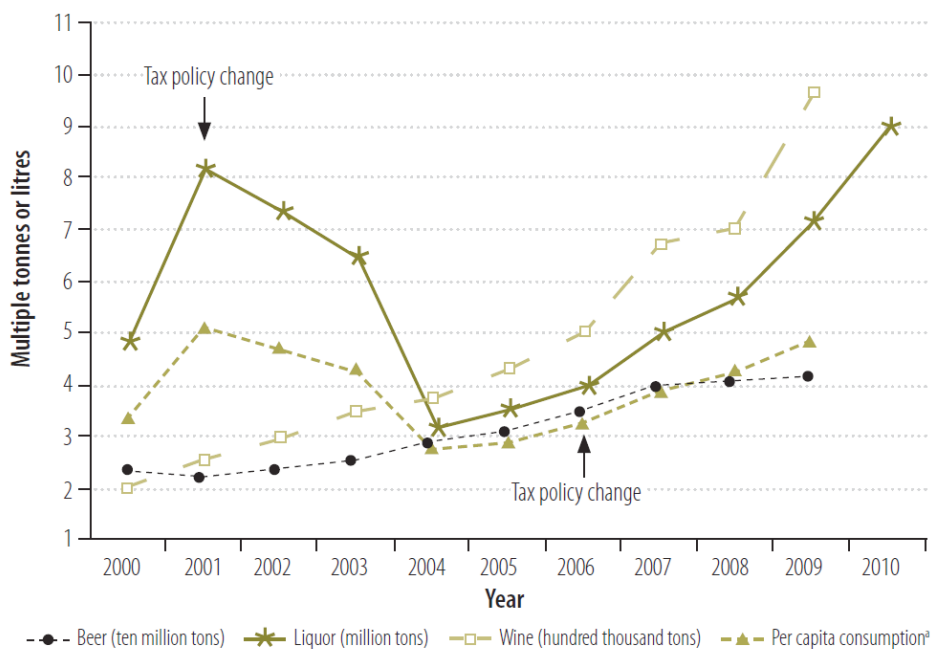
Pricing and Taxation Policies

Pricing and taxation policies have been used for centuries to control alcohol-related problems and to generate government revenues. They include excise taxes on the volume of alcohol sold, minimum prices, bans on happy hours and so-called smart taxation, which is designed to shift consumption towards weaker types of alcohol.

In general, people increase their drinking when prices are lowered, and decrease their consumption when prices rise (Wagenaar, *et al.*, 2009). Adolescents and problem drinkers are no exception to this rule (Cook and Moore, 2002). Increased alcohol taxes and prices are related to reductions in alcohol-related problems, including crime, traffic accidents and mortality rates (Wagenaar *et al.*, 2010). Alcohol taxes are thus an attractive instrument of alcohol policy because they can be used both to generate direct revenue and to reduce

alcohol-related harm.

For example, the beer and stout industry in Malaysia plays an important role in generating approximately RM1.4 billion each year in tax revenue for the government. Over the past decade, the Malaysian Government has significantly increased the excise rate on beer and stout, the preferred alcoholic beverages in that country. Between 1991 and 2006, there was a 169 per cent increase in the Beer and Stout excise rate, in addition to a 15 per cent *ad valorem* duty imposed in 2005, making these taxes among the second highest in the world (Confederation of Malaysian Brewers, CCMB, 2007). The tax increase caused beer and stout volumes to fall as consumers switched to consumption of other forms of



^a Per capita annual consumption of pure alcohol (litres).

Figure 1. Average Annual National Production of Alcoholic Beverages and Average Annual Per Capita Consumption of Alcohol in China, 2001-2011

Source: Reproduced, with permission of the publisher, from Tang Yi-lang, Xiang Xiao-jun, Wang Xu-yi, Cubells JF, Babor TF, and Wei Hao, *Bull World Health Organ*, 2013; 91: Page 271 (Figure 1)

alcohol or cut down on their drinking (CCMB, 2013). Since 2004, the consumption of tax paid beer and stout dropped by 14 per cent whereas wine and spirits volumes have increased by 12 per cent and 3 per cent, respectively, over the same period. The significant drop in beer and stout volumes caused the total alcohol market to fall by 13 per cent during this period.

China provides another example of how tax policies influence alcohol consumption. Although the government's intention was to increase liquor revenues (rather than prevent

alcohol-related problems), liquor production decreased sharply from 2001 to 2004 because of a tax increase. In 2006 the government discontinued differential taxation for potato and grain liquor. This was followed by dramatic increases in alcohol consumption (Tang *et al.*, 2013). Figure 1 illustrates that it was not only affordable prices that were followed by increased consumption, but also the aggressive marketing activities of the largest alcohol producers, many of them large transnational producers. These examples demonstrate the powerful effect that taxes can have on alcohol consumption.

The most important downside to raising alcohol taxes is smuggling and illegal in-country alcohol production. Political opposition from the alcohol and hospitality industries, as well as trade harmonization policies, make tax interventions difficult to implement and maintain.

Physical Availability Policies

Restrictions on alcohol availability focus on regulating the places, times, and contexts in which consumers can obtain alcohol, and include both partial and total bans on alcohol sales. There is great variability in the regulation of access to alcohol. A number of countries have monopolies for at least some form of retail sale (discussed in the next section), and many Islamic states and some localities in other countries practise total prohibition. In contrast, there is concern in many Asian countries that cheap, informal-produced alcohol is easily obtained and largely unregulated. Informal alcohol markets are a relatively small part of total consumption in most of the developed world. In countries like Malaysia and South Korea, informal retail markets can be important, accounting for as much as 25 per cent of total consumption.

The main assumption behind this approach to alcohol control is that restrictions on time, place, and density of alcohol outlets reduce the demand for alcoholic beverages by increasing the time and effort to obtain alcohol (Babor *et al.*, 2010). Related strategies include age restrictions on the purchase of alcohol and the promotion of alcohol-free environments such as the workplace or sports arenas. In this way, availability restrictions reduce total volume consumed as well as alcohol-related problems. Consistent enforcement of availability controls is a key ingredient of effectiveness. License suspensions and revocations often provide the most direct and immediate enforcement mechanism.

Alcohol availability is typically regulated in license systems by enacting limits on purchase age, restricting hours and days of sale, and controlling the number, location, and type of retail outlets. All of these restrictions have been subject to systematic research in a variety of countries. The research shows very good evidence of effectiveness in reducing both alcohol consumption and alcohol-related problems (Babor *et al.*, 2010; Room *et al.*, 2005). Substantial changes in the number of alcohol outlets result in significant changes to alcohol consumption and related harm.

The evidence of an association between outlet density and alcohol-related harms is quite consistent. A growing number of studies find higher rates of alcohol-related problems

in areas with higher outlet densities, such as late night entertainment districts. A Brazilian study examined how restrictions on hours of sale affected the rates of alcohol-related harm (Duailibi *et al.*, 2007). A new law in Diadema (an industrial city near São Paulo in Brazil) mandated all on-premise alcohol outlets to close at 11p.m. Prior to the law most bars traded 24 hours a day. The study found a reduction of around nine murders a month after the restrictions were imposed.

This and other research suggests that dense clustering of alcohol outlets into entertainment districts is particularly problematic because it increases niche environments or the number of interactions among drinkers, thus increasing the likelihood of violent incidents. These districts often involve large numbers of drinkers moving from premise to premise throughout the night, increasing the likelihood of alcohol-related aggression. When restrictions are placed on hours of sale, they can reverse the negative effects of concentrated alcohol establishments.

Another example of a successful alcohol policy based on restricting physical availability is the enforcement of age restrictions on drinking through laws that raise the minimum legal purchasing age among young drinkers (Wagenaar and Toomey, 2002). In 1984 the US Congress passed the National Minimum Purchase Age Act, which encouraged states to adopt the age 21 purchase standard. As each of the 50 states implemented the standard, the number of young people who died in a crash when an intoxicated young driver was involved has declined by almost 63 per cent.

Making beverages of low alcohol content (e.g., 3% alcohol or less) more available than higher-strength beverages may also be effective in reducing overall alcohol consumption and problems. Regulations directed toward commercial vendors of alcohol who sell to minors and ignore other restrictions can also be effective, but these regulations need to be supported by a system of specific licenses for selling alcoholic beverages that is enforced through the power to suspend or revoke a license in the case of selling infractions (Babor *et al.*, 2010).

In contrast to licensing systems, a comprehensive alternative method to regulate alcohol availability is through government-owned retail monopolies. In a monopoly system, the state controls all or most of the retail sales of alcohol. Monopolies can lead to a reduction in both physical and economic availability by reducing the opportunity for profit-making in the private sector, whether through sales, marketing or promotion. This reduced opportunity lowers incentives and motivation for private entrepreneurship, thereby eliminating price competition and enabling high retail prices. State monopoly systems often lead to a smaller number of outlets and limited hours of sale. State monopoly systems have been established in most Nordic countries, Canada, parts of the US, some central and eastern European countries as well as the former Soviet Union, many of them following a period of prohibition during the 1920s. However, recent political developments have led to market deregulation, privatization, and a shift in priority from public health

goals to an emphasis on revenue generation for the state.

Restrictions on Marketing and Other Types of Alcohol Promotion

The marketing of alcohol has now become a global industry where transnational alcohol producers and advertising agencies promote their products through television, radio, print, point-of-sale promotions, and the Internet. Exposure to repeated high-level alcohol promotion can establish pro-drinking attitudes, facilitate the early onset of drinking and increase the amount consumed by those already drinking (Gordon and Harris, 2009). Alcohol advertising reinforces the perception that drinking is positive, glamorous, and relatively risk-free. Studies in neuroscience, psychology and marketing conclude that adolescents may be especially attracted to risky branded products that, in their view, provide immediate gratification, thrills, and/or social status (Anderson *et al.*, 2009). If an advertisement portrayal corresponds closely to personally-relevant reference groups, children will be more likely to copy it. If children admire models in an advertisement, they learn to expect that imitating the models' behaviours will bring positive results. Repeated exposure to visual modeling can make even marginal behaviour seem normal and desirable by desensitizing the observer to the possible risks (Austin *et al.*, 2006). For these reasons, marketing to young people undoubtedly contributes to the on-going recruitment of young people to replace drinkers lost to the industry by attrition in mature markets and to expand the drinking population in emerging markets.

The main ways to regulate alcohol marketing are by means of total bans (as done in Norway and France), partial bans, such as restrictions on advertising during day-time television broadcasts when children are watching, and voluntary self-regulation. Self-regulation consists of content guidelines developed by the alcohol industry that define irresponsible advertising practices (e.g., cartoon characters, celebrities, young looking actors, excessive drinkers, drinking while driving), and exposure guidelines, which specify markets that should not be exposed to alcohol promotions (e.g., children, adolescents, pregnant women).

Studies in the European Union, Africa, Australia and the United States that self-regulation codes are often circumvented (deBruijn *et al.*, 2012; Marin Institute, 2008; Babor *et al.*, 2009; Donovan *et al.*, 2007; Jones and Donovan, 2002; Vendrame *et al.*, 2010). In the United States, for example, content guidelines over a ten year period were found to be systematically violated during college basketball tournaments appealing primarily to college students, most of whom are below the legal alcohol purchase age. When complaints are filed through the industry's compliance mechanisms, they are often denied for technical reasons (van Dalen and Kuunders, 2006). Industry compliance with self-regulation advertising codes should be evaluated regularly for both exposure and content guidelines by independent evaluators rather than the industry-appointed groups. The Precautionary Principle, which gives priority to the health of vulnerable populations, suggests that alcohol promotion communications should be limited in the interests of public health (Kriebal and Tickner, 2001).

Drinking and Driving Countermeasures

Alcohol is a major risk factor for traffic fatalities and injuries, especially in developing countries with rapidly expanding ownership of motor vehicles. A variety of legal measures have been developed to deter drink-driving. Frequent, highly visible, non-selective testing (and selective testing if carried out with sufficient intensity) can have a sustained effect in reducing drink-driving and the associated crashes, injuries, and deaths (Elder *et al.*, 2002). The most effective approach is Random Breath Testing or Compulsory Breath Testing (Shults *et al.*, 2001). Sobriety checkpoints also increase the public perception of likelihood of apprehension. The evidence indicates that laws setting a reasonably low level of blood alcohol concentration (e.g., 0.05%) at which one may drive legally, combined with well-publicized enforcement, significantly reduces drink-driving and alcohol-related driving fatalities (Fell and Voas, 2006; Tippits *et al.*, 2004). This is a required first step for effective drink-driving policy. Several approaches reduce recidivism of drink-driving, including counselling or therapy plus license suspension and ignition interlock devices that prevent a vehicle from being started until the driver passes a breath test (Elder *et al.*, 2011). While Designated Driver and Safe Ride Programs, which provide alternative transportation to persons whose drinking has exceeded the legal limit, may deter some people who presumably would otherwise drive while intoxicated, no overall impact on alcohol-involved accidents has been demonstrated (Ditter *et al.*, 2005; Elder *et al.*, 2005), and there is some evidence that they may inadvertently contribute to heavy drinking. Effective interventions for young drivers, who are at higher risk for traffic accidents, include a policy of zero tolerance (i.e., setting a blood alcohol concentration level as close to 0% as possible) (Shults *et al.*, 2001) and the use of graduated licensing for novice drivers (i.e., limits on the time and other conditions of driving during the first few years of licensing) (Shope, 2007). Traditional countermeasures such as driver training and school-based education programmes are either ineffective or yield mixed results (Ditter *et al.*, 2005; Elder *et al.*, 2005).

Modifying the Drinking Context

Alcohol is consumed in a variety of contexts including private residences, licensed premises and other settings such as parks, beaches, cars and campsites. As described in previous sections of this article, licensing provides the opportunity to regulate retail alcohol sales for both on and off-premise consumption. However, licensing of the environment where alcohol is actually consumed makes it possible to reduce harm over and above the licensing controls that apply to off-premise alcohol sales. For example, licensed premises such as bars, pubs and clubs may be subject to regulations of the training and licensing of staff, the forms of entertainment permitted and the maximum number of people who can be present at any time.

Research on measures to modify and regulate the drinking context shows that the training of bar staff can be effective in reducing alcohol-related violence and managing persons who are intoxicated, but such measures are only effective when there is consistent enforcement and the

potential for sanctioning individuals or employers that violate the rules such as serving alcohol to intoxicated patrons.

Education and Persuasion Strategies

School-based alcohol education programmes have been the predominant method used worldwide to prevent alcohol-related problems among young adults. School based alcohol education programmes are not an effective means to change drinking behaviour, but they have been found to increase knowledge and change attitudes toward alcohol (Foxcroft and Tsertsvadze, 2011). Beyond the provision of information about alcohol's negative effects, programmes that address self-esteem, general social skills, and activities intended to replace alcohol use (e.g., sports) are equally ineffective (Moskowitz, 1989). Modest changes in drinking have been associated with programmes that include multiple components (i.e., both individual-level education and family interventions), but the effects disappear after the programmes are concluded (Foxcroft and Tsertsvadze, 2011).

Public service announcements (PSAs) broadcast on television and radio that discourage alcohol misuse and driving while intoxicated are sometimes sponsored by non-governmental organizations, health agencies, and the advertising industry. Despite their good intentions, these messages have not been found to be effective in changing drinking behaviour or preventing alcohol-related problems. Similarly, health-warning labels on product packaging, such as messages explaining that consuming alcohol during pregnancy may cause birth defects, produce no change in drinking behaviour (Grube and Nygaard, 2001), despite the fact that a significant proportion of the population reports seeing the warnings. One possible reason for the lack of effectiveness is that these messages cannot compete with the high quality pro-drinking messages that appear much more frequently as paid advertisements in the mass media.

In sum, the impact of education and persuasion programmes tends to be small at best. When positive effects are found, they do not persist.

Treatment and Early Intervention Services

The development of specialized treatment programmes for alcoholics has become an accepted way for governments and for non-governmental organizations to help problem drinkers. Participation in almost any kind of treatment is associated with significant reductions in alcohol use and related problems, regardless of the type of intervention used. There are many different therapeutic approaches to choose from. The weight of evidence suggests that behavioural treatments (which teach relapse prevention skills) are more effective than insight-oriented therapies (which explore psychological conflicts and the underlying causes of excessive drinking) (Longabaugh *et al.*, 1983).

In addition to therapies based on counseling, behavioural skills training, and motivational enhancement, several new pharmacological compounds have been developed to address the neurobiological basis of alcohol dependence (Kranzler and Van Kirk, 2001).

Naltrexone, an opioid antagonist, and acamprosate, an amino acid derivative, have been shown to be effective in the prevention of relapse (O'Malley *et al.*, 1992; Kranzler and Van Kirk, 2001). However, these pharmacological interventions should be viewed as an adjunct to outpatient therapy rather than stand-alone treatments.

Although mutual help societies, such as Alcoholics Anonymous (AA), are not considered to be formal treatment, they are often used as inexpensive substitutes, alternatives, and adjuncts to treatment (Humphreys, 2003). Research suggests that AA itself can have an incremental effect when combined with formal treatment, and that AA participation alone may be as effective as formal treatment is (Babor and Del Boca, 2002; Humphreys, 2003; Walsh *et al.*, 1991).

In contrast to treatment provided to alcoholics in specialized settings, brief interventions consist of one to three sessions of counseling or advice delivered in general medical settings to non-alcoholic heavy drinkers. Numerous randomized controlled trials indicate that clinically significant changes in drinking behaviour and related problems can follow from brief interventions (Kahan, Wilson and Becker, 1995; Moyer *et al.*, 2002). In China, for instance, brief interventions have proved to be effective, although studies have focused on mixed samples of heavy and hazardous drinkers (Liu *et al.*, 2011; Li *et al.*, 2006; Li *et al.*, 2010.).

When treatment and early intervention are available to large segments of the population, there is some evidence that these services can reduce the rates of alcohol problems in a society (Smart and Mann, 2000). Nevertheless, specialized services (other than mutual help organizations) tend to be expensive and may not be cost-effective in developing countries unless they are integrated with the primary care system.

Conclusions and Implications

After years of research on alcohol control policies in many countries, several conclusions can be drawn about the most effective measures to prevent, reduce and manage alcohol-related harm.

First, alcohol problems can be minimized or prevented using a coordinated, systematic policy response. Policies that limit access to alcoholic beverages, discourage driving under the influence of alcohol, reduce the legal purchasing age for alcoholic beverages, limit marketing exposure and increase the price of alcohol, are likely to reduce the harm linked to drinking.

In most countries, regulation of affordability, physical availability, and alcohol promotions are the most cost-effective strategies, but enforcement of drink driving laws and provision of treatment and early intervention are also needed. According to WHO (Chisolm *et al.*, 2006), effective interventions produce a favourable health return for cost incurred in policy implementation.

Alcohol policy priorities should be informed by the epidemiological data and scientific evidence. Designing effective alcohol policies for a nation or for a community should start with an assessment of the policy responses that are already in place. To that end, Table 3 shows alcohol policies for seven countries in the Pacific Rim of Southeast Asia, drawing on data from an extensive WHO survey (WHO, 2014). Key informants in each country provided information about the nature and enforcement of selected alcohol policies.

Based on the country-level information provided in the WHO survey, eight policy areas were selected that could be evaluated in terms of the effectiveness findings described above. Because data were sometimes lacking on the extent to which these policies are implemented and enforced, it is not possible to say whether the policies actually are effective in a given country. Nevertheless, the table does provide a way to evaluate the potential impact of a country's policies, and to compare one country with another. As such, the ratings constitute a "report card" for each country in terms of key alcohol policies.

The countries differ markedly in the extent to which they have adopted national alcohol policies and in the types of policies adopted. Malaysia, Thailand and Indonesia have adopted the highest-impact policies overall, whereas China and Singapore show the lowest use of potentially effective alcohol policies.

Although all seven countries levy excise taxes on beer, wine and spirits, the amount of taxation differs across countries. Most countries report no regulations on hours of sale and density of outlets, and none have restrictions on days of sale. The maximum blood alcohol concentration for drinking drivers in all countries is consistent with WHO recommendations, but these limits are not consistently enforced. Moreover, most countries show weak controls on alcohol marketing and warning labels on alcohol packaging is virtually nonexistent.

Based on the survey information, it is clear that almost all the countries listed in Table 3 could improve their alcohol policies in a way that would increase the likelihood of preventing alcohol-related problems. For example, Random Breath Testing is an effective way to prevent alcohol-related automobile accidents and injuries. However, most countries in the region lack the resources or expertise to conduct Random Breath Testing. Similarly, most countries have the capacity to impose taxes on the production and sale of alcoholic beverages, but the relative price of alcohol in many of these countries is low in comparison to other countries in the world, where alcohol is considerably more expensive. One exception is Malaysia, which has one of the highest excise rates. Advertising restrictions are another area where alcohol controls are relatively weak in China and Southeast Asia. Two of the countries report no controls on alcohol advertising, and four of the others report minimal restrictions governing the marketing of alcohol. Only one country (Thailand) bans advertising entirely on television and radio, but even here only partial restrictions apply to print media and billboards. Age limits on the purchase of alcoholic beverages are specified in all countries with the exception of China, however most countries (Malaysia,

Table 3. Selected National Alcohol Policies in Asian Countries with Large Chinese Populations

Policies	Countries							
	China	Malaysia	Thailand	Indonesia	Singapore	Myanmar	Philippines	
Excise tax on:								
Beer	x	x	x	x	x	x	x	x
Wine	x	x	x	x	x	x	x	x
Spirits	x	x	x	x	x	x	x	x
National legal minimum age:								
Off-premise	-	18	20	21	18	18	18	18
On-premise	-	18	20	-	18	18	18	18
Restrictions for:								
Hours	-	x	x	x	x	x	x	x
Days	-	-	x	-	-	-	-	-
Places	-	x	x	x	x	x	x	x
Density	-	x	-	-	-	x	-	-
National maximum legal blood alcohol concentration when driving a vehicle	0.02	0.08	0.05	Zero tolerance	0.08	0.05	0.05	0.05
Legally binding regulations on:								
Alcohol advertising	x	x	x	x	-	x	-	-
Product placement	-	x	x	x	-	x	-	-
Alcohol sponsorship	-	-	x	x	-	x	-	-
Sales promotion	-	-	x	x	-	-	-	-
Legally required health warning labels on:								
Alcohol advertisements	-	-	x	x	-	-	x	x
Containers	-	-	x	x	-	-	-	x
National government support for community action	-	x	x	x	x	x	-	-
National monitoring system(s)	-	x	x	x	x	x	-	-
Written national policy	-	x	x	-	-	-	-	-
National Policy Score (out of 21)	5	14	18	15	10	14	14	10

Source: World Health Organization, 2014

Philippines, Singapore and Myanmar) allow purchases by those 18 years old.

The research summarized in this article has the following policy implications for China and other countries with large Chinese populations. First, countries with predominant Muslim populations should continue to be a model for other nations in Asia in the implementation of reasonably restrictive alcohol control policies. Second, countries should resist pressures from the alcoholic beverage industry, particularly the transnational producers that own local brands, to dismantle or weaken effective upstream policies such as excise taxes and advertising bans. Third, countries should focus on youth and other high intensity drinkers through targeted interventions such as drink-driving countermeasures, age restrictions, and early intervention in health care settings. Fourth, more can be done in each country to strengthen community action where evidence-based alcohol policies are adopted to prevent heavy drinking in Chinese populations.

“Thatch your roof before rainy weather; dig your well before you become parched with thirst,” is advice from a Chinese proverb that was seemingly written to prepare for the gathering storm of alcohol-related problems. In contemporary Chinese societies, effective alcohol policies are likely to be as important as a well thatched roof and a deep well.

References

- ANDERSON, P. 2009. Global alcohol policy and the alcohol industry, *Current Opinion in Psychiatry*, 22(3): 253–257.
- ANDERSON, P., DE BRUIJN, A., ANGUS, K., GORDON, R. and HASTINGS, G. 2009. Special issue: The message and the media: impact of alcohol advertising and media exposure on adolescent alcohol use: a systematic review of longitudinal studies, *Alcohol and Alcoholism*, 44(3): 229–243.
- BABOR, T.F. 1986. *Alcohol, Customs and Rituals*, New York: Chelsea House.
- BABOR, T.F., Caetano, R., Casswell, S., Edwards, G., Giesbrecht, N., Graham, K. *et al.* 2010. *Alcohol: No Ordinary Commodity – Research and Public Policy*, 2nd ed., Oxford and New York: Oxford University Press.
- BABOR, T.F. and DEL BOCA, F.K.(eds). 2002. *Treatment Matching in Alcoholism*, Cambridge: Cambridge University Press.
- BABOR, T.F. and ROBAINA, K. 2013. Public health, academic medicine, and the alcohol industry’s corporate social responsibility activities, *American Journal of Public Health*, 103(2): 206–214.
- BABOR, T.F., XUAN, Z., DAMON, D. and NOEL, J. 2013. An empirical evaluation of the US Beer Institute’s self-regulation code governing the content of beer advertising, *American Journal of Public Health*, 103(10).
- Centre for Social and Health Outcomes Research and Evaluation 2006. Alcohol marketing in the Western Pacific region. Paper prepared for the World Health Organization Regional Office for the Western Pacific, August.
- CHISHOLM, D., DORAN, C., SHIBUYA, K. and REHM, J. 2006. Comparative cost-effectiveness of policy instruments for reducing the global burden of alcohol, tobacco and illicit drug use, *Drug Alcohol Rev*, 25: 553–565.
- COCHRANE, J., CHEN, H., CONIGRAVE, K.M. and HAO, W. 2003. Alcohol use in China, *Alcohol*, 38: 537–542. PMID: 14633640.
- Confederation of Malaysian Brewers 2007. Consumers switching to high alcohol liquor: Brewers’

- Confederation cautions on counter productive effects and far-reaching consequences, 6 August. <http://www.malaysianbrewers.com.my/News/2013/pdf/060807-EN.pdf>.
- COOK, P.J. and MOORE, M.J. 2002. The economics of alcohol abuse and alcohol-control policies, *Health Affairs*, 21: 120–133.
- DEBRUIJN, A. 2011. *Monitoring Alcohol Marketing Practices in Africa: Findings from the Gambia, Ghana, Nigeria and Uganda*, WHO Regional Office for Africa: Brazzaville, Republic of Congo.
- DEBRUIJN, A., VAN DEN WILDENBERG, E. and VAN DEN BROECK, A. 2012. Commercial promotion of drinking in Europe key findings of independent monitoring of alcohol marketing in five European countries.
- DONOVAN, K., DONOVAN, R.J., HOWAT, P. and NARELLE, W. 2007. Magazine alcohol advertising compliance with the Australian alcoholic beverages advertising code, *Drug and Alcohol Review*, 26 (1): 73–81.
- DUAILIBI, S., PONICKI, W., GRUBE, J. *et al.* 2007. The effect of restricting opening hours on alcohol-related violence, *Am J Public Health*, 97: 2276–2280.
- ELDER, R.W., NICHOLS, J.L., SHULTS, R.A. *et al.* 2005. Effectiveness of school-based programs for reducing drinking and driving and riding with drinking drivers: a systematic review, *Am J Prev Med*, 28(5S): 288–304.
- ELDER, R.W., SHULTS, R.A., SLEET, D.A., NICHOLS, J.L., ZAZA, S. and THOMPSON, R.S. 2002. Effectiveness of sobriety checkpoints for reducing alcohol-involved crashes, *Traffic Injury Prevention*, 3:266–274.
- ELDER, R.W., SHULTS, R.A., SLEET, D.A. *et al.* 2004. Effectiveness of mass media campaigns for reducing drinking and driving and alcohol-involved crashes: a systematic review, *Am J Prev Med* 27: 57–65.
- ELDER, R.W., VOAS, R., BEIRNESS, D., SHULTS, R.A., SLEET, D.A., NICHOLS, J.L. and COMPTON, R. 2011. Task Force on Community Preventive Services. Effectiveness of ignition interlocks for preventing alcohol-impaired driving and alcohol-related crashes: a community guide systematic review, *Am J Prev Med*, 40(3): 362–376.
- FELL, J.C. and VOAS, R.B. 2006. The effectiveness of reducing illegal blood alcohol concentration (BAC) limits for driving: evidence for lowering the limit to .05 BAC, *Journal of Safety Research*, 37(3): 233–243.
- FREUDENBERG, Nick 2014. *Lethal but Legal: Corporations, Consumption, and Protecting Public Health*, New York: Oxford University Press.
- GALLET, C.A. 2007. The demand for alcohol: a meta-analysis of elasticities, *The Australian Journal of Agricultural and Resource Economics*, 51:121–135.
- GORDON, R., HARRIS, F., MARIE MACKINTOSH, A. and MOODIE, C. 2011. Assessing the cumulative impact of alcohol marketing on young people's drinking: Cross-sectional data findings, *Addiction Research and Theory*, 19(1): 66–75.
- GRUBE, J.W., NYGAARD, P. 2001. Adolescent drinking and alcohol policy, *Contemporary Drug Problems*, 28:87–131.
- HAO, W., CHEN, H. and SU, Z. 2005. China: alcohol today, *Addiction*, 737–741. doi:10.1111/j.1360-0443.2005.01036.x PMID:15918802.
- HAWKINS, B., HOLDEN, C. and MCCAMBRIDGE, J. 2012. Alcohol industry influence on UK alcohol policy: a new research agenda for public health, *Critical Public Health*, 22(3): 297–305.
- HUMPHREYS, K. 2003. *Circles of Recovery: Self-help Organizations for Addictions*, Cambridge: Cambridge University Press.
- JERNIGAN, D.H., 2009. The global alcohol industry: an overview, *Addiction*, 104(SUPPL. 1): 6–12.
- JONES, S.C. and DONOVAN, R.J. 2002. Self-regulation of alcohol advertising: is it working for Australia? , *Journal of Public Affairs*, 2(3): 153-165. doi: 10.1002/pa.

- KAHAN, M., WILSON, L. and BECKER, L. 1995. Effectiveness of physician-based interventions with problem drinkers: a review, *Can Med Assoc J.*, 152:851–859.
- KRANZLER, H.R. and VAN KIRK, J. 2001. Naltrexone and acamprosate in the treatment of alcoholism: a meta-analysis, *Alcohol Clin Exp Res*, 25: 1335–1341.
- KRIEBEL, D. and TICKNER, J. 2001. Reenergizing public health through precaution, *American Journal of Public Health*, 91(9): 1351–1355.
- KRÜGER, N.A. and SVENSSON, M. 2010. Good times are drinking times: empirical evidence on business cycles and alcohol sales in Sweden 1861-2000. *Applied Economics Letters*, 17 (6): 543–546.
- LI, Z., ARTHUR, D., WU, X. *et al.* 2006. The effect of a brief intervention for problem drinkers in a Beijing general hospital: a randomized controlled trial, *Chin J Nurs (in Chinese)*, 41:585–588.
- LI, Y., LIU, Z., LI, H., MA, J., SUN, Y., WANG, L. *et al.* 2010. Study of early intervention in hazardous and harmful drinkers, *China Journal of Health Psychology (in Chinese)*, 18(4):397–399.
- LIU, S.I., WU, S.I., CHEN, S.C., HUANG, H.C., SUN, F.J., FANG, C.K. *et al.* 2011. Randomized controlled trial of a brief intervention for unhealthy alcohol use in hospitalized Taiwanese men, *Addiction*, 106(5): 928–940.
- LONGABAUGH, R., MCCRADY, B., FINK, E., STOUT, R., MCAULEY, T., DOYLE, C. *et al.* 1983. Cost effectiveness of alcoholism treatment in partial vs. inpatient settings: six-month outcomes, *J Stud Alcohol*, 44:1049–1071.
- MOONEY, H. 2011. Drinks industry is using social networking to promote alcohol to young people, report warns, *BMJ (Clinical research ed.)*, 343.
- MOSKOWITZ, J.M. 1989. Primary prevention of alcohol problems: a critical review of the research literature, *J Stud Alcohol*, 50:54–88.
- O'MALLEY, S.S., JAFFE, A.J., CHANG, G., SCHOTTENFELDRS, MEYER, R.E. and ROUNSAVILLE, B. 1992. Naltrexone and coping skills therapy for alcohol dependence: a controlled study, *Arch Gen Psychiatry*, 49:894–898.
- RHOADES, E. and JERNIGAN, D.H., 2013. Risky messages in alcohol advertising, 2003–2007: Results from content analysis, *Journal of Adolescent Health*, 52(1): 116–121.
- ROOM, R., BABOR, T. and REHM, J., 2005. Alcohol and public health, *Lancet*, 365(9458): 519–530.
- ROOM, R., FERRIS, J., LASLETT, A.M., LIVINGSTON, M., MUGAVIN, J. and WILKINSON, C. 2010. The drinker's effect on the social environment: a conceptual framework for studying alcohol's harm to others, *International Journal of Environmental Research and Public Health*, 7: 1855-1871. doi:10.3390/ijerph7041855.
- SHOPE, J.T. 2007. Graduated driver licensing: review of evaluation results since 2002, *Journal of Safety Research*, 38:106–121.
- SHULTS, R.A., ELDER, R.W., SLEET, D.A., NICHOLS, J.L., ALAO, M.A., CARANDE-KULIS, V.G., ZAZA, S., SOSIN, D.M. and the Task Force on Community Preventive Services 2001. Reviews of evidence regarding interventions to reduce alcohol-impaired driving, *American Journal of Preventive Medicine*, 21:66–88.
- SMITH, L.A. and FOXCROFT, D.R. 2009. The effect of alcohol advertising, marketing and portrayal on drinking behaviour in young people: systematic review of prospective cohort studies, *BMC Public Health*, 9.
- TANG, Y.L., XIANG, X.J., WANG, X.Y., CUBELLS, J.F., BABOR, T.F., WEI, H. 2013. Alcohol and alcohol-related harm in China: policy changes needed, *Bulletin of the World Health Organization*, 91:270–276. doi:10.2471/BLT.12.107318.
- TIPPETTS, A., VOAS, R., FELL, J. and NICHOLS, J. 2005. A meta-analysis of .08 BAC laws in 19 jurisdictions in the United States, *Accident Analysis and Prevention*, 37 (1):149–161.
- VAN DALEN, W. and KUUNDERS, M. 2006. Alcohol marketing and young people: an analysis of the current debate on regulation, *Nordic Studies on Alcohol and Drugs*, 23(6).
- VENDRAME, A., PINKSY, I., SILVA, R. and BABOR, T.F. 2010. Assessment of self-regulatory code violations in Brazilian television beer advertisements, *Journal of Studies on Alcohol and Drugs*,

- 71(3): 445–451.
- WALSH, D.C., HINGSON, R.W., MERRIGAN, D.M., LEVENSON, S.M., CUPPLES, L.A., HEEREN, T. *et al.* 1991. A randomized trial of treatment options for alcohol-abusing workers, *N Engl J Med*, 325:775–781.
- WAGENAAR, A.C., TOBLER, A.L. and KOMRO, K.A. 2010. Effects of alcohol tax price policies on morbidity and mortality: a systematic review, *American Journal of Public Health*, 100: 2270–2278.
- WAGENAAR, A.C., SALOIS, M.J. and KOMOR, K.A. 2009. Effects of beverage alcohol price and tax levels on drinking: a meta analysis of 1003 estimates from 112 studies, *Addiction*, 104.
- WAGENAAR, A.C. and TOOMEY, T.L. 2002. Effects of minimum drinking age laws: review and analyses of the literature from 1960 to 2000, *Journal of Studies on Alcohol* (Suppl. 14): 206–225.
- World Health Organization 2010. *Global Strategy to Reduce the Harmful Use of Alcohol*, Geneva: World Health Organization.
- 2011. *From Burden to “Best Buys”: Reducing the Economic Impact of Non-Communicable Diseases in Low- and Middle-Income Countries*.
- 2014. *Global Status Report: Alcohol Policy*, Geneva: WHO.