



Policy

Brief

Alcohol Drinking among
Lebanese Youth: Delaying
Initiation and Reducing Harm

K2P Policy Briefs bring together global research evidence, local evidence and context-specific knowledge to inform deliberations about health policies and programmes. It is prepared by synthesising and contextualizing the best available evidence about the problem and viable solutions through the involvement of content experts, policymakers and stakeholders.



Policy Brief

+ Included



Description of a health system problem



Viable options for addressing this problem



Strategies for implementing these options

× Not Included



Does not make recommendations



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K2P Policy Brief

Alcohol Drinking among Lebanese Youth: Delaying Initiation and Reducing Harm

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Merit Review

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Key Messages

Key Messages

The problem

In Lebanon, early initiation of alcohol drinking and the frequent and heavy consumption of alcohol among youth is on the rise putting them at increased risk of multiple health, social and economic losses and even mortality. These consequences are protracted to their adulthood, their families and community at large. In Lebanon, this problem is particularly amplified by the absence of an alcohol harm reduction policy characterized by the weak or inadequate regulation of alcohol availability, affordability, advertising and marketing.

- Early onset alcohol drinking is a public health concern consistently linked with alcohol-related harms, including increased likelihood of engaging in other risky youth practices, as well as developing alcohol and other substance use disorders later in adulthood.
- In Lebanon 2005, one in five students in middle school (7th-9th graders) reported having experienced at least one alcohol-related harm in their lifetime, including being hungover, feeling sick, getting into trouble with family or friends, missing school, or getting into fights, as a result of their alcohol drinking.
- In 2011, one in four middle school students in Lebanon, aged approximately 13–15 years, reported having at least one alcoholic drink in the past month, with 87% of them having their first drink before age of 14.
- In Lebanon, between 2005 and 2011, there has been a 40% increase in the percentage of 7th-9th graders having at least one drink in the past month as well as in the reports of drunkenness (122% and 22% increase in females and males, respectively).
- The increase of self-reported drinking and drunkenness among youth in Lebanon is occurring at a time when most developed countries are witnessing a decrease in alcohol consumption among their youth.

Underlying factors

- There are several individual, familial, peer, environmental, political, economic, social and cultural underlying factors that influence youth drinking behaviors
- In Lebanon, there is no law that clearly stipulates a legal age for purchase of alcohol or regulates exposure to alcohol marketing and advertising. Alcoholic beverages in Lebanon are cheap, and very

affordable even to the very young. Furthermore, penalties for minor drinkers and those who offer them alcohol are minimal.

- The World Health Organization (WHO) has called for a global response to mitigate alcohol-related harms by requesting all member states (including Lebanon) to implement effective harm reduction policies (WHO, 2010). Alcohol harm reduction is an approach that focuses on minimizing the risks and consequences of alcohol use.

Elements of a comprehensive approach

Element 1› Implement programs at the school, family and community levels

- Interventions at the school, family and community levels have been shown to be effective but are not sufficient, alone, in reducing the alcohol use among minors
- These interventions are more effective when implemented in a comprehensive approach (targets multiple risk factors, involves parents and improves parenting skills), and is supported by policy level interventions.

Element 2› Implement Alcohol harm reduction policies at the national level

- Policy elements to decrease alcohol availability, affordability, drink driving and alcohol marketing and advertising have been consistently shown to be effective in reducing early alcohol initiation and frequency and amount of use of alcohol among minors.
- Effective policy measures limiting the availability of alcohol include: regulating the physical availability of alcohol (e.g. limiting the days and hours of sales), raising the minimum legal drinking age (MLDA), monopolization or licensing of on-premise (bars, restaurants etc.) and off-premise (grocery stores, convenience stores, etc.) outlets, and refusing to sell alcohol to intoxicated people.
- Decreasing alcohol affordability through setting a Minimum Unit Pricing (MUP), under which alcohol cannot be sold, is more effective than specific taxation for reductions in alcohol consumption
- Effective policy measures to decrease drink driving include having drink-driving checkpoints, lowering Blood Alcohol Concentration (BAC) laws for young drivers, increasing police patrols, even setting a minimum legal drinking age laws.
- Regulating alcohol advertising and marketing should be implemented in a research program that is of high quality, well

monitored and evaluated. Furthermore, it should be required by a comprehensive and not fragmented or partial law with the systematic monitoring of the influence of alcohol industry on legislations and without accepting industries' self-regulation.

Implementation considerations

- To ensure maximum effectiveness in promoting youth wellbeing, a variety of implementation considerations need to be kept in mind at the level of individuals, professionals, families, organizations, and systems.

Executive Summary

Executive Summary

The problem

In Lebanon, early initiation of alcohol drinking and the frequent and heavy consumption of alcohol among youth is on the rise putting them at increased risk of multiple health, social and economic losses and even mortality. These consequences are protracted to their adulthood, their families and community at large. In Lebanon, this problem is particularly amplified by the absence of an alcohol harm reduction policy characterized by the weak or inadequate regulation of alcohol availability, affordability, advertising and marketing.

Size of the problem

Early onset alcohol drinking is a public health concern because it has been consistently linked with alcohol-related harms including road traffic crashes (WHO, 2016), several risky youth practices (e.g. sexual activity with multiple partners, physical fights, gambling ...), in addition to developing alcohol and other substance use disorders later in adulthood (Hingson, Heeren, & Winter, 2006). Globally, alcohol is linked to more than 60 non-communicable diseases and injuries and is listed as a major risk factor and contributor to the burden of disease and disability (Rehm et al., 2009).

In Lebanon, alcohol consumption in young people is on the rise, both in terms of frequency and quantity, and is no longer occasional. In 2011, one in four middle school students (7th-9th graders) in Lebanon reported having had at least one alcoholic drink in the preceding month (i.e. current drinking), with 87% of them having their first drink before age of 14 (Ghandour, Afifi, et al., 2015). In fact, between 2005 and 2011, there has been a 40% increase in the percentage of current drinkers among 7th -9th grade students (aged 13-15 years), reaching around 30%, and with a much higher increase among the young females (66% compared to 28% in males). During the same period, increased reports of drunkenness were noted (122% increase in females and 22% increase in males) (Ghandour, Afifi, et al., 2015). Quite concerning is that, even in 2005, one in five students aged 13–15 years old reported ever having had a hangover, felt sick, gotten into trouble with family or friends, missed school, or gotten into fights, as a result of their alcohol drinking (Ghandour, Afifi, et al., 2015). Heavy and frequent patterns of alcohol drinking have also been noted among high school (Zahlan, Ghandour, Yassin, Afifi, & Martins, 2014) and university (Ghandour, El Sayed, & Martins, 2012) students.

Underlying factors:

There are multiple individual, familial, peer, environmental, political, economic, social and cultural underlying factors that influence youth to drink early or regularly. In Lebanon, the problem is amplified by the unregulated availability, advertising and affordability of alcohol drinks and the poor enforcement of drink-driving countermeasures. Alcohol harm reduction laws are not currently on the policy agenda with the last update to the existing laws dating back to 1985. Penalties for minor drinkers and those who offer them alcohol are minimal. For instance, Decree 12222 in 1963 prohibited minors from entering establishments that offer alcoholic beverages and an amendment to decree 340 in 1993 increased fines to 6.5–13 USD from 4-14 USD (in 1943) on establishments that offer alcoholic beverages to minors. Nonetheless, in Lebanon, there is no law that clearly stipulates a legal age for purchase of alcohol or regulation of alcohol marketing and sponsorship. The impact of this weakness in our local policies is reflected in illegal sale of alcohol to minors, low prices of alcoholic beverages, and low taxes on these products (Lilian Ghandour et al., 2016) problem is further exacerbated by the lack of community mobilization, or overall lack of awareness to the gravity of the situation and its implications. According to published literature, having an evidence-based effective national harm reduction strategy for youth is crucial to delay initiation and reduce harm that could result from early drinking (S. Casswell & T. Thamarangsi, 2009; Spear, 2002).

Elements of a comprehensive approach to address the problem

The World Health Organization (WHO) has called for a global response to mitigate alcohol-related harms by requesting all member states (including Lebanon) to implement effective harm reduction policies (L Ghandour et al., 2015; WHO, 2010). Educational approaches at the individual and/or family or community levels are among the most common approaches to the prevention and reduction of alcohol-related harms among youth, however they have shown limited effectiveness (Babor et al., 2010a). Evaluations of these intervention programs concluded that even small positive effects cannot be sustained in the absence of more effective public policy level strategies such as pricing policies, marketing restrictions, law enforcement initiatives, among others (Cairns, Purves, & McKell, 2014). Thus, an effective strategy for reducing alcohol-related harms among youth requires a comprehensive approach (Komro & Toomey, 2002; Naimi & Nelson, 2011). We describe below all evidence-based interventions that have been shown to be effective in reducing alcohol-related harms among youth categorized into two elements:

Element 1› Implement programs at the school, family and community levels

Element 1.1: School-based interventions

Two meta-analyses identified school-based programs for alcohol use prevention as effective in reducing the frequency and quantity of alcohol use (Hennessy & Tanner-Smith, 2014; Strøm, Adolfsen, Fossum, Kaiser, & Martinussen, 2014). Similarly, interventions among college students were also effective (Baer, Kivlahan, Blume, McKnight, & Marlatt, 2001; Marlatt et al., 1998). Generally, school-based alcohol interventions are found to be cost-effective because even small effects in universal prevention interventions could lead to important savings for the society associated with reduced harmful drinking (Strøm, Adolfsen, Fossum, Kaiser, Martinussen, et al., 2014). The effectiveness of those interventions neither varied across different age levels (elementary (kindergarden-5/6), junior high (grades 6/7-9) and high-school (grades 10-12)) and gender categories nor the level of program intensity (Strøm, Adolfsen, Fossum, Kaiser, & Martinussen, 2014).

Effective school-based programs focus on delaying onset and reducing frequency of alcohol consumption through decreasing personal and social risk factors on one hand and strengthening personal and social protective factors on the other (Komro & Toomey, 2002). In fact, students who went through such programs like the Life Skills Training (LST) program targeting multiple risk factors, and not only alcohol, resulted in 50% less binge-drinking episodes (>5 drinks per occasion) and showed lower normative expectations for peer drinking lasting up to two years of follow-up, compared to controls (Gilbert J Botvin, Griffin, Diaz, & Ifill-Williams, 2001).

Still, according to a systematic review, school based interventions have a short term effect and need to include multiple components on different levels and coupled with interventions on other risk factors (not only alcohol education) in order to show long-term and more evident effects (Strøm, Adolfsen, Fossum, Kaiser, & Martinussen, 2014). Nonetheless, another review of the long term effectiveness of alcohol prevention programs indicated reductions in alcohol use even after 15 years from the program implementation (Skara & Sussman, 2003).

Brief Alcohol Interventions (BAIs) which are theory based (MET approach), lasting < 5 hours, were as effective as longer duration interventions, improving the cost-benefit gains (Hennessy & Tanner-Smith, 2014; Strøm, Adolfsen, Fossum, Kaiser, & Martinussen, 2014). In fact, a meta-analysis identified motivational enhancement therapy (MET) was found to be the most effective intervention modality among cognitive behavior therapy and psychoeducational therapy. (Hennessy & Tanner-Smith, 2014).

Element 1.2: Family-based interventions

An overview of systematic reviews documented that family-based interventions are effective at delaying initiation of alcohol use among youth and reducing the quantity of self-reported alcohol consumption among young drinkers (Foxcroft & Tsertsvadze, 2012b). Effective interventions have resulted in fewer reports of lifetime alcohol use among adolescents in intervention group vs. controls (Bauman et al., 2002) and in preventing alcohol misuse among this age group (R. L. Spoth, Redmond, Trudeau, & Shin, 2002). Furthermore, a systematic review concluded that combined family intervention with the LST program (described above) showed reductions (30%) in alcohol initiation rates among children aged 10-14 years as compared to LST program alone [(R. L. Spoth et al., 2002) as cited in (Petrie, Bunn, & Byrne, 2007)].

Family-based interventions either work with parents alone to teach them specific parenting skills (parental support and establishing clear boundaries and rules) or with parents and children together to promote family bonding and skills, as well as the development of behavioral norms and positive peer affiliations, social and peer resistance (Gilbert J Botvin & Griffin, 2007; Foxcroft & Tsertsvadze, 2012b; Griffin & Botvin, 2010). The most effective programs, however, are those that: (1) include active parental involvement, developing parenting skills and instilling social skills or personal responsibility amongst youth; (2) target more than one type of substance use and misuse of those substances; (3) were delivered during the transition from primary to secondary school; (4) complimented with multicomponent life skills program at schools. More research is needed to evaluate long terms effects of family based interventions (Fred Martineau, Elizabeth Tyner, Theo Lorenc, Mark Petticrew, & Karen Lock, 2013).

Element 1.3: Community based interventions

According to two reviews, community-based interventions targeting underage alcohol use are effective (Fagan, David Hawkins, & Catalano, 2011; Toomey et al., 2011), and a key feature for their effectiveness is to have long-term and multiple components, including school-based component, family or parenting components, along with mass media campaigns, public policy initiatives, and other types of community organization and activities (Griffin & Botvin, 2010). As such, community-level interventions do not only target direct causes of underage alcohol use (availability, peer pressure and family influences) but also the complex long-term, social, cultural, political, and economic influences of an environment (i.e. the commercial sales of alcohol and accessibility of alcoholic beverages to underage drinkers) surrounding youth and young adults (Fagan et al., 2011; Toomey et al., 2011). Thus, they have the potential to produce long-term effects and achieve population-level reductions in alcohol misuse among adolescents and young adults (Fagan et al., 2011).

Successful interventions have consisted of 5 components: community mobilization, increased enforcement of drinking and driving laws, controlled access to alcohol through zoning and controlling outlet density, restricting underage drinking by limiting access to alcohol through increased enforcement of underage sales law, and promoting responsible beverage service (H. D. Holder et al., 2000). The underage drinking component aimed at reducing underage access to alcohol through doing (i) off-site server training programs, (ii) surveys on youth access to alcohol and disseminating research findings back to communities, and (iii) police enforcement operations against underage sales (H. D. Holder et al., 2000). A common feature of community-based programs is to rely on community coalitions that consist of different stakeholders from various backgrounds and organizations dedicated to break the taboo of providing alcohol-related information and news of alcohol abuse (Fagan et al., 2011; Nikfarjam, Memaryan, Damari, Zamani, & Hassanian-Moghaddam, 2014). Coalitions that are most successful have the following characteristics: (1) having clearly defined, focused and manageable goals, (2) having adequate planning time, (3) choosing evidence-based prevention policies, practices, and programs that have been evaluated for effectiveness and meet identified community needs; and (4) carefully monitoring prevention activities to ensure implementation quality (Fagan et al., 2011).

Element 2> Implement Alcohol harm reduction policies at the national level

This element is related to national policies that influence alcohol consumption and its related harms.

Element 2.1: Regulate the availability of alcohol

An overview of systematic reviews, two reviews and WHO recommendations concluded that controlling the availability of alcohol is an effective way of reducing alcohol consumption and its related harms (Peter Anderson, Chisholm, & Fuhr, 2009; Babor et al., 2010a; Fred Martineau et al., 2013; Mallie J Paschall, Grube, & Kypri, 2009; WHO, 2014). Regulating alcohol outlet density (number of locations where people can purchase alcohol in a defined area), and hours/days of sale can decrease the impact of the three following variables: overall alcohol consumption (volume of alcohol consumed), drinking patterns (how alcohol consumption is distributed over time) and damage from alcohol (morbidity and mortality related to alcohol consumption, social problems and chronic diseases) (Popova, Giesbrecht, Bekmuradov, & Patra, 2009). Policy measures limiting the availability of alcohol include: regulating the physical availability of alcohol (e.g. limiting the days and hours of sales), raising the minimum legal drinking age (MLDA), monopolization or licensing of on-premise (bars, restaurants etc.) and off-premise (grocery stores,

convenience stores, etc.) outlets, and refusing to sell alcohol to intoxicated people (WHO, 2012).

An overview of systematic reviews concluded that limiting the hours/days of sale and maintaining the limit was found to be effective in reducing alcohol consumption (in youth and adults) and alcohol-related harms. It also concluded that higher alcohol outlet density (AOD) is strongly associated with increased alcohol consumption (Martineau et al., 2013). Three reviews of evidence found that higher MLDA impedes alcohol access by minor drinkers, therefore reducing alcohol drinking among underage drinkers and of-age youth who lived in an environment of higher MLDA; higher MLDA also reduces alcohol related motor vehicle crashes, among other problems (Komro & Toomey, 2002; Shults et al., 2001; Alexander C Wagenaar & Toomey, 2002). Increasing the MLDA from 18 to 21 in the US, and from 18 to 19 in Canada resulted in significant reduction in car crash injuries (Callaghan, Gatley, Sanches, & Asbridge, 2014; Shults et al., 2001). Government monopolies for the sale of alcohol can also reduce alcohol-related harm (Peter Anderson, Chisholm, et al., 2009). Monopoly by definition makes demand on a specific product at retail level less likely to increase the number of outlets compared to privatization (H. Holder et al., 2008). Government monopolies tend to have fewer stores, which are open for a limited number of hours (Peter Anderson, Chisholm, et al., 2009). In developed countries such the US, Canada, and New Zealand, privatization of wine sales resulted in higher density of outlets, longer opening hours or more days of sale, and often lower prices due to competition (H. Holder et al., 2008). The most notable adverse effects of controlling availability of alcohol include the activation of informal market activities such as illegal imports, smuggling, and home production, all which can be prevented through minimal enforcement (Babor et al., 2010a).

Element 2.2: Decrease alcohol affordability

Three systematic reviews concluded that, with clear and consistent evidence, increasing alcohol prices and excise taxations can decrease alcohol consumption (A. C. Wagenaar, Salois, & Komro, 2009; Alexander C Wagenaar, Tobler, & Komro, 2010) and lead to a significant decrease in alcohol-related morbidity and mortality (e.g. alcohol related diseases, suicide, motor vehicle crashes/fatalities, etc.) among youth and adults in high income countries (HICs) (Booth et al., 2008; Randy W Elder et al., 2010; Alexander C Wagenaar et al., 2010). Consistently with the evidence from HICs, in low-middle income countries (LMICs), high level of aggregate relative alcohol price levels were associated inversely with alcohol consumption, specifically alcohol consumption in the past year, number of drinks per occasion, drinking frequency, and binge-drinking, all in the past year (Cook, Bond, & Greenfield, 2014).

While high levels of taxation have generally been proven to reduce alcohol consumption and alcohol-related harms, some alcohol beverages are so inexpensive that increasing taxes on them does not have as much effect (Ludbrook, 2009). In this case, minimum unit pricing (MUP) has been used as a strategy to lower alcohol consumption. Alcohol cannot be sold then below a standard price set per unit of alcohol (Ludbrook, 2009). MUP is more effective than specific taxation for reductions in alcohol consumption (mean reductions of 11.9 drinks/week/capita), especially among low-income quintiles (Vandenberg & Sharma, 2016). Furthermore, increasing the cost of the cheapest alcohol is not highly regressive and is effective in reducing alcohol consumption (Vandenberg & Sharma, 2016).

Identifying which beverages to introduce taxes on is very important. In British Columbia, Canada, a 10% increase in minimum pricing of a certain beverage reduced consumption of that beverage by approximately 16.1%; while a 10% increase in the minimum pricing of all beverages led to a 3.4% decrease in consumption for all beverages. An introduced minimum pricing for coolers, premixed cocktails, and liqueurs witnessed a significant reduction in drinking of 13.2%, 21.3% and 5.3% respectively (Stockwell, Zhao, et al., 2012).

However, higher alcohol prices in a country can lead to youth switching to other cheaper alcohol beverages or whose price did not increase, as well as smuggling of alcohol from a neighboring country that sells relatively cheap alcohol or increased border trade. A low quality systematic review found that educational messages against drinking smuggled alcohol resulted in a substitution effect with reduced illegal spirit's purchase, but increased legal spirit purchase (Lachenmeier, Taylor, & Rehm, 2011).

Element 2.3: Decrease drink-driving

In an overview of systematic reviews, eleven reviews assessed drink driving policies and their effectiveness (F. Martineau, E. Tyner, T. Lorenc, M. Petticrew, & K. Lock, 2013). Multicomponent community interventions implemented with youth and older populations aiming to reduce drink-driving appear to be effective in reducing alcohol-related vehicle crashes. Those components pertain to drink-driving checkpoints, among others such as responsible beverage service, alcohol availability restrictions specifically for youth, educational campaigns and media advocacy [(Shults et al., 2009) as cited by (Fred Martineau et al., 2013)]. Other highly effective drink-driving policies are lowering Blood Alcohol Concentration (BAC) laws for young drivers, minimum legal drinking age laws, (Shults et al., 2001), and increasing police patrols (Goss et al., 2008; F. Martineau et al., 2013).

A systematic review found that increasing police patrols had consistent positive effects (Goss et al., 2008; F. Martineau et al., 2013). A meta-analysis reported that sobriety check points were associated with an estimated

14% reduction in car crashes (Erke, Goldenbeld, & Vaa, 2009). Furthermore, lower allowed BAC levels have been proven to decrease alcohol related harm (e.g. alcohol related motor vehicle crashes etc.) (Schwartz & Davaran, 2013) and mortality, as found in another systematic review, especially among 18-25 years old (Killoran, Canning, Doyle, & Sheppard, 2010; F. Martineau et al., 2013).

Element 2.4: Regulate alcohol advertising and marketing

Three systematic reviews have found a positive association between different forms of alcohol marketing (advertising and promotion) and initiation of alcohol use among youth and the risky alcohol consumption (Peter Anderson, Chisholm, et al., 2009; Peter Anderson, De Bruijn, Angus, Gordon, & Hastings, 2009; Engels, Hermans, Van Baaren, Hollenstein, & Bot, 2009). Another systematic review and a meta-analysis concluded that alcohol advertisement viewing can increase alcohol consumption by 0.39- 2.67 alcohol units among males and 0.25- 1.69 units among females (Stautz, Brown, King, Shemilt, & Marteau, 2016).

A review concluded that alcohol warning labels are ineffective in changing alcohol drinking behaviors, as opposed to tobacco warning labels' effect on health behaviors (Wilkinson & Room, 2009). Alcohol companies prefer self-regulations on alcohol advertising, however a systematic review showed that this method is ineffective in preventing the marketing of content that might affect young people (Vendrame & Pinsky, 2011). One cross-sectional study found that countries with the most severe restriction on alcohol advertising showed lower prevalence of hazardous drinking than those without such restrictions; 30.6% prevalence in countries with no restrictions, 20.3% prevalence in countries with some restrictions and 14.4% in countries with the strongest restriction (Bosque-Prous et al., 2014). Similarly, in low and middle income countries, more restrictive policies, including advertising and marketing regulations, have a stronger inverse relationship with drinking outcomes (Cook et al., 2014).

However, an overview of systematic reviews and another meta-analysis concluded that alcohol advertising banning effectiveness is still controversial with inconclusive evidence whether to recommend it or not (Fred Martineau et al., 2013; Siegfried et al., 2014). According to the meta-analysis, advertising restrictions reaching to banning should be implemented in a research program that is of high quality, well monitored and evaluated (Siegfried et al., 2014). Similarly, Lithuania's experience with banning alcohol advertising concluded that bans are only effective when they are comprehensive and not fragmented or partial with a systematic monitoring of the influence of alcohol industry on legislations (Paukštė, Liutkutė, Štelemėkas, Goštautaitė Midttun, & Veryga, 2014).

Globally, it has been well reported that global alcohol corporations promote themselves as good corporate citizens in order to be accepted in the process of the policy development and implementations, as such, they have prevented countries from adopting restrictive policy measurements (Casswell, 2013). It is noteworthy that regulation and restriction of all marketing should be required by law and not implemented as industries' voluntary agreement to self-regulation which is not effective (Peter Anderson, Chisholm, et al., 2009; Sally Casswell & Thaksaphon Thamarangsi, 2009). The law needs to cover all forms of marketing including the global technologies (internet and satellite broadcast) that highly affect youth behaviors and culture (Sally Casswell & Thaksaphon Thamarangsi, 2009).

Implementation considerations:

Implementation considerations are discussed in details for each element in the full policy brief.

Content

K2P Policy Brief

The Problem

In Lebanon, early initiation of alcohol drinking and the frequent and heavy consumption of alcohol among youth is on the rise putting them at increased risk of multiple health, social and economic losses and even mortality. These consequences are protracted to their adulthood, their families and community at large. In Lebanon, this problem is particularly amplified by the absence of an alcohol harm reduction policy characterized by the weak or inadequate regulation of alcohol availability, affordability, advertising and marketing.

Size of the Problem

Alcohol drinking among youth aged 15-25 years is a public health problem in Lebanon. Local scientific evidence reveals that youth start to drink alcohol at a very young age and the number of young people drinking regularly is on the rise. One in four middle school students (7th-9th graders) in Lebanon, who were surveyed in 2011, reported drinking alcohol, and an overwhelming majority (87%) of them had their first drink before age of 14 (L Ghandour, Afifi, Fares, El-Salibi, & Rady, 2015). Between 2005 and 2011, there has been a 40% increase in the percentage of 7th -9th grade students who report having had at least one drink in the preceding month, with a much higher increase among the young females (66% compared to 28% in males). Of more concern are the increased reports of drunkenness at least once in the past month, a 122% increase in the percentage of females who stated they had ever gotten drunk versus a 22% increase in males. The data noted here are based on the Global School-based Health Survey implemented in Lebanon among middle school students (L Ghandour, Afifi, et al., 2015), but several other local studies confirm that alcohol drinking among youth in Lebanon warrants immediate attention (L Ghandour, Chalak, et al., 2015). Among high school students, research points to a frequent drinking pattern, with about 40% of those who ever had an alcoholic drink in the preceding year (in 2010) reporting drinking alcohol once or twice per week or more (Zahlan, Ghandour, Yassin, Afifi, & Martins, 2014). Similar alcohol drinking patterns have been found among youth drinkers at the university level (Lilian A Ghandour, El Sayed, & Martins, 2012).

Background to Policy Brief

A K2P Policy Brief brings together global research evidence, local evidence and context-specific knowledge to inform deliberations about health policies and programs. It is prepared by synthesizing and contextualizing the best available evidence about the problem and viable solutions and options through the involvement of content experts, policymakers and stakeholders.

The preparation of the Policy Brief involved the following steps:

- 1) *Selecting a priority topic according to K2P criteria*
- 2) *Selecting a working team who deliberates to develop an outline for the policy brief and oversee the litmus testing phase.*
- 3) *Developing and refining the outline, particularly the framing of the problem and the viable elements*
- 4) *Litmus testing by conducting one to one interviews with up to 15 selected policymakers and stakeholders to frame the problem and make sure all aspects are addressed.*
- 5) *Identifying, appraising and synthesizing relevant research evidence about the problem, elements, and implementation considerations*
- 6) *Drafting the brief in such a way as to present concisely and in accessible language the global and local research evidence.*
- 7) *Undergoing merit review*
- 8) *Finalizing the Policy Brief based on the input of merit reviewers, translating into Arabic, validating translation, and disseminating through policy dialogues and other mechanisms.*

It is important to note that the increase of self-reported drinking and drunkenness among youth in Lebanon is occurring at a time when most developed countries are witnessing a decrease in alcohol consumption among their youth. Between 2005 and 2011 for example, the percentage of current drinkers among 8th graders attending public and private schools in the United States decreased by 26% compared to the 47% increase in Lebanon (L Ghandour, Afifi, et al., 2015). Similarly, percentage of 8th graders who reported ever getting drunk dropped by 24% while increasing by 55% within the same age group in Lebanon. Compared to their peers in other Arab countries, more youth from Lebanon are engaged in early alcohol drinking. For instance, the percentage of 13-15 year-olds who reported drinking in the past month in 2011 was found to be much higher in Lebanon (27%) than among their counterparts in Morocco (3.7%) or Syria (7.4%) (CDC, 2013; as cited by (L Ghandour, Afifi, et al., 2015).

Early initiation of alcohol use is a public health concern because it has, globally, long been consistently linked with several risky youth practices (NIH, 1997), such as physical fights (Hingson, Heeren, & Zakocs, 2001), sexual activity with multiple partners (Grunbaum et al., 2004), skipping school, illegal drug use, drink-driving (Gruber, DiClemente, Anderson, & Lodico, 1996), depression and suicide (Hanes, 2012). Furthermore, early initiation of alcohol drinking has been consistently linked with a higher likelihood of developing problematic drinking/alcohol abuse/dependence (Warner, White, & Johnson, 2007) and subsequent alcohol –health related problems (liver disease, stroke, cancer of the throat/esophagus, etc.) as well as other substance use–related problems (DeWit, Adlaf, Offord, & Ogborne, 2000; Lowman, 2004) later in life. Indeed, people who start to drink at age 14 or earlier are 4 times more likely to develop alcohol dependence in adulthood compared to those who start drinking in their twenties [(Grant & Dawson, 1997) cited by (Bratek et al., 2013)]. In fact, studies show that delaying the initiation of drinking until age 21 would decrease the risk of developing serious alcohol problems later in life by 70% (Bratek et al., 2013). Globally, alcohol is listed as a major global risk factor and contributor to the burden of disease and disability, given its link to more than 60 non-communicable diseases and injuries (Rehm et al., 2009).

While much of the evidence is from international studies, local data points towards the presence of serious alcohol-related problems among a substantial percentage of youth. In 2005, 17% of students in seventh-ninth grade reported ever having had a hangover or alcohol-related such as: having felt sick, gotten into trouble with family or friends, missed school, or gotten into fights, as a result of their alcohol drinking. In 2011, 20% reported ever getting drunk, and 5% reported having experienced alcohol-related problems (L Ghandour, Afifi, et al., 2015). Alcohol abuse was reported by 9% of university students (Karam, Ghandour, Maalouf, & Salamoun, 2010). Drink

driving is also suspected to be a leading cause for road traffic crashes in Lebanon. According to the head of the Traffic Experts' Association, the vast majority of serious car crashes are caused by speeding and/or alcohol consumption (Dhumieres, 2011). Road traffic deaths involving alcohol are not available (WHO, 2015) however, based on figures from the Lebanese Red Cross, YASA, a local road safety NGO, estimates that more than 700 car crash fatalities occur every year of which around 30% are alcohol related (Brophy, 2013).

Underlying Factors

Countries with no alcohol-harm reduction policies experience a large proportion of that burden (Paschall, Grube, & Kypri, 2009). Several individual, familial, peer, environmental, political, economic, social and cultural underlying factors influence youth drinking behaviors. To develop effective programs and strategies to delay early initiation and reduce alcohol use among youth, it is important to have a solid understanding of the underlying reasons for youth drinking that can be grouped as follows: individual factors (e.g., genetics, religiosity, mental health problems, etc.), familial factors (e.g. history of family drinking, parenting styles etc.) (WHO, 2014), peer-related factors (e.g. peer pressure, perceived peer norms) (Simons-Morton, Haynie, Crump, Eitel, & Saylor, 2001), environmental factors (e.g. availability of alcohol, community norms, media and marketing) (Kuntsche, Kuendig, & Gmel, 2008; Smith & Foxcroft, 2009), and sociopolitical factors (e.g. wars, conflicts, country harm reduction policies...) (Wallace & Roberts, 2014).

In Lebanon, the problem is amplified by the unregulated availability, affordability and marketing of alcohol drinks and the poor enforcement of drink-driving countermeasures. On the policy level, alcohol harm reduction is not currently on the policy agenda in Lebanon with the last update dating back to 1985. For example, in 1943, decree number 340 imposes a penalty equivalent to 4-14 USD on persons who put minors under in a drunken state by offering them alcoholic beverages. Decree 12222 in 1963 prohibited minors from entering establishments that offer alcoholic beverages and an amendment to decree 340 in 1993 increased fines to 6.5–13 USD on establishments that offer alcoholic beverages to minors. However, there is now law that clearly stipulates a legal age for purchase of alcohol or regulation of alcohol marketing and sponsorship. Alcohol-related policies are either non-existent or outdated, as reflected by the illegal sale of alcohol to minors, low prices of alcoholic beverages, and low taxes on these products (L Ghandour, Afifi, et al., 2015).

Despite efforts to raise awareness among youth on harms of alcohol consumption by local nongovernmental organizations, wider and more

targeted efforts are needed by the national government. Having an evidence-based effective harm reduction strategy for youth in Lebanon is therefore crucial to delay initiation and reduce harm that could result from early drinking (Spear, 2002).

Elements of a comprehensive approach

Since alcohol consumption is an important public health problem, the World Health Organization (WHO) has called for a global response to mitigate alcohol-related harms by requesting all member states (including Lebanon) to implement effective harm reduction policies (L Ghandour, Chalak, et al., 2015; WHO, 2010). Alcohol harm reduction is an approach that focuses on the risks and consequences of alcohol use and not on the use of alcohol itself. Educational approaches at the individual and/or family or community levels are among the most common approaches to the prevention and reduction of alcohol-related harms among youth, however they have shown only modest effects (Babor et al., 2010a). Evaluations of these intervention programs conclude that even small positive effects cannot be sustained in the absence of more effective public policy level strategies such as pricing policies, marketing restrictions, law enforcement initiatives, etc. (Cairns et al., 2014). Thus, an effective approach for reducing alcohol-related harms among youth requires a comprehensive alcohol control and harm reduction strategy (Komro & Toomey, 2002; Naimi & Nelson, 2011). We describe below all the approaches demonstrated to be effective as alcohol harm reduction interventions for youth categorized into two elements:

Element 1. Implement Alcohol harm reduction programs at the school, family and community levels:

Element 1.1. School-based interventions

Element 1.2. Family-based interventions

Element 1.3. Community-based interventions

Element 2. Implement Alcohol harm reduction policies at the national level:

Element 2.1. Regulate the availability of alcohol

Element 2.2. Decrease alcohol affordability

Element 2.3. Decrease drink-driving

Element 2.4. Regulate alcohol advertising and marketing

Elements

Policy Elements and Implementation Considerations

Element 1

Implement Alcohol harm reduction programs at the school, family and community levels:

Element 1.1

Implement school-based interventions

Two meta-analyses identified school-based programs for alcohol use prevention as effective in reducing the frequency and quantity of alcohol use (Hennessy & Tanner-Smith, 2014; Strøm, Adolfsen, Fossum, Kaiser, & Martinussen, 2014). Brief School-based behavioral interventions were able to reduce drinking in the past month by 1.4 days, an effect that can be translated into enhanced health, educational and social well-being (Hennessy & Tanner-Smith, 2014). Similarly, two systematic reviews, concluded that the most commonly observed positive effects across programs were for drunkenness and binge drinking (Foxcroft & Tsertsvadze, 2012a, 2012b). Generally, school-based alcohol interventions are found to be cost-effective because even small effects in universal prevention interventions, which are designed to reach all students regardless of their risk for alcohol use, could lead to important savings for the society as a result of reduced harmful drinking (Strøm, Adolfsen, Fossum, Kaiser, Martinussen, et al., 2014)

Nonetheless, research has shown that some school-based approaches are more effective than others. A review found that effective school-based programs focus on delaying onset and reducing frequency of alcohol consumption through decreasing personal and social risk factors on one hand and strengthening personal and social protective factors on the other (Komro & Toomey, 2002). Those approaches to school-based interventions are derived from psychosocial theories on the etiology of adolescent alcohol and other substance use, and are categorized into three types: 1) social skills training (to identify and resist internal [e.g., anxiety stress] and external [e.g., peer pressure, advertising] pressures); 2) normative education (that relies on changing the attitudes and norms that exist around youth drinking and reinforces the awareness that most adolescents do not use alcohol); 3) competence enhancement skills training (e.g. learning stress management, communication skills, general social skills, and assertiveness skills) (Griffin & Botvin, 2010; Komro & Toomey, 2002). A meta-analysis identified motivational

S U M M A R Y

Element 1

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enhancement therapy (MET) as the most effective intervention modality among cognitive behavior therapy and psychoeducational therapy. Interactive brief interventions using the MET approach have been found to result in reduction in drinking days among students who reported consuming on an average of 3.4 days to 1.4 days in the last month (Hennessy & Tanner-Smith, 2014).

Programs relying on providing knowledge alone, fear appeals, or messages urging not to drink before a “certain older age” have consistently been found to be ineffective (Bonnie, 2004). Also strategies focused solely on self-esteem and resisting direct peer pressure have not proven to be effective (Bonnie, 2004). Overall educational interventions have been shown to be supportive rather than stand-alone strategies (Hope, 2004). Educating students on harmful alcohol drinking is one of the main approaches employed to prevent and reduce the alcohol-related harms at the school level but that can only reach modest effects that are often short-lived particularly when booster sessions are not provided to reinforce the effects of a programme (Babor et al., 2010a; Cairns et al., 2014). This has also been ascertained by a systematic review showing that these interventions were found to be effective in the short term mainly (< 12 months), and that they need to be multicomponent working on different levels and coupled with interventions on other risk factors (not only alcohol education) for long-term and more evident effects (Strøm, Adolfsen, Fossum, Kaiser, & Martinussen, 2014).

Nonetheless, another review of the long term effectiveness of alcohol prevention programs indicated reductions in alcohol use even after 15 years from the program implementation (Skara & Sussman, 2003). Another school-based educational intervention noted less reporting of lifetime binge-drinking among 7th grade students, who received an alcohol-specific intervention, at post-test (4 months) and at 12 month follow-up, compared to those receiving the usual curriculum (Morgenstern, Wiborg, Isensee, & Hanewinkel, 2009). The alcohol-specific intervention consisted of four interactive lessons conducted by teachers, who underwent a training workshop, in addition to booklets for students and booklets for parents aiming to tackle beliefs about consequences of alcohol use, media/advertising literacy, resistance skills and alcohol-related normative beliefs (Morgenstern et al., 2009).

Other prevention programs that aim to prevent multiple risk factors such as alcohol, tobacco, and drug use or anti-social behavior had a bigger and more prolonged impact on health or social problems in comparison to alcohol-specific ones (Foxcroft & Tsertsvadze, 2012a, 2012b). Life Skills Training (LST) is a school-based program consisting of 3 years of prevention curricula for 7th, 8th, and 9th grade (11-14 year-old students) on the use of tobacco, alcohol, and marijuana, and violence which focuses only on the individual-level (Gilbert J. Botvin, Baker, Dusenbury, Botvin, & Diaz, 1995). The

LST program, delivered either through teacher or video training, was significantly more effective in reducing the mean number of drunkenness episodes in the last month compared to standard curriculum at 4 months follow-up (Gilbert J. Botvin et al., 1995). The LST program targets the major social and psychological actors that promote the initiation of substance use and other risky behaviors. The strongest effects were observed in those receiving at least 60% of the sessions. Prevalence of weekly and monthly alcohol drinking and frequency of having 3 or more drinks did not differ between intervention and control group. In another study, the LST program showed long-term effects on alcohol use when the LST group reported 50% less binge-drinking episodes (>5 drinks per occasion) and showed lower normative expectations for peer drinking at up to two years of follow-up, relative to controls (Gilbert J Botvin et al., 2001). Furthermore, a systematic review concluded that life skills and social norms approaches were associated with reductions in risky behaviors (Cairns et al., 2014).

Effective school-based programs also work on different levels and involve parents and community interventions. For example, a study evaluating the Drug Abuse Resistance Education (D.A.R.E) program among 7th - 8th grade students concluded that D.A.R.E. classroom curriculum alone was not effective in changing alcohol and other substance use; however, when combined with peer-led parental involvement and youth-led extracurricular activities (D.A.R.E. Plus), it illustrated significant reductions in alcohol use. Specifically, boys in the D.A.R.E. Plus schools were less likely to show increases in alcohol use intentions, consumption in the past year or past month, than their counterparts in control schools, whereas girls in the D.A.R.E. Plus schools were less likely to report increases in ever having been drunk, compared with girls in the D.A.R.E. only schools (Perry et al., 2003).

School-based alcohol harm reduction programs may take place during school-day, extended-day, or afterschool programs. They may be delivered by school teachers or by community-based facilitators, and may be mandatory (e.g. health education class) or voluntary (e.g. an afterschool program course) (Marshall, 2016). According to a meta-analysis, the effectiveness of school-based interventions neither varied across different age levels (elementary (kindergarden-5/6), junior high (grades 6/7-9) and high-school (grades 10-12)) and gender categories nor the level of program intensity (Strøm, Adolfsen, Fossum, Kaiser, & Martinussen, 2014). Brief Alcohol Interventions (BAIs) which are theory based (MET approach), lasting < 5 hours for alcohol drinkers at baseline, were as effective as longer duration interventions, improving the cost-benefit gains (Hennessy & Tanner-Smith, 2014; Strøm, Adolfsen, Fossum, Kaiser, & Martinussen, 2014). Moreover, short duration interventions are more convenient in school-setting as they put less pressure on the school resources and the time of the teaching staff than long-

duration interventions (Cairns et al., 2014). Furthermore, individually delivered interventions were found to be more effective than group-delivered interventions (Hennessy & Tanner-Smith, 2014). However, that effect could have been attributed to the fact that most group-delivered interventions did not use theory-based interventions as the MET approach, whereas individual based interventions did use it (Hennessy & Tanner-Smith, 2014).

Alcohol prevention programs delivered in higher education settings follow a harm reduction approach (rather than abstinence) that aims to reduce alcohol and other drug related harms to individuals and communities (Poulin, 2006). Alcohol drinking and binge-drinking in particular are often perceived by college students as normative behavior and unproblematic (Gilbert J Botvin & Griffin, 2007). Hence, programs for college alcohol use focus on frequent binge drinkers, providing education, referral, and normative education (Gilbert J Botvin & Griffin, 2007). For instance, AlcoholEdu program, a 2-3 hour online course (derived from BASICS, described below) was designed to reduce both hazardous drinking and alcohol-related harms among college students. Such interventions typically include personalized feedback to change normative beliefs about alcohol use, education about alcohol effects on the brain and on behavior, risk awareness, challenges to expectations regarding the effects of alcohol use, and suggestions for alcohol-free activities and strategies to minimize alcohol-related harms (SAMHSA, 2016b). An evaluation of AlcoholEdu showed statistically significant reductions in past month alcohol use and binge-drinking frequency in students attending intervention schools, compared to control schools in the semester immediately following implementation (Mallie J. Paschall, Antin, Ringwalt, & Saltz, 2011). Furthermore, long-term effects were spotted in programs directed at high-risk groups, particularly conducted among college students (18-24 year-olds) (Babor et al., 2010a), such as Brief Alcohol Screening and Intervention for College Students (BASICS) which consists of two fifty minute one-on-one counseling sessions with a trained physician, psychologist or social worker covering skills to enhance motivation to change, promote healthier choices and build coping skills (Dimeff, 1999). College high-risk drinkers who received BASICS demonstrated greater reductions in drinking rates, harmful consequences of drinking, and alcohol dependence than participants in the control group, sustained at 2- and 4-year follow-ups (Baer et al., 2001; Marlatt et al., 1998).

In conclusion, positive effects in school-based interventions are generally small to modest, and specific factors such as the heterogeneity of interventions, settings, population characteristics, and duration) seem to influence the extent of effectiveness (Fred Martineau et al., 2013).

Table 1 Key findings from systematic reviews

Category of finding	Element 1.1
Benefits	<p>Two meta-analyses identified the school-based programs for alcohol use prevention as effective in reducing the frequency of alcohol use and the quantity of alcohol use (Hennessy & Tanner-Smith, 2014; Strøm, Adolfsen, Fossum, Kaiser, & Martinussen, 2014).</p> <p>A systematic review concluded that interventions targeting more than one risky behaviour tended to have longer intervention impact compared to alcohol-specific interventions (Foxcroft & Tsertsvadze, 2012b).</p> <p>A randomized trial found that teacher or video training delivered program, were significantly more effective in reducing the mean number of drunkenness episodes in the last month compared to standard curriculum at 4 months follow-up (Gilbert J. Botvin et al., 1995).</p> <p>A meta-analysis concluded that short duration and individually delivered (<5 hours) school-based Brief alcohol interventions using Motivational enhancement Therapy (MET) reduced drinking days by 1.4 drinking among adolescents in the intervention groups relative to the control groups, with MET being the most effective approach (Hennessy & Tanner-Smith, 2014).</p> <p>College based program showed statistically significant reductions in past month alcohol use and binge-drinking frequency in students attending intervention college, compared with control schools in the semester immediately following implementation (Mallie J. Paschall et al., 2011).</p>
Potential harms	<p>A meta-analysis concluded that group-based brief alcohol interventions for youth who already drink alcohol may instigate pro-alcohol and pro-binge drinking discussions that could lead to negative and harmful effects (Hennessy & Tanner-Smith, 2014). This study concluded that individually-delivered sessions are more effective (Hennessy & Tanner-Smith, 2014).</p> <p>An evaluation study of Project Northland confirmed that the lack of continuity of intervention can cause significant deterioration in alcohol use outcomes (Perry et al., 2002).</p>
Costs and/or cost-effectiveness in relation to the status quo	<p>A systematic review concluded that school-based education are not expensive (International \$0.29–0.53 per year per person in the population across regions Americas, Europe and Western Pacific), however they are not considered as cost-effective because their effects on</p>

Category of finding	Element 1.1
	<p>alcohol consumption levels and health outcomes are not remarkable (Peter Anderson, Chisholm, et al., 2009).</p> <p>However, a more recent meta-analysis concluded that school-based alcohol interventions are found to be cost-effective because even small effects in universal prevention interventions, which are designed to reach all students regardless of their risk for alcohol use, could lead to important savings for the society associated with harmful drinking (Strøm, Adolfsen, Fossum, Kaiser, Martinussen, et al., 2014).</p> <p>A systematic review concluded that Brief Alcohol Interventions (BAIs) which are theory based (MET approach), lasting < 5 hours, were as effective as longer duration interventions, improving the cost-benefit gains (Hennessy & Tanner-Smith, 2014; Strøm, Adolfsen, Fossum, Kaiser, & Martinussen, 2014)</p>
<p>Uncertainty regarding benefits and potential harms*</p>	<p>One overview of systematic reviews found that the evidence for school-based interventions' effectiveness remains inconclusive overall; positive effects in alcohol-related outcomes were generally small to modest, and context specific factors (such as the heterogeneity of interventions, settings and population characteristics) seem to influence the extent of effectiveness (Fred Martineau et al., 2013).</p> <p>A systematic review concluded that evidence on sustained effect of school-based intervention on alcohol behaviour is not clearly established (Peter Anderson, Chisholm, et al., 2009).</p>
<p>Key elements of the approach if it was tried elsewhere</p>	<p>Implementing a Multi-component and integrated program</p> <p>An overview of systematic reviews concluded that the most promising interventions addressed more than one domain (individual and peer, family, school and community) of risk and protective factors for risk behaviour (Fred Martineau et al., 2013). School-based programs are most successful when they are maintained over several years, interactive, use more than one strategy e.g., addressing social norms, building social resistance skills, provide booster sessions, and are peer-led (Babor et al., 2010b).</p> <p>Ensuring Sufficient in Dose and Follow-up</p> <p>The interventions are conducted across multiple sessions and multiple years to ensure that an adequate "dose" of prevention is received by students and schools. The results of Project Northland evaluation emphasize the importance that interventions should be age-appropriate to every developmental stage throughout adolescence. This is because it is critical to focus on psychosocial</p>

Category of finding	Element 1.1
	<p>mediators such as social skills, perceptions, and peer norms during early adolescence when there is a greater susceptibility to peer influence (Perry et al., 2002).</p> <p>Establishing norms that support non-use</p> <p>Three studies concluded that School-based interventions that use normative education appear to be promising with the strongest effect established on delaying the onset of ever being drunk (Gilbert J Botvin & Griffin, 2007; Hansen & Graham, 1991; Morgenstern et al., 2009) specially those delivered in an interactive manner.</p> <p>Addressing Parental monitoring and supervision</p> <p>Active family involvement by monitoring their children activities with friends and supervising them has been shown to delay onset of alcohol use and inhibit alcohol abuse (Bonnie, 2004; Lilian A. Ghandour, 2009).</p> <p>Avoiding a focus on information alone and making interactive teaching techniques</p> <p>A recent systematic review that emphasizes the importance of program delivery characteristics (program setting, key personnel, or target age and context) than the content for the effectiveness of the intervention (Foxcroft & Tsertsvadze, 2012a). Interactive techniques that involve role playing, discussions, and small-group activities, to promote active student participation have been shown to be more effective than non-interactive curricula (lecture oriented and stress awareness development) in preventing alcohol and other substance use among youth (Komro & Toomey, 2002).</p> <p>Implementing with Fidelity</p> <p>The quality of program delivery is closely associated with its effectiveness (Bonnie, 2004). Effective programs often provide teacher training. However, a systematic review reported that involving external specialist has also been found to be correlated with positive behavioural effects as opposed to utilizing teaching staff to carry out the interventions (Cairns et al., 2014). External specialists can be elected such as trained peer leaders and trained police officers to deliver the curriculum, and community organizers to facilitate extracurricular programs (Perry et al., 2003). External agencies for training and technical support may be used depending on the school needs and their current internal resource (UNODC, 2004).</p> <p>Computer and internet based intervention</p> <p>A systematic review found that computer and internet-based activities for alcohol and substance use have been shown to be effective. These programs are also known for</p>

Category of finding	Element 1.1
	<p>having high fidelity (Champion, Newton, Barrett, & Teesson, 2013).</p> <p>Social and emotional skill development</p> <p>There is evidence from two reviews showing that early onset alcohol use influences the development of social and personal competencies (Bonnie, 2004) specifically the ability to develop goal setting, manage stress, communicate effectively, among other general social and assertiveness skills (Komro & Toomey, 2002). Therefore, and according to a randomized trials, effective school-based interventions in reducing alcohol self-reported use among youth use alcohol awareness and education about the consequences of alcohol drinking, social and peer resistance training (Hansen & Graham, 1991; Morgenstern et al., 2009)</p>
Stakeholders' views and experiences	<p>About half of stakeholders, participating in a national Australian study on the role of schools in alcohol education, (Stakeholders such as parents, school personnel, health professionals and government representatives) strongly disagree/disagree that young people's drinking is not a responsibility of schools. The majority of stakeholders, particularly parents and school personnel strongly agree/agree that schools play an important role in educating young people about alcohol (Roche et al., 2009).</p> <p>Stakeholders rated alcohol experts as the most appropriate people to deliver alcohol education followed by students trained as peer leaders and specially designated teachers (Roche et al., 2009).</p> <p>Many stakeholders thought that alcohol education could be tailored according to age and conducted across schooling levels (Roche et al., 2009).</p>

Table 1 **Barriers and Counterstrategies**

Level	Barriers	Counterstrategies
Individual	<p>For school-based programs that include parents, lack of child care and transportation means, work schedule conflicts, stressful financial situations, residential mobility, marital or relationship conflict, and the lack of positive relationships with school</p>	<p>Motivating parents and their children's participation through telling them more about the negative consequences of substance use.</p> <p>Programs need to take into account common barriers and try to incorporate solutions that</p>

Level	Barriers	Counterstrategies
	teachers and administrators (Mbwana, Terzian, & Moore, 2009).	<p>enhance probability of parent participation</p> <p>Target parents with tailored (different messages for different groups of parents) communication materials about the program to minimize the biased enrolment.</p> <p>In addition, when given the choice to allow their children to participate, parents of students who have already been exposed to health promotion activities or whose children are more involved in extracurricular activities are more likely to agree (Anderman et al., 1995).</p>
Professional	Lack of competent professionals to deliver the intervention and monitor the progress. Teachers may not have knowledge or understanding of alcohol and other substance related issues, or skill in intervention implementation (Roche et al., 2009).	Offering ongoing professional development teacher training workshop and technical support programs enhances impact and sustainability of the program (Roche et al., 2009; UNODC, 2004).
Organization	Schools may not engage in these interventions due to limited funds and time, schools perception of the intervention, parent's concern about the topic, and competing priorities at the school (Forman, Olin, Hoagwood, Crowe, & Saka, 2009).	<p>Using computer- and internet-based prevention programs where applicable (Agabio et al., 2015).</p> <p>Using classroom organization and management strategies such as parent volunteers, police officers, or professional consultants as instructors or aides (Perry et al., 2003).</p> <p>Provide information to parents in a way that enhances understanding, perception of risk, and relevance of the issue of alcohol use.</p> <p>Flexibility to tailor program to needs of the school population is</p>

Level	Barriers	Counterstrategies
		<p>important to enhance successful implementation at the school level.</p> <p>A supportive school environment including support from the School Principal and broader school community is important to promote successful implementation.</p> <p>Provision of enhanced funding to develop, implement and evaluate programs and to ensure the availability of readily accessible, up-to-date, and relevant program resources (ideally available via the internet, etc.) is critical (Roche et al., 2009)</p>

Element 1.2

Implement family-based interventions

An overview of systematic reviews documented that effective family –based interventions have the ability to influence children’s alcohol drinking patterns and reduce self-reported alcohol consumption (Fred Martineau et al., 2013). A review suggested that family-based interventions can either be provided to parents without the presence of their children to teach them specific parenting skills or with parents and children together to promote family bonding and skills (Griffin & Botvin, 2010). Yet, the most effective interventions are those that can promote both parenting and family skills (Griffin & Botvin, 2010). A systematic review concluded that effective parenting interventions in reducing alcohol use and initiation among children < 18 years are those that emphasize active parental involvement, develop parenting skills and instill social skills or personal responsibility amongst youth (Petrie et al., 2007). In fact, this was ascertained by another systematic review concluding that universal family-based prevention programs work on the development of family skills (parental support and establishing clear boundaries and rules) as well as the development of behavioral norms and positive peer affiliations, as well as social and peer resistance (Foxcroft & Tsertsvadze, 2012b).

A systematic review identified the transition from primary to secondary school (i.e.11-15 years of age) as the best time to deliver family based interventions since drastic developmental changes occur during that phase and peer pressure starts affecting adolescent’s choices (Petrie et al.,

2007). Two systematic reviews suggested that daughters are more responsive to these interventions than sons (Foxcroft & Tsertsvadze, 2012b) (Foxcroft & Tsertsvadze, 2012b). There is evidence of short-medium effectiveness of gender-specific interventions between daughters and parents, typically mothers in terms of less reports of past week, month and year alcohol use in addition to improvement in resistance skills and healthier normative beliefs about underage drinking (Foxcroft & Tsertsvadze, 2012b). In some cases, involving parents of high-risk adolescents is unachievable due to the parents' refusal to take part in the intervention (Griffin & Botvin, 2010).

An example of a family-based program is Family Matters, a home-based universal prevention program implemented by parents and designed to prevent tobacco and alcohol use in children aged 12 - 14 years (SAMHSA, 2016a). Adolescents who received the intervention were less likely to use alcohol in their lifetime than adolescents who did not receive the intervention, and the beneficial effects of this program were maintained even after 12 months of the end of the program (Bauman et al., 2002).

A systematic review showed the effectiveness of another program "Strengthening Families Programme (SFP)" on primary prevention for alcohol use, even over the longer-term (>3 years) (R. L. Spoth et al., 2002). Strengthening Families is a family skills training program originally designed to increase resilience, improve parenting skills and family relationships, reduce problem behaviors, delinquency and alcohol and drug abuse in 10-14 year old children of high-risk families and to improve their social competencies and school performance (SAMHSA, 2016c). The program promotes parenting, family and children's life skills through 7 weekly, 2-hour sessions and has been evaluated in several studies done in different countries (Mihalic, 2016).

Furthermore, a systematic review showed that a combination between the SFP and school-based interventions (LST- Life skills Training program in schools described above) is favorable. An evaluation study of this combination showed 30% reduction rates in alcohol initiation by the children for the combined intervention after a 2 year follow-up period compared to the children who did not participate in the combination program (Petrie et al., 2007). Even though these interventions showed long-term effects, however, more research needs to be done to evaluate the sustainability of the family based interventions (Fred Martineau et al., 2013).

Table 3 **Key findings from systematic reviews**

Category of finding	Element 1.2
Benefits	An overview view of systematic reviews and evaluation studies concluded that parenting interventions (examples Family matters or strengthening families programme) that emphasize active parental involvement, develop their parenting skills and instil social skills or personal responsibility amongst youth are effective in reducing

Category of finding	Element 1.2
	<p>alcohol use and initiation among youth aged <18 years (Martineau et al., 2013)(Bauman et al., 2002; Petrie et al., 2007; Roche et al., 2009).</p> <p>Two systematic reviews concluded that gender-specific interventions between daughters and parents, typically mothers have short-medium effectiveness in terms of less reports of past week, month and year alcohol use in addition to improvement in resistance skills and healthier normative beliefs about underage drinking (Foxcroft & Tsertsvadze, 2012b).</p> <p>Furthermore, a systematic review showed that a combination between the SFP and school-based interventions (LST- Life skills Training program in schools described above) is favourable. An evaluation study of this combination showed 30% reduction rates in alcohol initiation by the children for the combined intervention after a 2 year follow-up period compared to the children who did not participate in the combination program (Petrie et al., 2007).</p>
Potential harms	The literature did not identify any potential harms.
Costs and/or cost-effectiveness in relation to the status quo	<p>A review concluded that family-based interventions are considered cost-beneficial since parents learn and apply new skills that can improve their relationships with their children and sustain them on the long-term (Kumpfer, 2014). In addition, since extensive interventions will be delivered to families only, therefore the management of resources becomes more efficient (Stormshak et al., 2011).</p> <p>According to multiple evaluations of the SFP, cost considerations for implementing SFP 10-14 serving 10 families are estimated to vary between 5,001-10,000\$ though some sites reported being able to implement SFP 10-14 for as little as about 2,300\$. The SFP for 10-14 demonstrated significant reductions of 30% to 60% in alcohol initiation and consumption by the ninth grade that were maintained to the 12th grade. These results produced substantial cost/benefit ratio of \$9.60 per \$1 spent on SFP (Mihalic, 2016; SAMHSA, 2016c; SFP, 2016)</p>
Uncertainty regarding benefits and potential harms*	An overview of systematic reviews in 2013 concluded that more research needs to be done to evaluate the sustainability of the family based interventions (Fred Martineau et al., 2013).
Key elements of the approach if it was tried elsewhere	A systematic review concluded that the majority of the parenting programs targeted more than one type of substance use and misuse (Petrie et al., 2007)

Category of finding	Element 1.2
	<p>A systematic review identified the effective parenting intervention approaches as those that include active parental involvement, developing parenting skills and instilling social skills or personal responsibility amongst youth (Petrie et al., 2007).</p> <p>A systematic review concluded that the best time to deliver the intervention appeared to be during the transition from primary to secondary school (i.e.11-15 years of age) (Petrie et al., 2007).</p> <p>A review and a primary evaluation study concluded that follow-up and monitoring as illustrated in Family Matters program is essential to motivate parents to complete the program's components (Griffin & Botvin, 2010; SAMHSA, 2016a).</p> <p>A review ascertained that programs need to be implemented with fidelity whereby provider undergo special training workshops to work with families (Griffin & Botvin, 2010).</p>
Stakeholders' views and experiences	<p>In the literature, only one primary study addressed stakeholders' views from Slovenia. All stakeholders groups that are involved in alcohol policy, including alcohol industry, governmental organizations, NGOs, and public health organizations gave highest rating on the importance of implementing programs for counselling family members of people with harmful alcohol consumption (Krnjel, Kamin, Koskir, & Markic, 2010)</p>

Table 4 **Barriers and Counterstrategies**

Level	Barriers	Counterstrategies
Family	<p>Lack of time to get involved in the intervention, program demands, parents beliefs and attitudes (cultural and social sensitivity) toward the intervention, parent's refusal family members and other social influences, and perception of child's risk level (R. Spoth, Redmond, Hockaday, & Shin, 1996)</p>	<p>Provide information to parents in a way that enhances understanding, perception of risk, and relevance of the issue of alcohol use.</p> <p>Considering having incentives to encourage participation and attendance (Kumpfer, 2014)</p>

Element 1.3

Implement community-based interventions

Community-based programs are interventions that address the individual, social and environmental influences on behaviour change of a group of individuals or a geographic community (McLeroy, Norton, Kegler, Burdine, & Sumaya, 2003). According to two reviews, community-based interventions targeting underage alcohol drinking are effective (Fagan et al., 2011; Toomey et al., 2011). A key feature for their effectiveness is to have multiple components, including a school-based component, family or parenting component, along with mass media campaigns, public policy initiatives, and other types of community organization and activities (Griffin & Botvin, 2010). As such, community-level interventions do not only target direct causes of underage alcohol use (availability, peer pressure and family influences) but also the complex long-term, social, cultural, political, and economic influences of an environment (the commercial sales of alcohol and accessibility of alcoholic beverages to underage) surrounding youth and young adults (Fagan et al., 2011; Toomey et al., 2011). Furthermore, community participation plays a pivotal role in creating comprehensive institutional policies and national policies that aim to reduce youth access to alcohol (Komro & Toomey, 2002). A review of community-based interventions to target alcohol consumption concluded that they have the potential to produce long-term effects since they work on achieving population-level reductions in alcohol misuse among adolescents and young adults (Fagan et al., 2011). However, a local needs assessment is warranted for assessing the risk and protective factors specific to a certain community to ensure that prevention services are well-fitted (Fagan et al., 2011).

Holder and colleagues evaluated a comprehensive community-based Community Trials Intervention to Reduce High-Risk Drinking (RHD), and found it to be effective in decreasing self-reported amount of alcohol consumed per occasion (binge-drinking), drink driving, and alcohol-related car crashes and assault injuries among a sample of individuals aged 18 years and above (H. D. Holder et al., 2000). The intervention consisted of 5 components that act synergistically: community mobilization, increasing enforcement of drinking and driving laws, controlling access to alcohol, restricting underage drinking, and promoting responsible beverage service (H. D. Holder et al., 2000). The community mobilization component entailed initiation of community coalitions and the use of media advocacy to draw attention to alcohol-related problems (H. D. Holder et al., 2000). The underage drinking component aimed at reducing underage access to alcohol through doing (i) off-site server training programs, (ii) surveys on youth access to alcohol and disseminating research findings back to communities, and (iii) police enforcement operations against underage sales (H. D. Holder et al., 2000). A

similar intervention, the “Reducing Youth Access to Alcohol” (RYAA), implemented in several communities in Oregon, USA between 2004 and 2010 targeting 11th grade students (Flewelling et al., 2013), produced significant reduction in underage sales, the perception of alcohol availability but not in the prevalence of alcohol drinking among high-school students. However when implemented with high levels of enforcement, the RYAA was significantly effective in reducing underage drinking in the intervention communities, particularly, 30-day use of alcohol and binge drinking and reductions (Flewelling et al., 2013).

A common feature of community-based programs is to rely on community coalitions that consist of different stakeholders from various backgrounds and organizations (municipalities, sports/health clubs, religious leaders, influential people in the media, and community leaders), dedicated to break the taboo associated with providing alcohol-related information and news of alcohol abuse, especially to the young population, through various media outlets (Fagan et al., 2011; Nikfarjam et al., 2014). For example, a systematic review concluded that “don’t drink and drive” media campaigns have been found to decrease crashes and injury-induced crashes by a median of 13% and 10%, respectively (Randy W Elder et al., 2004). Worth noting that these media campaigns were implemented in areas where strict law enforcements for driving under the influence (DUI) were already in place (Randy W Elder et al., 2004), hence highlighting the importance of coupling community based interventions with adequate local policies. On the other hand, a recent systematic review showed no evidence of media campaigns, alone, in reducing the risk of alcohol-related injuries or fatalities due to heterogeneity of the studies included. However, the authors concluded that despite those results, it can’t be concluded that mass media campaigns are not effective (Yadav & Kobayashi, 2015). Nonetheless, not all coalitions are destined to succeed in reducing rates of alcohol use among adolescents and young adults; in order to succeed, coalitions must ensure (1) having clearly defined, focused and manageable goals, (2) having adequate planning time (3) choosing preventive strategies that are based on empirical data about what needs to change in the community and on evidence from scientifically valid studies of what has worked to address those needs (4) choosing evidence-based prevention policies, practices, and programs that have been evaluated for effectiveness (5) carefully monitoring prevention activities to ensure implementation quality (Fagan et al., 2011).

One community-based trial, Communities Mobilizing for Change on Alcohol (CMCA) program, focused exclusively on changing policies to lessen the non-commercial and commercial access of alcohol to youth under 21, inhibiting adult provision of alcohol to youth, and reducing the community’s tolerance to underage drinking. The program used a range of social organizing

techniques addressing legal, institutional, social, and health issues to target commercial on- premises (e.g., bar, restaurant) and off-premises (e.g., liquor store, convenience store) alcohol vendors within a community. CMCA resulted in a lesser likelihood that the merchants in intervention sites would sell alcohol to minors (<18 years) (Alexander C. Wagenaar, Murray, & Toomey, 2000). Youth aged 18-20 years in intervention communities were less likely than their peers in the comparison communities to give alcohol to younger adolescents or try to purchase or drink alcohol at a bar (Alexander C. Wagenaar, Murray, & Toomey, 2000) or be arrested for driving under the influence (Alexander C. Wagenaar, Murray, Gehan, et al., 2000). While the program was able to reduce physical and commercial availability of alcohol to youth, the intervention did not show any effects on youth’s self-reported alcohol drinking (past month alcohol drinking, binge-drinking, number of drinks on last occasion, etc.). This outcome has been attributed to the short duration of the study and the inability to impact social availability of alcohol i.e. provision of alcohol by adults such as family and older friends (Alexander C. Wagenaar, Murray, Gehan, et al., 2000). Hence, multicomponent and long duration community-based interventions are needed for effective results.

Table 5 Key findings from systematic reviews

Category of finding	Element 1.3
Benefits	<p>Two reviews concluded that community-based efforts (usually comprised of more than one component) work on achieving population-level reductions in alcohol misuse among adolescents and young adults and have the potential to produce long-term effects (Fagan et al., 2011).(H. D. Holder et al., 2000).</p> <p>A systematic review concluded that “Don’t drink and drive” media campaigns are effective in decreasing crashes and injury-induced crashes by a median of 13% and 10%, respectively, provided having a strong implementation and enforcement for driving under the influence (DUI) are already in place (Randy W Elder et al., 2004).</p> <p>A randomized trial study evaluating “Reducing Youth Access to Alcohol” found that when implemented with high levels of enforcement, the intervention was significantly effective in reducing underage drinking in the intervention communities, particularly, underage sales, 30-day use of alcohol and binge drinking (Flewelling et al., 2013).</p> <p>Two randomized trials evaluating the Communities Mobilizing for Change on Alcohol (CMCA) program found that youth aged 18-20 years in intervention communities were less likely than their peers in the comparison communities to give alcohol to younger adolescents or try to purchase or drink alcohol at a bar (Alexander C. Wagenaar, Murray, & Toomey, 2000) or be arrested for</p>

Category of finding	Element 1.3
	driving under the influence (Alexander C. Wagenaar, Murray, Gehan, et al., 2000).
Potential harms	Not addressed by the identified systematic reviews
Costs and/or cost-effectiveness in relation to the status quo	A systematic review concluded that there has to be more studies on the cost-effectiveness to identify the best timing, location, audience, and campaign characteristics (Yadav & Kobayashi, 2015).
Uncertainty regarding benefits and potential harms*	<p>Only when high levels of enforcement were in place, the Reducing Youth Access to Alcohol program was significantly effective in reducing underage drinking in the intervention communities, particularly, 30-day use of alcohol and binge drinking and reductions (Flewelling et al., 2013).</p> <p>Although according to one systematic review (Randy W Elder et al., 2004), media campaigns such as “don’t drink and drive” are effective in reducing alcohol-related motor vehicle crashes if coupled with strong enforcements , another more recent systematic showed no evidence for effectiveness of media campaigns alone against drink-driving due to heterogeneity of studies included but not necessary because these interventions are not effective (Yadav & Kobayashi, 2015).</p> <p>While the CMCA program was able to reduce physical and commercial availability of alcohol to youth, the intervention did not show any effects on their self-reported alcohol drinking (past month alcohol drinking, binge-drinking, number of drinks on last occasion, etc.) (Alexander C. Wagenaar, Murray, Gehan, et al., 2000).</p>
Key elements of the approach if it was tried elsewhere	<p>There is no curricula or manuals that specify how to make environmental changes in the community. Moreover, each community is unique, complex, and not always predictable. According to a review, a local needs assessment is warranted for assessing the risk and protective factors specific to a certain community to ensure that prevention services are well-fitted (Fagan et al., 2011).</p> <p>A randomized trial concluded that an effective community based intervention has to be multicomponent and mainly comprised of 5 components that act synergistically: community mobilization, reducing the risk of drinking and driving, controlling access to alcohol, restricting underage drinking, and promoting responsible beverage service (H. D. Holder et al., 2000).</p> <p>The underage drinking component in the intervention above aimed at reducing underage access to alcohol</p>

Category of finding	Element 1.3
	<p>through doing (i) off-site server training programs, (ii) surveys on youth access to alcohol and disseminating research findings back to communities, and (iii) police enforcement operations against underage sales (H. D. Holder et al., 2000).</p> <p>One component of the effective intervention trials above is community mobilization which entailed initiation of community coalitions and the use of media advocacy to draw attention to problems (H. D. Holder et al., 2000)</p> <p>A randomized trail concluded that community-based intervention has to be of long duration to be effective (Alexander C. Wagenaar, Murray, Gehan, et al., 2000) .</p> <p>A review suggested that in order to succeed, coalitions must ensure (1) having clearly defined, focused and manageable goals, (2) having adequate planning time (3) choosing preventive strategies that are based on empirical data about what needs to change in the community and on evidence from scientifically valid studies of what has worked to address those needs (4) choosing evidence-based prevention policies, practices, and programs that have been evaluated for effectiveness (5) carefully monitor prevention activities to ensure implementation quality (Fagan et al., 2011).</p>
Stakeholders' views and experiences	Not addressed by the identified systematic reviews

Table 6 **Barriers and Counterstrategies**

Level	Barriers	Counterstrategies
Professional	Limited amount of resources (time, effort and commitment) and coordination between stakeholders (Griffin & Botvin, 2010)	<p>Consider engaging with academic institutions.</p> <p>A coalition of stakeholders is needed to ensure proper management that involves parents, educators and community leaders. This coalition needs to invest immensely on coordination (Griffin & Botvin, 2010).</p> <p>The NGOs tend to consider that the government should be concerned about covering the costs of the prevention</p>

Level	Barriers	Counterstrategies
		<p>programs (Peter Anderson & Baumberg, 2006b).</p> <p>Organizing fundraisers and expose the program to publicity (Wallack & Barrows, 1983).</p>
System/Community	<p>Culture (religious beliefs, economic status) and acceptability factor for youth, parents and stakeholders.</p> <p>Limited effect on perceived availability due to retail and social access (Flewelling et al., 2013)</p>	<p>Media advocacy to help raise awareness and change community norms regarding the acceptability of underage drinking (Flewelling et al., 2013)</p> <p>Increase the visibility of underage drinking activities by raising media attention (Flewelling et al., 2013)</p>

*The above analysis is based on evidence from the literature and interpretations of team members who are experts in the field of public health.

Element 2

Implement effective policies

Comprehensive national alcohol-harm reduction policies are fundamental for delaying alcohol initiation, controlling consumption and reducing alcohol related harms, with strong evidence on their effectiveness (Naimi & Nelson, 2011). A review concluded that policies that regulate the physical, social and cultural environments in which alcohol is marketed (specifically pricing and availability) are identified as the most effective in reducing alcohol-related harms (Peter Anderson, Chisholm, et al., 2009; Hope, 2004). The WHO Global Alcohol Strategy (2010) has called on its member states (including Lebanon) to implement the following four harm-reduction regulations: (1) Regulating availability of alcohol, (2) Decreasing alcohol affordability, (3) Implementing drink driving countermeasures, and (4) Regulating alcohol advertising/marketing (WHO, 2010). Together, these four elements have been found to be the most cost-effective regulations to reduce alcohol-related harms among the general population, including youth (Peter Anderson, Chisholm, et al., 2009). Yet, consistent enforcement of regulations remains a critical element of effectiveness (Hope, 2004).

A comparative study of alcohol policies in 30 countries reported a strong inverse relationship between the strength of a country's alcohol control

policies and alcohol consumption, especially among the four policy domains stated above (Brand, Saisana, Rynn, Pennoni, & Lowenfels, 2007). Furthermore, based on ratings of a panel of alcohol policy experts, the efficacy of alcohol policies that fall in the four policy domains was found to be even higher among youth compared to the general population, particularly in controlling binge-drinking and alcohol-impaired driving (Nelson et al., 2013). Pricing policies are the highest-rated policies followed by limiting physical availability, a finding that is consistent with previous reviews of alcohol policy efficacy (Babor et al., 2010b; T. F. Nelson et al., 2013). Policies that target alcohol availability and marketing are the most effective in lowering the prevalence and frequency of alcohol consumption and age of first alcohol use among adolescents aged between 15-17 years (Mallie J Paschall et al., 2009). In general, policies that are effective among adults are rated as effective among youth (Nelson et al., 2013). Quite importantly, however, policies that are designed to target only youth while ignoring the significantly larger adult population are doomed to failure (Hope, 2004). Indeed, as shown by a global review of alcohol policy must take into consideration the general population, high-risk groups, and high-risk drinkers (Babor et al., 2010b).

Element 2.1

Regulate the availability of alcohol

An overview of systematic reviews, two reviews and WHO recommendations concluded that controlling the availability of alcohol is an effective way of reducing alcohol consumption and its related harms (Peter Anderson, Chisholm, et al., 2009; Babor et al., 2010a; Fred Martineau et al., 2013; Mallie J Paschall et al., 2009; WHO, 2014). Policy measures limiting the availability of alcohol include: regulating the physical availability of alcohol (e.g. limiting the days and hours of sales), raising the minimum legal drinking age (MLDA), monopolization or licensing of on-premise (bars, restaurants etc.) and off-premise (grocery stores, convenience stores, etc.) outlets, and refusing to sell alcohol to intoxicated people (WHO, 2012). An overview of systematic reviews concluded that limiting the hours/days of sale and maintaining the limit is effective in reducing alcohol consumption (in youth and adults) and alcohol-related harms (Popova et al., 2009). It also concluded that alcohol outlet density (AOD) is strongly associated with increases in alcohol consumption (Martineau et al., 2013). This association was also found in many developed countries such as the US, Australia, Switzerland and Taiwan (Rowland, Toumbourou, & Livingston, 2015). Increases in club density and package density (density of shops that sell takeaway liquor) had the greatest impact on increasing the risk of underage purchasing alcohol (Rowland et al., 2015). In some countries, access to alcohol among youth as well as the older populations is reduced by regulating the location and the number of outlets

selling alcohol through for example, banning sale of alcohol in outlets situated near schools, universities, hospitals, gas station, drive-through shacks/kiosks (Österberg & Karlsson, 2002).

Another policy that limits availability, is setting a minimum age for the purchase of alcohol which is one of the most effective measures in limiting access of alcohol to young people (Hope, 2004). Three reviews of evidence found that higher MLDA restricts alcohol access by minor drinkers, and thus reduces alcohol consumption among underage drinkers; it also reduces alcohol related motor vehicle crashes, and other alcohol-related problems (Komro & Toomey, 2002; Shults et al., 2001). A review from the US concluded that raising the minimum legal drinking age (MLDA) from 18 to 21 led to a significant inverse relationship with alcohol related crash injuries (Shults et al., 2001). In fact, increasing the MLDA from 18 to 19 in Quebec in Canada has been estimated to potentially decrease car crashes by 6.2% or a reduction of 337 collisions per year (Callaghan et al., 2014).

Inversely, a reduction in MLDA has been shown to lead to an increase in road traffic crashes (Kypri et al., 2006). For example, when New Zealand lowered its MLDA from 20 to 18 in 1999, they experienced a significant increase in the number of car crashes amongst 15-19 year olds (Kypri et al., 2006). After the law, the ratio of alcohol-related crashes was 12% higher among 18-19 year olds and 14% higher for 15-17 year olds (Kypri et al., 2006).

Regulating days of sales as another measure of regulating alcohol availability has been extensively evaluated. A systematic review assessing the outcomes of 14 studies (also from the developed world), found that increasing or decreasing days of sales has an impact on alcohol consumption in youth and adults (ability to purchase alcohol and volume of alcohol purchased) and alcohol related harm (e.g. motor vehicle crashes, motor vehicle fatalities, etc.) (Middleton et al., 2010). Days of sale may be regulated at the national or local levels (Middleton et al., 2010). For example, in Scotland, following the legalization of pub Sunday sales of alcoholic beverages in some areas, there was a significant 2.4 standard unit of alcohol increase in the average weekly consumption of alcohol among men aged 18-45 in the area where the pub Sunday sales was legalized (Middleton et al., 2010). In addition, in Perth, Australia, also after legalizing Sunday alcohol sales in 1970, i.e. allowing two 2-hour periods when alcoholic drinks could be purchased, there was a 22.6% increase in motor vehicle crashes and a 58.9% increase in car crash fatalities in comparison to other cities in Australia where no such increasing hours of sale was present (Middleton et al., 2010). In New Mexico, after the ban on Sunday alcohol sales at off-premises retail outlets was repealed, the risk of death in an alcohol-related crash on Sunday increased by 26.8% compared to the risk of death in a crash on other days of the week. In Sweden, there was a net 3.6% increase in alcohol sales with Saturday opening of government

alcohol stores, with no significant changes on harm (Middleton et al., 2010). Middleton and colleagues, suggest that banning alcohol sales on Saturdays and Sundays would lead to a significant decrease in alcohol consumption as well as alcohol related harm (Middleton et al., 2010).

On another note, restrictions on hours of sale has been identified as an effective practice towards reducing alcohol-related harms (Babor et al., 2010a). In fact, if opening hours for the sale of alcohol are extended, more cases of alcohol-related harms occur (Hahn et al., 2010). A systematic review assessed the effects of increasing hours of sale in on-premises settings in high-income countries, and concluded that increasing the hours when alcohol may be sold by 2 or more hours is associated with increased alcohol-related harms particularly alcohol-related road crashes and hospitalizations (Hahn et al., 2010).

In developed countries such as the US, Canada, and New Zealand, privatization of wine sales resulted in higher density of outlets, longer opening hours or more days of sale, and often lower prices due to competition (H. Holder et al., 2008). A review on the abolishment of retail wine monopolies reported evidence from 10 of 13 studies that demonstrate an increased trend in wine consumption following the abolishment of wine monopoly (Alexander C. Wagenaar & Holder, 1996). Similar trends were illustrated for total alcohol consumption specifically when allowing for substitution with another beverage type (Alexander C. Wagenaar & Holder, 1996). A study in Alberta, Canada found that privatization of the retail sale of alcohol which took place primarily between the end of the 1980s and the beginning of the 1990s had a significant long-term impact on the sale of spirits but not on all alcohol sales (H. Holder et al., 2008). Government monopolies for the sale of alcohol can reduce alcohol-related harm (Peter Anderson, Chisholm, et al., 2009). Monopoly by definition makes demand on a specific product at retail level less likely to increase the number of outlets compared to privatization (H. Holder et al., 2008). Government monopolies tend to have fewer stores, which are open for a limited number of hours. In countries that don't have government monopolies, establishing a licensing system for alcohol sale allows for control, however it is important to consider, as a result of the licensing system, the multiplication of licensed retail outlets that occur to generate income for jurisdictions (Peter Anderson, Chisholm, et al., 2009).

The most notable adverse effects of controlling availability of alcohol, however, include the activation of informal market activities such as illegal imports, smuggling, and home production, all which can be prevented through minimal enforcement (Babor et al., 2010a). In addition, changing either hours or days of alcohol sale implies a redistribution of the times at which many alcohol related crashes and violent events related to alcohol occur

which entails changes in police shifts and extra police work to accommodate the new regulations (Peter Anderson & Baumberg, 2006a).

Element 2.2

Decrease alcohol affordability

Three systematic reviews concluded that, with clear and consistent evidence, increasing alcohol prices and excise taxations can decrease alcohol consumption (A. C. Wagenaar et al., 2009; Alexander C Wagenaar et al., 2010) and lead to a significant decrease in alcohol-related morbidity and mortality (e.g. alcohol related diseases, suicide, motor vehicle crashes/fatalities, etc.) among youth and adults in high income countries (HICs) (Booth et al., 2008; Randy W Elder et al., 2010)(Elder et al., 2010; Booth et al., 2008, (Alexander C Wagenaar et al., 2010). Consistently with the evidence from HICs, in low-middle income countries (LMICs), high level of aggregate relative alcohol price levels were associated inversely with alcohol consumption, specifically alcohol consumption in the past year, number of drinks per occasion, drinking frequency, and binge-drinking, all in the past year (Cook et al., 2014).

Such policies also help reduce the economic availability of alcohol specifically among youth who are under the legal drinking age. A large number of studies have demonstrated that higher alcohol prices may substantially reduce alcohol consumption among the general population as well as the adolescents in terms of frequency and amount (Komro & Toomey, 2002). Higher taxes on alcohol are also associated with less drinking among youth aged 16-21 years and high-school-students (Komro & Toomey, 2002). Restrictions on price-related alcohol promotion, such as happy-hour discounts, regulation of minimum price levels and setting limits on price discrimination at the wholesale level can also have impact on the cost of alcohol (Organisation mondiale de la santé. Bureau régional de & Österberg, 2004).

A systematic review concluded that a 10% increase in alcohol prices can reduce alcohol consumption by 3-10% (Elder et al., 2010)). Another systematic review found that policy regulations that increased taxes and prices of alcohol were linked to a reduction in alcohol-related mortality from alcohol related diseases, suicide, etc. by an estimated 35%;specifically, mortality as a result of drink driving by 11%, and morbidity from sexually transmitted infections by 6%, form violence by 2% and crime by 1.2% (Alexander C Wagenaar et al., 2010). Similarly, a study that looked at alcohol tax fluctuations from 1969 to 2006 in the U.S, in New York State found that for every per unit (1\$ per gallon) increase of beer tax during that period, there was an overall 45% decrease in alcohol-related mortality (Delcher, Maldonado-Molina, & Wagenaar, 2012).

While high levels of taxation have generally been proven to reduce alcohol consumption and alcohol-related harms, some alcohol beverages are

so inexpensive that increasing taxes on them would not have as much effect (Ludbrook, 2009). For this reason, minimum unit pricing (MUP), or setting a standard price per unit of alcohol below which it cannot be sold (Ludbrook, 2009), has been suggested, as an alternative to raising taxes, as a strategy to decrease per capita alcohol consumption. It would do so with a particular impact on heavy drinkers with low incomes who are thought to respond to general price increases by substituting to cheaper products and hence at minimal cost to moderate drinkers (Ludbrook, 2009). A research study done by the University of Sheffield in the UK found that a proposed minimum price of 50p (0.5 pounds) per unit of alcohol would result in a 7% reduction in alcohol consumption among harmful drinkers and is estimated to lead to 2,036 fewer alcohol-related deaths and 38,859 fewer hospitalizations during the first 20 years of the policy (Angus, Holmes, Pryce, Meier, & Brennan, 2016). Alternatively, alcohol taxes would have to rise to 28% to match the reductions of the minimum unit pricing among both moderate and heavy drinkers but with smaller reductions in alcohol consumption among harmful drinkers and, particularly, harmful drinkers of low income levels. Moreover, alcohol taxation is said to be regressive; the increases in consumer spending on alcohol are estimated to be substantially greater in all groups under a 28% tax increase than a 50p MUP and especially among the lowest-income consumers (Vandenberg & Sharma, 2016) (Angus et al., 2016). Similar results were found in another recent study, concluding that MUP is more effective than specific taxation for reductions in alcohol consumption (mean reductions of 11.9 drinks/week/capita), especially among low-income quintiles (Vandenberg & Sharma, 2016). Furthermore, increasing the cost of the cheapest alcohol is not highly regressive and is effective in reducing alcohol consumption (Vandenberg & Sharma, 2016).

Identifying which beverages to introduce taxes on is very important. In a study conducted in British Columbia, Canada, where minimum pricing was enforced, it was found that a 10% increase in minimum pricing of a certain beverage reduced consumption of that beverage by approximately 16.1%; while a 10% increase in the minimum pricing of all beverages led to a 3.4% decrease in consumption for all beverages (Stockwell, Auld, Zhao, & Martin, 2012). In another study conducted in Canada, it was found that a 10% increase of minimum pricing already implemented would significantly decrease alcohol consumption by 8.34% (Stockwell, Zhao, et al., 2012). An introduced minimum pricing for coolers, premixed cocktails, and liqueurs witnessed a significant reduction in drinking of 13.2%, 21.3% and 5.3% respectively (Stockwell, Zhao, et al., 2012). The alcohol tax fluctuations study from 1969 to 2006 in the U.S, concluded that concurrent excise tax increases on beer and spirits were associated with reductions in alcohol-related disease mortality (Delcher et al., 2012). However, increasing taxes on two or more beverages

simultaneously (not only beer or spirits) has been suggested to further reduce alcohol deaths (Delcher et al., 2012).

Policies that lead to changes in alcohol prices can result in unintended consequences that need to be closely monitored (Organisation mondiale de la santé. Bureau régional de & Österberg, 2004). For example, higher alcohol prices in a country can lead to youth switching to other cheaper alcohol beverages or to beverages whose price did not increase, or to smuggling alcohol from a neighboring country that sells relatively cheap alcohol or increased border trade. A low quality systematic review found that educational messages against drinking smuggled alcohol resulted in a substitution effect with reduced illegal spirit's purchase, but increased legal spirit purchase (Lachenmeier et al., 2011). Hence, multi-component interventions are needed to tackle different aspects of the problem and its consequences.

Element 2.3

Decrease drink-driving

In an overview of systematic reviews, eleven reviews assessed drink driving policies and their effectiveness (F. Martineau et al., 2013). Multicomponent community interventions implemented with youth and older populations aiming to reduce drink-driving appear to be effective in reducing alcohol-related vehicle crashes. Those components pertain to drink-driving checkpoints, among others such as responsible beverage service, alcohol availability restrictions specifically for youth, educational campaign and media advocacy [(Shults et al., 2009) as cited by (Fred Martineau et al., 2013)]. Other highly effective drink-driving policies are lowering Blood Alcohol Concentration (BAC) laws for young drivers, minimum legal drinking age laws, (Shults et al., 2001) and increasing police patrols (Goss et al., 2008; F. Martineau et al., 2013). In fact, a systematic review found that increasing police patrols had consistent positive effects (Goss et al., 2008; F. Martineau et al., 2013). Sobriety checkpoints are locations where police randomly stop drivers and require them to undergo random breath testing to detect their BAC levels (Randy W Elder et al., 2002). A meta-analysis examining the effects of sobriety checkpoints found that they were associated with an estimated 14% reduction in car crashes (Erke et al., 2009). This meta-analysis found that reducing car crashes was the highest directly after the introduction of checkpoints, when it was universal rather than selective testing and with high baseline levels of enforcements (Erke et al., 2009). On another note, establishing a legal BAC level (defined as the amount of ethanol in a given amount of blood, assessed an exhale sample of breath) has been proven to be effective in decreasing alcohol-related harms and mortality, especially among 18-25 years old (Killoran et al., 2010; F. Martineau et al., 2013). According to the 2007 US

National Highway Transportation Safety Administration, a decrease of BAC levels from 0.10g/dL to 0.08g/dL resulted in a drop from 60% to 40% in alcohol-related fatal crashes (Schwartz & Davaran, 2013). A systematic review found a median reduction of alcohol related motor vehicle crashes (analyzed from police incident reports) of 7% after the enactment of the 0.08g/dL BAC level law in some states in the US such as Vermont (Shults et al., 2001).

Moreover, a systematic review of school-based interventions targeting drink-driving through in-school instructional programs found that these programs are effective in reducing self-reported riding with a driver who had been drinking alcohol but have no sufficient evidence to determine their effectiveness on reducing drinking while driving (Randy W. Elder et al., 2005) as cited by (Fred Martineau et al., 2013)]. Drink driving behaviors was however reduced among students attending colleges in US states where there are strong comprehensive laws addressing underage drinkers and high level of enforcement (Wechsler, Lee, Nelson, & Lee, 2003).

Element 2.4

Regulate alcohol advertising and marketing

A systematic review of longitudinal studies found that various form of alcohol marketing including advertising and promotions are strongly associated with initiation of youth drinking and risky drinking patterns among youth who drink (Peter Anderson, De Bruijn, et al., 2009). Another systematic review and a meta-analysis concluded that alcohol advertisement viewing might increase alcohol consumption by 0.39- 2.67 alcohol units among males and 0.25- 1.69 units among females (Stautz et al., 2016). Furthermore, a systematic review that assessed the effect of alcohol sports sponsorship found a positive relationship with alcohol drinking among school children and hazardous drinking among adults (Brown, 2016).

The regulation of alcohol advertising comes in the form of restrictions on marketing methods, advertising bans, educational campaigns and counter-advertising (J. P. Nelson, 2010). A review concluded that alcohol warning labels are ineffective in changing alcohol drinking behaviors, as opposed to tobacco warning labels' effect of health behaviors (Wilkinson & Room, 2009). Alcohol companies prefer self-regulations on alcohol advertising, however a systematic review showed that this method is ineffective in preventing the marketing of content that might affect young people (Vendrame & Pinsky, 2011). Stricter more restrictive policies have a stronger inverse relationship with drinking outcomes (Cook et al., 2014). Cook et al (2014) and their assessment of alcohol control policies in middle and low income countries found an inverse relationship between alcohol advertising restrictions, particularly beer advertisement, and alcohol consumption (average usual quantity and drinking volume)(Cook et al., 2014). Bosque-Prous

et al (2014) also conducted a cross sectional study examining the association of alcohol advertising and hazardous drinking across 16 European countries, and found that countries with the most severe restriction on alcohol advertising showed lower prevalence of hazardous drinking than those without such restrictions; 30.6% prevalence in countries with no restrictions, 20.3% prevalence in countries with some restrictions and 14.4% in countries with the strongest restriction (Bosque-Prous et al., 2014).

However, an overview of systematic reviews and a meta-analysis concluded that alcohol advertising banning effectiveness is still controversial with inconclusive evidence whether to recommend it or not (Fred Martineau et al., 2013; Siegfried et al., 2014). A systematic review and a meta-analysis showed inconsistent and unclear results whether banning can have positive effects on alcohol consumption. In an example of a study assessing lifting the total ban of advertising to a partial ban, all alcohol sales decreased by 11.11 kiloliters per month after lifting the ban. However, beer and wine sales increased by 14.89 kiloliters/month and 1.15 kiloliters/month respectively but spirit sales decreased by 22.49 kiloliters/month (Siegfried et al., 2014). On the other hand, a study examining the relationship of alcohol advertisement in 20 countries including UK, USA, France, Canada, and New Zealand, over a 26 year period concluded that alcohol advertising bans decrease alcohol consumption (Saffer & Dave, 2002). Furthermore, the effectiveness of alcohol advertising bans may increase as their scope increases. For example, banning all media advertising of alcohol decreases consumption by 8% while banning advertising of beer, wine and spirits only would reduce alcohol consumption by 5% (Saffer & Dave, 2002).

According to the meta-analysis, advertising restrictions/banning should be implemented in a research program that is of high quality and well monitored and evaluated (Siegfried et al., 2014). Lithuania's experience with banning alcohol advertising concluded that bans are only effective when they are comprehensive and not fragmented or partial with a systematic monitoring of the influence of alcohol industry on legislations (Paukštė et al., 2014). Lithuania's experience sheds light on the pressure alcohol companies exert in preventing bans. Though a total advertising ban law was passed in 2008, to be implemented in Jan 2012, , the alcohol companies' pressure resulted in amending the law in December 2011 to prevent the ban, despite the social support of the ban and the extensive advocacy and lobbying from the NGOs (Paukštė et al., 2014). Globally, it has been well reported that global alcohol corporations promote themselves as good corporate citizens in order to be accepted in the process of the policy development and implementations, as such, they have prevented countries from adopting restrictive policy measurements (Casswell, 2013). Tactics regularly used are: sponsorship of intergovernmental events, funding research, publications, educational

initiatives, cultural and sporting events (Casswell, 2013). Other tactics, reported by a systematic review, include emphasizing the responsibility of the industry in self-regulation and the individual responsibility of not responding to advertisements (Savell, Fooks, & Gilmore, 2016); direct link with government officials, undermining scientific evidence and the provision of financial incentives/gifts (Paukštė et al., 2014).

Table 7 **Key findings from systematic reviews & single studies for element 2**

Category of finding	Regulate availability of alcohol	Decrease alcohol affordability	Decrease drink driving	Regulate alcohol advertising and marketing
Benefits	<p>One systematic review found that regulating alcohol outlet density, and hours and days of sale have an impact on: overall alcohol consumption, drinking patterns and alcohol-related morbidity and mortality (Popova et al., 2009).</p> <p>A review of policies in some European countries found that the location and the number of outlets selling alcohol are regulated to reduce access to alcohol among youth as well as the older populations through for example, banning sale of alcohol in outlets situated near schools, universities, hospitals, gas station, drive-through shacks/kiosks (Österberg & Karlsson, 2002). Such interventions have an impact on</p>	<p>Three systematic reviews concluded that, with clear and consistent evidence, increasing alcohol prices and excise taxations can decrease alcohol consumption and lead to a significant decrease in alcohol-related morbidity and mortality (A. C. Wagenaar et al., 2009; Alexander C Wagenaar et al., 2010).</p> <p>A systematic review concluded that a 10% increase in alcohol prices can reduce alcohol consumption by 3-10% (Elder et al., 2010). Another systematic review found that policy regulations that increased taxes and prices of alcohol were linked to a reduction in alcohol-related mortality from alcohol related diseases, suicide, etc. by an</p>	<p>A review of systematic reviews found that the drinking-driving policies that are highly effective include lower Blood Alcohol Concentration (BAC) laws for young and drivers, minimum legal drinking age laws, and sobriety checkpoints laws (Shults et al., 2001)</p> <p>A meta-analysis of 23 studies found that alcohol-related injuries and fatalities decreased by</p> <p>23% after introduction of sobriety checkpoints and by 22% after introduction of random breath testing (Shults et al., 2001).</p>	<p>Banning beer, wine and spirits advertising would reduce alcohol consumption by 5% while a ban on alcohol advertising in the media would result in an 8% reduction of alcohol consumption (Saffer & Dave, 2002).</p> <p>Countries with stricter policies on advertising have lower prevalence of hazardous drinking (Bosque-Prous et al., 2014)</p> <p>In low-middle income countries, a cross-sectional study found an inverse relationship between alcohol advertising restrictions, particularly beer advertisement, and alcohol consumption (average usual quantity and</p>

Category of finding	Regulate availability of alcohol	Decrease alcohol affordability	Decrease drink driving	Regulate alcohol advertising and marketing
	<p>reducing alcohol use and drunk-driving fatalities (Peter Anderson & Baumberg, 2006a).</p> <p>A review of evidence from states that raised the minimum legal drinking age found a significant inverse relationship between MLDA and alcohol related crash injuries (Shults et al., 2001).</p> <p>A systematic review assessing the outcomes of 14 studies from the developed world suggested that banning alcohol sales on Saturdays and Sundays would lead to a significant decrease in alcohol consumption as well as alcohol related harm (Middleton et al., 2010).</p> <p>One systematic review assessed the effects of increasing hours of</p>	<p>estimated 35% , mortality as a result of drink driving by 11%, morbidity from sexually transmitted infections by 6%, form violence by 2% and would reduce crime by 1.2% (Alexander C Wagenaar et al., 2010).</p> <p>MUP is more effective than specific taxation for reductions in alcohol consumption (mean reductions of 11.9 drinks/week/capita), especially among low-income quintiles (Vandenberg & Sharma, 2016).</p> <p>A 10% increase in minimum pricing of a certain beverage reduced consumption of that beverage by approximately 16.1% vs. a 3.4% reduction in alcohol consumption in case of a 10% increase of minimum</p>	<p>Sobriety check points are associated with an estimated 14% reduction in car crashes (Erke et al., 2009).</p> <p>A decrease of BAC levels from 0.10 to 0.08g/dL resulted in a drop from 60% to 40% in alcohol-related fatal crashes (Schwartz & Davaran, 2013).</p>	<p>drinking volume) (Cook et al., 2014)</p> <p>As found in tobacco research, advertising bans may be more effective in LMICs than High-income countries even when they are not comprehensive given the inverse associations between alcohol advertisement restrictions and drinking variables in LMICs (Cook et al., 2014)</p>

Category of finding	Regulate availability of alcohol	Decrease alcohol affordability	Decrease drink driving	Regulate alcohol advertising and marketing
	<p>sale in on-premises settings in high-income countries concluded that increasing the hours when alcohol may be sold by 2 or more hours is associated with increased alcohol-related harms particularly alcohol-related road crashes and hospitalizations (Hahn et al., 2010).</p>	<p>pricing on all beverages (Stockwell, Auld, et al., 2012).</p>		
Potential harms	<p>The activation of informal market activities such as illegal imports, smuggling, and home production, all which can be prevented through at least minimal enforcement (Babor et al., 2010a).</p> <p>New regulations imply changes in police shifts and extra police work to accommodate the new measures (Peter Anderson & Baumberg, 2006b).</p>	<p>Alcohol taxes is said to be regressive; the increases in consumer spending on alcohol are estimated to be substantially greater in all groups under a 28% tax increase than a 50p MUP and especially among the lowest-income consumers (Vandenberg & Sharma, 2016)</p> <p>Higher alcohol prices in a country can lead to youth switching to other cheaper</p>	<p>The literature did not identify any potential harms.</p>	<p>Self-regulation approach, the alcohol industry’s favourite alternative to marketing restrictions did not show any effectiveness in protecting vulnerable populations from exposure to alcohol advertising and other marketing practices (Peter Anderson, Chisholm, et al., 2009; Babor et al., 2010a).</p>

Category of finding	Regulate availability of alcohol	Decrease alcohol affordability	Decrease drink driving	Regulate alcohol advertising and marketing
Costs and/or cost-effectiveness in relation to the status quo	<p>A systematic review concluded that the effect of reducing access to retail outlets for specified periods of the week have the potential to be a very cost-effective countermeasure, but only if they are fully enforced (every healthy year of life restored costs between I\$515 and I\$1307) (Peter Anderson, Chisholm, et al., 2009).</p>	<p>While increasing alcohol taxes reduces alcohol consumption and related harm, it also increases government revenue (Peter Anderson, Chisholm, et al., 2009).</p> <p>Tax increases (of 20% or even 50%) is considered a highly cost-effective policy in countries with a high prevalence of heavy drinking (Peter Anderson, Chisholm, et al., 2009).</p>	<p>Evidence from high-income countries indicate that drink-driving policies and their enforcement via breath testing and sobriety checkpoints are cost-effective with a probability of realizing similar effects in other less privileged countries (Peter Anderson, Chisholm, et al., 2009).</p> <p>Intervention implementation produced positive health</p>	<p>The effect of implementation of a comprehensive advertising ban have the potential to be very cost-effective countermeasures, but only if they are fully enforced (every healthy year of life restored costs between I\$931 and I\$961) (Peter Anderson, Chisholm, et al., 2009).</p>

Category of finding	Regulate availability of alcohol	Decrease alcohol affordability	Decrease drink driving	Regulate alcohol advertising and marketing
		<p>In contest where the prevalence of alcohol drink is lower, the population level effects of policies decrease and cost-effectiveness indicators rise accordingly (Peter Anderson, Chisholm, et al., 2009).</p>	<p>effects saving I\$762 in eastern Europe to I\$1264 in the western Pacific costs per Disability-Adjusted Life Years (DALYs) (Peter Anderson, Chisholm, et al., 2009).</p>	
			<p>In the US, based on the assumption that lower BAC laws reduce young drivers' alcohol-related crashes by 20%, the cost benefit analysis showed that lower BAC laws would yield 11\$ per dollar invested when violators receive a 6-month license suspension. The costs included "the cost of trials and sanctions imposed and compliance costs to young drivers (i.e., cost of the loss of mobility)" (Shults et al., 2001).</p>	

Category of finding	Regulate availability of alcohol	Decrease alcohol affordability	Decrease drink driving	Regulate alcohol advertising and marketing
<p>Uncertainty regarding benefits and potential harms (so monitoring and evaluation could be warranted if the approach element were pursued)</p>	<p>All evidence are derived from high-income countries with a high rate of alcohol use (Peter Anderson, Chisholm, et al., 2009).</p> <p>Effectiveness depends on the level of enforcement; increased visibility of enforcement to reduce underage access to alcohol and perceived likelihood of detection, accountability and consequent legal punishments influence underage drinking behaviours (Flewelling et al., 2013).</p>	<p>Some alcohol beverages are so inexpensive that increasing taxes on them does not have as much effect (Ludbrook, 2009)</p> <p>The effectiveness of increasing prices as measured with price elasticities depends on the country's characteristics, the different time periods, and the different categories of alcoholic beverage. Therefore, local drinking habits need to be assessed prior to planning pricing regulations that influence economic availability of alcohol (Österberg, 2012).</p>	<p>A review of school-based interventions targeting drink-driving through in-school instructional programs found that these programs are effective in reducing self-reported riding with a driver who had been drinking alcohol but have no sufficient evidence to determine their effectiveness on reducing drinking while driving[(Randy W. Elder et al., 2005) as cited by (Fred Martineau et al., 2013)].</p> <p>The effectiveness of both checkpoint programs and random breath testing depends how visible, rigorously enforced, sustained and consistent they are (Sally</p>	<p>Imposing total or partial ban on alcohol advertising produces only small effects in alcohol consumption on the long term mainly due to the ability of producer to invest their promotions though other unrestricted promotional approaches (Babor et al., 2010a).</p> <p>An overview of systematic reviews and a meta-analysis concluded that alcohol advertising banning effectiveness is still controversial with inconclusive evidence whether to recommend it or not (Fred Martineau et al., 2013; Siegfried et al., 2014).</p> <p>According to the meta-analysis, advertising restrictions reaching</p>

Category of finding	Regulate availability of alcohol	Decrease alcohol affordability	Decrease drink driving	Regulate alcohol advertising and marketing
Key elements of the approach if it was tried elsewhere	Regulation of all production and conditions of sale. Licensing of places for sale and consumption which will affect the nature of the venue, the density and clustering of outlets. Licensing of days and hours of sale.	Excise tax graded by volume of ethanol. Inflation-adjusted taxes (Peter Anderson, Chisholm, et al., 2009).	Blood limit of alcohol concentration established in law (Shults et al., 2001). Sobriety check points (Shults et al., 2001).	to banning should be implemented in a research program that is of high quality and well monitored and evaluated (Siegfried et al., 2014). Similarly, Lithuania’s experience with banning alcohol advertising concluded that bans are only effective when they are comprehensive and not fragmented or partial with a systematic monitoring of the influence of alcohol industry on legislations (Paukštė et al., 2014). Regulation of all marketing, including sponsorship. Content restricted with no lifestyle advertisements Bans on sponsorship. Placement restricted by volume and media (eg, no electronic media) (Sally Casswell &

Category of finding	Regulate availability of alcohol	Decrease alcohol affordability	Decrease drink driving	Regulate alcohol advertising and marketing
	<p>Minimum purchase age</p> <p>(Sally Casswell & Thaksaphon Thamarangsi, 2009).</p>	<p>Increasing the cost of the cheapest alcohol is not highly regressive and is effective in reducing alcohol consumption (Vandenberg & Sharma, 2016).</p>	<p>A meta-analysis found that reducing car crashes was the highest directly after the introduction of checkpoints, when it was universal rather than selective testing and with high baseline levels of enforcements (Erke et al., 2009)</p>	<p>Thaksaphon Thamarangsi, 2009).</p> <p>Self-regulation is ineffective</p> <p>Warning labels are ineffective</p> <p>If bans were to be implemented, caution is required.</p>
<p>Stakeholders' views and experiences</p>	<p>Governmental organizations (GOs) and Non-Governmental Organizations NGOs hold similar views on alcohol policy that are different than those of the Alcohol Industries (AIs) (Peter Anderson & Baumberg, 2006b).</p> <p>While GOs and NGOs regarded regulatory measures (BAC levels for drinking and driving, taxation, health warning labelling, availability and advertising) as highly effective and important, the AIs gave low ratings to these policy measures. AIs were more favourable to educational measures than either NGOs or GOs. All three groups agreed on the importance of implementation measures to reduce alcohol-related harms among young people. While GOs and NGOs stressed the necessity of coordination, the AIs emphasized stakeholder involvement particular their involvement in policy making and their respective regulatory marketing codes., NGOs and GOs perceived industry lobbying as a major barrier to effective alcohol harm reduction policy among youth (Peter Anderson & Baumberg, 2006b).</p>			

Table 8 **Barriers and Counterstrategies**

Level	Barriers	Counterstrategies
Youth level	Drinkers are convinced that drinking leads to social acceptance and it has been shown that heavy drinkers often deny the severity of the consequences that are tied with alcohol consumption and perceive drinking as a social norm and an individual attitude, an idea that has been reinforced by alcohol marketing and advertisement (Peter Anderson & Baumberg, 2006b; Mosher, 1999)	Information and education type programs can play an important role in raising awareness among youth about the negative consequences of harmful alcohol drinking and underage drinking and increase attention and acceptance to alcohol on the national political agendas (Peter Anderson, Chisholm, et al., 2009).
Industry level	Alcohol industry lobbying can cause major setbacks. Alcohol industries have developed a number of tactics which prevent alcohol policies from being implemented or even considered as a public health issue (Peter Anderson & Baumberg, 2006b; Mosher, 1999). Some of these tactics include: “alliances with other interest groups, involvement of popular sports, direct links with the legislative and executive levels of government, attempts to undermine scientific evidence and subvert public messages, creation of social responsibility initiatives, provision of financial incentives/honoraria/gifts” (Paukštė et al., 2014)	It is important to regularly analyse and systematically monitoring of the influence of alcohol industry on legislations, legislators, the research field and the market (Paukštė et al., 2014)
	Manufacturers and distributors of alcohol may also be reluctant to address the issue of alcohol since it will lead to commercial and fiscal consequences (Campbell et al., 2009).	Self-regulation should not be left as an option for the alcohol market. Furthermore, the industry should not be involved in the decision making process about control measures as they will affect the decisions in their favour (P. Anderson, 2009; Vendrame & Pinsky, 2011). Advocacy, lobbying, creating coalitions, community mobilization, media’s support and public polls can be used to fight the industry’s influence. Constant monitoring from advocates is recommended for quick response to countermeasures from the industry (Paukštė et al., 2014). Preventing sponsorship in media and sports from the alcohol industry can ensure that these

	<p>Bans on alcohol advertising often operate alongside codes of industry self-regulation that specify the content of permitted forms of alcohol advertising (Babor et al., 2010a).</p> <p>The unfettered trade barriers reinforcing the conduct of alcohol industries as one big international market leads to the inability of national government to regulate the alcohol trade (Mosher, 1999).</p> <p>Existence of a substantial illicit market (smuggled, illegal, and informal) for alcohol affects the link between taxation policies and affordability (Peter Anderson, Chisholm, et al., 2009).</p>	<p>important stakeholders will not later be from the opponents (Paukštė et al., 2014).</p> <p>Bringing the non-taxed alcohol market under strict regulatory control (Sally Casswell & Thaksaphon Thamarangsi, 2009)</p> <p>Strong enforcement needs to take important measures including “the closure of illegal factories and after-hours production, and the use of tax stamps to record that duty has been paid on informal products” (Peter Anderson, Chisholm, et al., 2009)</p>
System level	<p>The drinking culture, social norms and public attitudes toward drinking (Peter Anderson & Baumberg, 2006b; Mosher, 1999). The more a person drinks the less favourable their attitudes toward alcohol policies (Macdonald, Stockwell, & Luo, 2011).</p> <p>Lack of prioritization of alcohol on the political agenda (Peter Anderson & Baumberg, 2006b).</p> <p>Insufficient transparency and information, poor organisation and preparation for the introduction of new policies and laws, inadequate financing, corruption, and public distrust of authority</p>	<p>Raising awareness: Public knowledge about the increasing consumption patterns and related increasing alcohol-related harms may shift public attitude toward greater support for alcohol control policy (Seo, Chun, Newell, & Yun, 2015).</p> <p>Science and research has a role in the development of base knowledge of the risk factors and in creating evidence based public policies (Vendrame & Pinsky, 2011).</p> <p>Sensitization of policy makers and the community on the harmful effects of alcohol drinking among adolescents and young adults.</p>

make it hard to accept, integrate, implement and enforce effective policy (Peter Anderson, Chisholm, et al., 2009)

Developed policies need to be comprehensive, keeping any negative consequences due to perverse incentives to a minimum (Peter Anderson, Chisholm, et al., 2009).

Outdated laws and limited capacity and resources of government to implement and enforce policies (Babor et al., 2010a).

The WHO Framework Convention on Tobacco Control can inform alcohol control efforts and aid in protecting against vested interested in countries with high corruption levels (Paukštė et al., 2014).

Officers may have difficulty identifying underage drinking drivers with low BACs who do not show signs of impairment. Moreover, some state laws do not authorize officers to perform the BAC of an underage driver unless the officer has probable cause to believe that the driver's BAC is above the legal limit for adults (Shults et al., 2001).

International regulations are needed to limit the influence of the alcohol industry in national law making (Paukštė et al., 2014).

The creation of independent body for monitoring can reveal the violations to the regulatory rules (Vendrame & Pinsky, 2011).

*The above analysis is based on evidence from the literature and interpretations of team members who are experts in the field of public health.

Next Steps

Next Steps

The aim of this policy brief is to foster dialogue informed by the best available evidence. The intention is not to advocate specific policy options/elements or close off discussion. Further actions will flow from the deliberations that the policy brief is intended to inform. These may include:

- Deliberation amongst policymakers and stakeholders regarding the policy elements described in this policy brief.
- Refining elements, for example by incorporating, removing or modifying some components

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