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Research agendas for alcohol policymaking in the wider world

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ABSTRACT

From comparisons of World Health Organization statistics, it is clear that people in lower- and middle income countries (LMICs) experience more harms per litre of alcohol and different types of harms compared to those from higher-income countries (HICs). Yet studies in HICs dominate research on policies to prevent alcohol problems. The paper begins a dialogue on priorities for research in the wider world, particularly in LMICs. It reports on results of collaborative work among a group of academics to map priority areas for research relevant to LMIC. Research focus areas were identified and discussed among potential co-authors from diverse fields with relevant knowledge, with agreement reached on an initial list of seven research priority areas. Areas identified include: (1) the effects of choices (e.g., national vs. local, monopoly vs. licensing system) in organising the alcohol market; (2) involvement/separation of alcohol industry interests in decisions on public health regulation; (3) options and effectiveness of global agreements on alcohol governance; (4) choices and experience in controlling unrecorded alcohol; (5) means of decreasing harm from men's drinking to family members; (6) strategies for reducing the effects of poverty on drinking's role in harms; and (7) measuring and addressing key alcohol-induced LMIC health harms: infectious diseases, injuries, digestive diseases. Potential paths ahead for such research are briefly outlined and engagement in agenda setting from a wider group of stakeholders is sought.

Keywords: policy research; alcohol problems prevention; lower-income countries; alcohol policymaking; research agendas

Supplemental material: Supplemental material is included at the end of this document.

Research agendas for alcohol policymaking in the wider world

Introduction

Alcohol is among the leading risk factors for deaths and disabilities in the global burden of disease, a source of harm not only to the drinker but often also to those around the drinker. A public health framing of alcohol's effects identifies how the average volume of alcohol consumption and patterns of drinking relate to toxicity, intoxication and dependence and then to the burden of disease (Rehm et al., 2003), and how wider societal and individual contexts impact on alcohol-related harm (WHO, 2014) and alcohol-related violence against women (WHO, 2010). The harms are wide-ranging, including cancers and other noncommunicable diseases, mental illnesses, tuberculosis and other infectious diseases, and violence and other injuries (GBD 2019 Risk Factors Collaborators, 2020). Although per-capita alcohol consumption levels are often higher in high-income countries, the burden of alcohol-related harm in terms of lost life-years is greater in lower-income countries, with the predominant alcohol-related disorders differing between high- and low-income countries. Table 1, using data from WHO's 2018 Global Status report on alcohol (WHO, 2018), shows that disability-adjusted life-years (DALYs) lost because of alcohol-attributable diseases are greatest in the Low-Income country category for alcohol-attributable infectious diseases and unintentional injuries, greatest in the High-Income country category for cancers (malignant neoplasms), and greatest in one or the other of the Middle-Income country categories for other substantial alcohol-attributable disease categories.

[Table 1 about here]

Comparing the four national-income categories, the total alcohol per capita (APC) consumption rises regularly with increasing income, primarily reflecting an increasing proportion of the population drinking at all. So the relative "harm per litre" varies inversely with national income: a litre of beverage ethanol is associated with 3.7 times as many DALYs in the Low-Income as in the High-Income national income group.

In contrast to the pattern for harm per litre, the evidence base concerning alcohol policies and other measures to reduce the health harm from alcohol consumption is primarily derived from high-income countries, and indeed from a limited range of such countries (Savic & Room, 2014). This means that quite often research is lacking on

policy issues of special relevance in low- and middle-income countries (LMICs), both in terms of the emphasis in the research literature on diseases and other harms with a high prevalence in high-income countries, and in terms of the societal factors and circumstances contributing to the occurrence of the harms, and the potential policy levers for preventing the harm. In view of the heavy burden from alcohol-attributable harm in LMICs, while acknowledging that there is great diversity in LMICs, in terms of alcohol use, problems, policies and contexts in which drinking does and does not occur, an initiative was undertaken to identify priority areas for research which would contribute knowledge useful for formulating policies and programs to reduce the burden of alcohol-related harm in LMICs. The initiative was conducted as part of an International Alcohol Policy Project supported by Thailand Health Promotion Foundation.

This paper reports on the initiative, in which a group of scholars with diverse geographic and professional backgrounds collaborated to identify and characterise key research focus areas relating to the effects and effectiveness of policies and programs to reduce harms from drinking of particular importance for low- and middle-income countries. The areas of research focus are proposed to inform and potentially guide action in the 2020s and beyond that will develop relevant knowledge on reducing harms from alcohol to public health and welfare. Our aim is to identify areas of focus in the wider world, particularly those relevant to LMICs.

The international policy context for the project is highly relevant. WHO has implemented SAFER, a set of policies primarily chosen to diminish or limit rates of alcohol-related harm in the population, while being relatively efficient to implement (WHO, 2019). This paper aims to open up data and understanding of relations between alcohol and harms which would point to further policy initiatives. In reviewing its 2010 Global Strategy to Reduce the Harmful Use of Alcohol (Global Strategy; WHO, 2010) in February 2020, the World Health Organisation Executive Board noted that “the overall burden of disease and injuries attributable to alcohol remains unacceptably high” and committed to a program of “accelerating action to reduce the harmful use of alcohol” over the next decade (WHO, 2020). It should be noted, however, that the present project of identifying priority areas of research focus is not a WHO activity and is distinct from the WHO effort. The project aims to inform and contribute more

generally to discussions of priorities in policy-relevant research in the coming decade on alcohol in a global perspective.

Methods

In this paper a series of focus areas for research are put forward as being of particular importance in providing evidence for the adoption and implementation of public health-oriented alcohol control policies in LMICs. An initial partial draft was prepared mostly by the three first-listed coauthors and the last author, and sent to potential coauthors for their views on the importance of the topics nominated, for any suggestions on additional topics, and for their comments and suggestions. In seeking contributors, attention was paid not only to drawing on a range of expertise but also to including scholars with an LMIC background or experience. Those sending substantial responses were invited to be co-authors, and several rounds of revisions followed. The aim was to compile and characterise a set of focus areas for research, not to pursue each focus area in detail. Some additional topics were suggested along the way, but not subjected to detailed discussion. Brief discussion of these six topics can be found in the Supplementary Online Material for this paper.

Results: Key research focus areas

1. Choices and consequences in organising the alcohol market

A public health approach to alcohol, as an item that is consumed and digested but which often causes substantial health and welfare harm, requires government control and regulation of the market. Most governments have some kind of regulatory control specifically on alcohol products (WHO, 2018, pp. 99-102). But there is little up-to-date discussion of alternatives in organising and regulating the alcohol market, and the public health effects of these alternatives. This research area focuses on developing and assembling the evidence on different ways of organising and controlling alcohol production, distribution, sale and consumption, and on the effects and effectiveness of choosing different options.

Whether produced by traditional methods in the community or industrially and commercially, alcoholic beverages are produced by fermenting or distilling a wide range of agricultural products. From the point of fermentation or distillation into an

alcoholic beverage, in most countries the production, distribution and sale are supposed to be operating under state controls, whether the producers or distributors are a government monopoly, community or producer cooperatives, or private corporations or individuals. About 74.5% of beverage alcohol globally in 2016 was estimated to be “recorded alcohol” (WHO, 2018, p. 43), which more or less equates to being under such state oversight. The focus here is on modes of regulation of recorded alcohol (for informal or unrecorded alcohol, see research topic 4).

Divergent and often conflicting interests are at stake in how governments choose to control the alcohol market (Mäkelä & Viikari, 1977). On the one hand, alcohol production and sale contribute to local and national economies, and taxes on alcohol are a fruitful source of state revenue. But on the other hand, alcohol consumption contributes heavily to harms to health, welfare and public order. These interests are not wholly in conflict: a high tax on alcohol can serve the interests both of public health and of state revenue. But they are often conflicting, and private interests in the alcohol market in particular – at levels ranging from the multinational corporation to the local tavernkeeper – have a vested interest in more rather than less drinking. From a public health and welfare perspective, the policy question is how to set up and implement government controls of the different levels and aspects of the alcohol market in a way that minimises alcohol-related harm, and so that such controls can best be protected from pressures to increase the market. In LMICs where there is substantial unrecorded alcohol production, there is also the question of whether and how best to bring home production or other informal production into state oversight (see research topic 4 below).

While there was wide English-language discussion of policy choices for the organisation of the alcohol market in the mid- and late 20th century (e.g., Catlin, 1931; Mäkelä et al., 1981), there has been less research attention in high-income countries in recent decades, although parallel issues have arisen in recent years concerning the organisation of recreational cannabis markets -- and in this context the alcohol policy experience has again been looked to for evidence (Room & Cisneros Örnberg, 2019). However, in other parts of the world, the organisation and regulation of the alcohol market and the effects of regulation have been lively issues in recent decades (e.g., Gururaj et al., 2020; Neufeld et al., 2020; Tang et al., 2013), although these discussions

have been more often guided by ideology or revenue considerations than by public health considerations.

A research focus in this area might start with a scoping review identifying and discussing options for national and local organisation and regulation of the alcohol market, with case studies of organisation or reorganisation mostly from low- and middle-income countries. This review should assemble and synthesise evidence and findings on the public health effects and effectiveness of different forms of structuring and regulation in relation to the different levels and branches of the market. On this basis, priorities in a research and development agenda in the area can be identified and proposed.

2. Improving public health management: strategies to limit opportunities for transnational corporations to impede public health-oriented alcohol regulation

Particularly for beer and spirits, and to a lesser extent for wine, recent decades have seen a substantial concentration of the international market for alcohol beverages (Jernigan & Ross, 2020). Transnational corporations have often been successful in repealing or neutralising public health-oriented alcohol control – in both LMICs and high-income countries (HICs). Their cross-national organisation often means they can outflank a national government in knowledge and actions, applying tactics learned elsewhere. These corporations and their industry representatives are involved in policymaking processes around the globe, particularly in the development of national alcohol strategies. For example, industry input in “multisectoral action” in Malawi resulted in a document excluding effective alcohol control measures (Mwagomba et al., 2018). Other instances of alcohol companies interfering with the implementation of alcohol policies in sub-Saharan Africa have also been documented (e.g. van Beemen, 2019; Morojele et al., 2021).

A clear research agenda has been set out regarding the types of research required to better document the activities of the alcohol industry, including more studies on the industry’s involvement in research and policy development, and ethnographic and interview studies to complement the existing studies using publicly available data (McCambridge et al., 2020). An important part of these studies would be about

understanding the impact which industry activities have on the attitudes, beliefs and actions of government authorities and staff, and of national representatives at international levels. Research is also required to identify strategies for eliminating or reducing industry influence, and how these strategies might differ for different segments of the industry (transnational vs. local, production vs. retail, type of beverage) and between countries. Further research is also needed, along the lines of a study in Africa (Babor et al., 2015), to understand how the alcohol industry develops partnerships with grass-roots movements and NGOs, and how these partnerships operate in different polities.

A recent scoping review (Mialon et al., 2020) provides a basis for work in this area by examining mechanisms for managing the influence of companies producing or selling unhealthy products (alcohol, gambling, tobacco etc.) on public health policy. Further research is required to identify the most effective mechanisms, particularly in relation to the alcohol industry. Future work could also examine case studies of industry influence in different countries, including whether industry interests prevailed, and if not, how they were countered and overcome.

A scoping review is needed to draw together evidence of political successes by transnational corporations in actions adverse to public health, as well as outcomes from government responses and countermeasures. Issues and developments in public health-oriented studies on alcohol in trade and investment agreements should also be summarised and evaluated.

3. Alcohol in global health governance: opportunities for agreement

Most intoxicating substances are subject to international agreements that aim to control their supply and markets in the interest of public health and welfare. Alcohol is the great exception. Indeed, at this point it is still not even subject to international CODEX standards that apply to the labelling of all other foodstuffs (Hepworth et al., 2020). Despite calls in public health publications in the last two decades for an international agreement on alcohol control, most often in the form of a treaty parallel to the Framework Convention on Tobacco Control, such a development is not an immediate prospect (Burci, 2021).

The diverse activities and problems associated with alcohol reach far beyond those central to the rubric of health, including for instance such areas as education, welfare, sports, tourism, safety and crime, so that an alcohol aspect is within the scope of a number of the 35 or so agencies in the United Nations intergovernmental “family” (United Nations, 2020). For instance, alcohol issues are of concern to the International Criminal Police Organisation (Interpol) and the United Nations Educational, Scientific and Cultural Organisation (UNESCO). However, it is only through the WHO that there has been substantial and ongoing efforts related to alcohol issues (Room, 2021). And, even within WHO, staffing and program support for alcohol projects and activities has remained very limited.

Meanwhile, in the arena of international trade and investment agreements, recent treaties and disputes have aimed to prioritise multinational commercial interests over public health interests. The treaties have provisions, for instance, to limit national labelling requirements on alcoholic beverages (Gleeson & O’Brien, 2020) and to restrict national oversight of and limits on promotion and marketing on social media and other internet modalities (Kelsey, 2020). The issue of cross-border advertising, marketing, and promotional activities has been highlighted by WHO as an area of concern, with the Executive Board calling for a technical report on these issues as part of development of the new “action plan” (WHO, 2020; WHO, 2022).

From a public health perspective, the position of alcohol in global health governance thus urgently needs improvement. Inventive research work is needed to identify effective measures to improve the situation. A diversity of forums and processes need to be used to evaluate options and instruments that can establish new international norms concerned with reducing harms from alcohol. These norms could include using an expanding set of regional rather than global agreements, and making declarations and agreements not only in the public health sphere but also in other frames, such as human rights law (Slattery, 2021), food safety labelling (Hepworth et al., 2021), and the currently debated area of control of cross-border commercialisation of social media and other digital marketing (Room & O’Brien, 2021). Work in this topical area will necessarily involve internationally-oriented legal scholarship as well as social and public health policy research.

Strengthening the global governance of alcohol is a matter of particular importance for LMICs. The transnational alcohol companies are primarily

headquartered and owned in HICs, as are wine industry interests, and the trade and investment agreement provisions helpful to them have primarily been promoted through HIC governments. Well aware of the much lower levels of drinking in many LMICs, the companies look particularly in that direction for expansion of their market (e.g., van Beeman, 2019; Pantani et al., 2021). And, for other problem areas, the intergovernmental organisations of the UN “family” have been primary avenues for assistance to governments in societal welfare and development.

A research focus in this area might start with a scoping review drawing on recent scholarship on the handling of alcohol and other public health concerns in global health governance, with a focus on potential practical steps to enhance the ability of governments to control alcohol in the interest of public health and welfare.

4. Choices and experience in controlling unrecorded alcohol in LMICs

According to WHO estimates, in 2016 36.8% of alcohol in Low Income countries was unrecorded, 43.6% in Lower Middle Income countries, and 21.4% in Upper Middle Income countries, compared with 11.4% for High Income countries (WHO, 2018, p. 57). “Unrecorded” implies that it is untaxed, and usually means that it was informally produced or smuggled. Studying informal alcohol markets and the changes which occur as these markets are increasingly regulated and move into the formal economy are crucial areas for future research in LMICs.

Although there is much more policy-oriented alcohol research on unrecorded alcohol than was true 20 years ago (Lachenmeier et al., 2011; Okaru et al., 2019), the coverage has been across the whole range of “unrecorded alcohol”. This includes, for instance, beverages contaminated with methanol or other poisons and “surrogate alcohol” (alcohol-containing preparations intended for non-drinking purposes). But the primary types of unrecorded alcohol competing with taxed alcohol in many LMICs are backyard-brewed or distilled drinks served or sold on site, and cross-border purchased or smuggled alcoholic beverages.

Ethnographic studies have been the primary literature on traditional alcohol production, which is based on local agricultural products, with seasonality and the success or failure of crops imposing limits on its production. In some respects, this traditional mode of production and distribution has had advantages for health and

welfare. Women have been the primary brewers of traditional alcoholic beverages in many tribal and village cultures, while the majority of the drinking was by men. So long as drinking was primarily of traditional local alcohol, this meant that the alcohol supply was limited, and women were in a position to exert some control over their men's drinking, as well as to benefit financially from production. A common theme in the ethnographic literature has been that the advent of commercial alcohol upset this arrangement, with alcohol becoming much more readily available and less controlled, thereby leading to more social and health problems ensuing (e.g., Colson & Scudder, 1988; Schmidt & Room, 2012).

But informal and unregulated alcohol also has major drawbacks. Informal alcohol often undercuts the public health aim of reducing consumption, both by being available in a wide assortment of outlets and by undercutting public health efforts to reduce consumption by raising taxes – since tax is not being collected on it. Some governments have felt forced to retract an increased alcohol tax because of effective competition of untaxed informal beverages (e.g., Zimbabwe's 1995 beer tax increase: Jernigan, 1999). To the extent such informal alcohol retains a substantial presence, a government is limited in its ability to raise alcohol taxes, a key “best buy” in WHO's advice to governments on means of controlling alcohol consumption.

Governments thus commonly have a strong fiscal interest in increasing the share of alcohol which is recorded, with some choice of means in accomplishing this. For instance, one route is to ban and close home and informal production and distribution, another is to favour commercial production, while a third is to facilitate the move of informal producers or sellers into the legal market. From a public health and welfare perspective, the third of these options may be the most promising. However, this may not be an easy task; for instance, Kenya appears to have had little success with its efforts in this direction since 2011 (Mkuu et al., 2019).

Experiences in this policy area have not been collected, assembled and analysed in order to provide useful knowledge for LMIC governments. A start on this agenda is a paper by Okaru et al. (2019) on unrecorded consumption which includes a section on potential policy remedies. Included are short case studies of several of them: tax exemption for transitional periods for informal alcohol sellers who are willing to become formal; formation of a production or wholesale monopoly; and limits (e.g., on alcohol strength) for home produced beverages. Research is needed that systematically

assembles and evaluates examples of the extent that policy initiatives on unrecorded alcohol serve public health goals, with guidelines describing lessons drawn from these strategies and next steps to be taken.

5. Means of decreasing harms to women and children in the family caused by men's drinking.

Globally, over four-fifths of all alcohol is consumed by men (calculated from WHO, 2018, Table 3.8, p. 55). The Global Burden of Disease (GBD) studies focus on effects of alcohol on the drinker; unsurprisingly, given the higher consumption by men, alcohol accounted for four times more deaths in 2019 among men than among women (GBD 2019 Risk Factors Collaborators, 2020). But drinking also causes harms to people other than the drinker, most notably to women, who bear a substantial portion of the harm from men's drinking. In a study in 10 countries across the range from low- to high-income, men were usually the source of recent harm from a known person's drinking, for both men and women; and for women, the most harmful drinker was usually a male partner, relative or friend (Stanesby et al., 2018). Women also often assume the responsibilities abdicated by male drinkers. For example, Australian women spend over three times as much time as do men caring or filling in for someone who has become intoxicated (Jiang et al., 2017).

A recent review identified 275 publications about harms to women and children from drinking in the Global South (primarily LMICs), with the majority concerning harms to women and children from others' drinking (Laslett & Cook, 2019). Harms identified included: gender-based and other violence; the impact of drinking (one's own or others' drinking) on HIV AIDS transmission; and traffic deaths and injuries.

It is thus not surprising that movements to reduce levels of drinking have recurrently been women's movements, including movements in low and middle income populations – for instance, in recent decades among the Australian Indigenous population (Brady, 2019), on Pacific islands (Marshall & Marshall, 1990), and in states in India (Larsson, 2006). The ways in which different societal response systems – health, police and welfare agencies -- report and manage alcohol-related problems from others' drinking and support heavy drinkers' families has been little studied (Laslett et al., 2019). Secondary prevention programs (targeting groups at greater risk) and tertiary

prevention programs (forestalling more serious and repeated problems) are rarely aimed at the families of drinkers, and whether harms to family members are affected by alcohol policy changes has seldom been evaluated (Laslett et al., 2015; Wilson et al., 2014).

Reviews need to be undertaken gathering information, particularly for LMICs but also more broadly, about harms to women and other family members from another's drinking. The reviews should include assessment of success in reducing harms by various types of efforts, including, for example, grassroots initiatives such as women's movements, market regulation, and health, police and social worker first-responder actions. Of particular importance is the collation of evidence on the effectiveness of countermeasures to reduce the harm to partners and families of drinkers *in poorer circumstances*. Some case studies of women's movements to reduce their men's drinking should be included, with conclusions drawn on circumstances for success of such movements, and ways in which gains from such movements can be institutionalised.

6. Strategies for reducing the potentiating effect of poverty on drinking's role in harms

Given the same amount of alcohol, poorer people experience more harm than do richer people. This is true for different socioeconomic statuses within a given society, as well as for poor versus rich societies (WHO, 2018, pp. 14-19). The fact of this difference impedes the adoption of public health-oriented alcohol policies, because policies tend to be made by the affluent, and in their social context alcohol is not nearly as problematic as it is in poor families and neighbourhoods. Relevant literature should be reviewed, with an emphasis on evidence from LMICs, outlining ways in which poverty intensifies the connection between drinking and harm, both in poor societies and in more affluent ones. A good start on this has been made by a recent systematic review of "causal mechanisms proposed" for the greater harm per litre experienced by poor than by rich drinkers in a given society, which found 41 distinct explanations offered, along 16 different thematic lines, in research papers and commentaries (Boyd et al., 2022). In further reviews, the emphasis should be on evidence on what can make a difference in rates of harm in LMICs particularly among those who are poorer, and on how such measures may be implemented.

Research is also needed to understand the differential effects of policy change, particularly in LMICs, on richer and poorer neighbourhoods and individuals. Evaluations of government interventions are needed and should draw on available quantitative survey and secondary data, as well as case studies of policy interventions to specifically interrogate which groups acquire most benefit, to ensure that policies do not inadvertently increase health inequalities.

Ecological and other longitudinal modelling studies are needed in LMICs to evaluate and inform interventions to test measures to reduce alcohol-related harms in poor neighbourhoods and families. In high-income countries, such studies have identified a problematic intersection between neighbourhood disadvantage and greater density of alcohol outlets, with the higher density adversely affecting multiple community indicators of living conditions and problematic outcomes such as assault (Pridemore & Grubestic, 2013) and child maltreatment (Freisthler & Gruenewald, 2013). The greater concentration of alcohol outlets in poorer areas often reflects that bars and liquor stores are often seen as potential trouble-spots, adversely affecting neighbourhood ambience, and richer neighbourhoods usually have more political power to ensure that such potential trouble spots are located elsewhere.

Whether drinkers' families, as well as drinkers, benefit from policy interventions and how this relates to economic status has not always been well studied. Certainly, there is evidence that, in a poor neighbourhood, the family members are worse off financially in the family of a heavy drinker than in the family of a nondrinker (e.g., Saxena et al., 2003), suggesting that policies that decrease drinking will benefit not only the drinker but also the drinker's family. However, family outcomes are rarely evaluated holistically. Identifying family-level problems may provide incentive for drinkers and communities to take action; however, it is crucial that such actions and policy changes also measure the outcomes for families as well as for the drinker, particularly in disadvantaged areas. As an initial step, scoping reviews might focus on identifying and evaluating strategies to diminish harm from drinking in poor families, particularly in LMICs.

7. Addressing key alcohol-related harms: infectious diseases, injuries and digestive diseases

Alcohol is a risk factor for an extraordinarily wide range of disorders, and, as Table 1 shows, the types of disorder that are most prevalent vary between high-income and low-income countries. The largest difference is for infectious diseases, a large component of alcohol-attributable health harm for both of the lower-income categories, but only a small component for HICs. There are substantial differences also at more detailed levels, for instance in the profile of types of injuries most common in countries at different income levels.

Policy research to address alcohol in LMICs needs to focus on the categories of disorder which are particularly common in LMICs. Accordingly, we focus our recommendations for addressing the categories of disorders in Table 1 with the highest alcohol-attributable health harm in the low- and lower-middle national income categories. In drawing on the epidemiological literature on factors involved in the relationship of alcohol consumption and disorders in each category, there should be attention to the potential influence of ecological and cultural factors which may be involved particularly in lower-income countries.

a. **Infectious diseases: tuberculosis, pneumonias, HIV, hepatitis.** Aside from studies of HIV, infectious diseases associated with alcohol have been considerably neglected, despite this area being of substantial importance, particularly in low-income and lower-middle-income societies (Rehm et al., 2009). The etiological and epidemiological research literature on alcohol and health disorders, primarily paid for and carried out in high-income countries, understandably tends to focus on the relationships which are large in those countries; work on alcohol and infectious diseases has been somewhat more scanty. Alcohol is involved in increasing the individual's chances of becoming infected in the first place, and in worsening the prognosis of the illness once infected. There are at least two mechanisms at work: (1) heavy drinking weakens the immune systems and responses, and (2) as the COVID-19 pandemic has reminded us, conditions associated with poverty, such as proximity in ill-ventilated areas, are prime environments for transmitting an infection such as tuberculosis. Both of these mechanisms operate more strongly in poor populations than in rich. More broadly, in increasing risky behaviours and risk of injuries and poor health, heavy drinking compromises resistance to and recovery from infectious disease. Apart from shining a light on the epidemiology, a scoping review might also identify policy measures that

have been successful in reducing rates of alcohol-related harm from infectious diseases, and suggest paths forward in both research and policy initiatives.

b. Violence and accidental injury. Alcohol's involvement in violence and accidental injury has received substantial research attention. Considerable progress has been made in preventing drink-driving crashes, whereas alcohol-related injuries from other causes have been largely ignored. The kind of thinking and effort expended on reducing drink-driving needs to be applied to preventing other alcohol-related injuries. Violence prevention initiatives have been poorly integrated with alcohol prevention efforts, with most alcohol-related violence prevention focused on licensed drinking contexts (e.g., Graham & Homel, 2008).

One particular issue for the health system is that first-response agencies, such as hospital emergency rooms, are unlikely to collect information on the drinking of anyone involved in the occurrence of the injury other than the person being treated (Cherpitel et al., 2012). The history of successful programs against drink-driving shows that collecting such information can be a crucial step in adoption of preventive measures: for example, routine breath-alcohol measurement put drink driving on the map as a societal problem against which countermeasures had to be taken (Gusfield, 1988). Steps to implement routine questions or measurement about the involvement of drinking or intoxication in the occurrence of violence and other injuries would thus be important steps forward in their own right towards preventive policies.

For alcohol-related offences and injuries, collection of data about the place and circumstances of last drinking provides material for preventive actions and policies. A scoping review should look for documentation and evaluation of efforts to improve the routine measurement and recording of alcohol ingestion prior to the incident – whether the drinking was by the case under treatment or by others involved in the incident -- and for documentation of examples of model arrangements of such measurement recording and analysis. Case studies of successful policies and programs in LMICs to prevent alcohol-related injuries and violence might also be collected and analysed.

c. Digestive diseases: cirrhosis, pancreatitis. The relation of alcohol to gastrointestinal diseases such as liver cirrhosis and pancreatitis is well established (Rehm et al., 2017). Studies within societies have shown that such diseases are more common among poorer than among more affluent drinkers (e.g., Petrovski et al., 2011; Roberts et al., 2013). Thus, Erskine et al. (2010) noted that their study's results implied

that “socioeconomically deprived heavy drinkers are more likely to get serious liver disease than affluent heavy drinkers”. Relatively little epidemiological attention has been paid to the interaction of alcohol with other risk factors in harm to health in LMICs. A recent review of the etiology and progression of liver disease emphasised alcohol’s involvement in multiple forms and stages of liver disease and its complex interactions with other major risk factors (Rehm et al., 2021). A further factor which potentially contributes to differential alcohol-related cirrhosis mortality is the “flushing” genetic variation (ALDH2*2), mostly found among eastern Asians, which may well play a part in liver cirrhosis accounting for a higher proportion of alcohol-attributable DALYs there than in other global regions (Liangpunsakal et al., 2016, Table 1). A scoping review might evaluate the role of different social and economic circumstances in LMICs in the diverse pathways by which alcohol plays a role in digestive diseases, and how the occurrence or progression of the diseases in such circumstances may be prevented or treated.

Discussion: Looking forward – paths ahead

In this paper, we have sketched the shape of a number of topical areas in which reviews as well as original research and evaluation studies are needed on policies to reduce alcohol-attributable harms. This paper is the result of an initial expert consultation – it is by no means an end-point, but rather a beginning. The agenda outlined constitutes a set of suggested priorities that have been developed from an academic perspective, with only a slim majority of authors from LMICs. Our suggestion for immediate paths forward is for scoping literature reviews, along with other review strategies such as collation of case studies, to be undertaken in each of the research focus areas, involving those with expertise in the particular area – bringing together both research and clinical or public policy-oriented organisational alcohol expertise. The nature of the reviews will vary with the nature of the area and the state of the relevant literature, and a review of a particular area may well draw on several types of evidence, ranging from the finding of systematic reviews to the assembling of case studies. A major issue in the review process will be considering the applicability of findings from HICs to the different circumstances of various categories of LMICs. The majority of policy research has been undertaken in HICs, with less evidence gathered in

LMICs. Consequently, research funding should be directed towards a broader range of initiatives, particularly outside HICs. For each focus area, the perceived potential capacities of policies and programs to reduce harm in these areas will need to be taken into account. But, given that these areas were identified precisely because they need further research, the lack of policy research is ironically also a crucial marker of the need for additional work in the area.

In parallel with this process, planning and preparation needs to get under way for a new initiative and funding for research and surveillance on alcohol policies and their implementation in LMICs. Alcohol consumption is projected to increase in many LMICs, particularly in Asia and in Lower Middle-Income countries (WHO, 2018, p. 59), pushed along by the efforts of the transnational alcohol industry. Given the high “harm per litre” in LMICs (Table 1), a gathering storm of harms from alcohol may be expected – both those measured in the Global Burden of Disease (GBD), and the harms to others individually and collectively which are not included in the GBD. In this context, there is a need for local and regional capacity building for research, policy development and broader analysis that builds collaboratively and more equitably a new international research program with substantial financing to inform alcohol policymaking in LMICs and across the wider world. The program should include new studies in key policy areas, including studies of the effects of policy changes and their implementation. Collaborative international financing is needed for a program of such studies, since the study results will have major utility not only for a particular nation under study, but also for the general alcohol policy research literature and for policymakers internationally.

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Table 1. Disability-adjusted life-years lost per 100,000 people from alcohol-attributable diseases, by World Bank national income group

	World Bank national income group			
	Low-income	Lower middle-income	Upper middle-income	High-income
Infectious diseases	441.5	362.0	93.8	27.0
Unintentional injuries	639.8	517.5	553.1	388.3
Intentional injuries	134.9	135.3	201.4	195.7
Digestive diseases	309.7	444.2	220.2	222.6
Alcohol use disorders	252.3	212.9	270.4	266.8
Cardiovascular, diabetes, epilepsy	111.3	197.8	239.4	66.1
Cancers	88.8	89.4	137.6	181.0
Total (DALYs/100,000)	1978.5	1959.0	1719.9	1375.5
Alcohol per capita, total (litres of ethanol per year)	3.8	4.7	7.0	9.8
Relative “harm per litre” (ratio to High-Income Countries)	3.7	3.0	1.8	1.0

The highest value in each row is shaded.

Source: WHO, 2018: p. 83 for DALYs lost from alcohol-attributable diseases, p. 57 for APC total.

Supplemental Material:

Other study areas for guiding alcohol policies in LMICs: brief overviews

In the course of the correspondence and discussions seeking consensus on research agendas to inform alcohol policies in LMICs, several other study areas were identified which are relevant to alcohol policy-setting and in which further review and research is needed. Since our collective discussion on these points has been limited, we describe them here more briefly.

a. Preventive interventions in the drinking setting. Interventions to reduce alcohol-related violence, injury and sexual-risk behaviour in bars and similar settings have been studied in HICs, but there is limited published research on this from LMICs. The HIC evaluative literature has clearly found that verbal commitments by bar staff to “responsible service” of alcohol have no lasting effect. What is needed is active enforcement of penalties or other community pressures for places and servers who break rules, for instance, on not serving to someone who is already drunk or is under the legal age for drinking (Graham & Homel, 2008). There are a few studies in LMICs (e.g. in South Africa, Brazil) involving interventions in on-premises drinking. Case studies of preventive interventions in drinking settings in LMICs should be collected and analysed, with attention to the context, the drinking behaviour within the setting, and adverse consequences and how they may be prevented, in order to understand changes in practices, policies and enforcement that may reduce alcohol-related harm.

b. Studying supports for maintaining abstinence in non-drinking population groups. Reviewing data on teenage heavy episodic drinking, Patton et al. (2012) noted that in general, rates “from high-income countries were substantially higher than those derived from low-income and middle-income countries, with the exception of some Latin American countries”. In many LMICs, women are much less likely to be alcohol drinkers than men, making women, for transnational alcohol companies, a promising market for expansion of the customer base. There is a clear trend internationally toward increasing proportions of drinkers in later birth cohorts (Slade et al., 2016). Reviews of evidence of successful efforts to reinforce abstinence (e.g., evaluations of promoting alcohol-free activities and forms of sociability in specific cultural circumstances) are needed, including case studies -- such as the promotion in Thailand of abstinence during

the Buddhist Lent Period (Jirattanasopha et al., 2019; Witvorapong & Watanapongvanich, 2020). The evidence needs to be analysed from the perspective of general cross-cultural lessons in maintaining abstinence in non-drinking subpopulations.

c. Studying choices for and interplay between response agencies and systems.

Most evaluative studies of treatment or intervention in heavy or problematic drinking are of the effectiveness of particular treatment models. But alcohol-related problems are encountered and may be dealt with by various components of health service systems, as well as by welfare agencies, police and court systems, and other problem-handling agencies (Weisner & Schmidt, 1993). Institutions and professions that serve as the primary resource for alcohol problems may differ for different countries and subpopulations within countries – for instance, welfare workers in one country, liver doctors in another, and psychiatrists in a third. Research is needed not only on the most effective treatment or handling by a primary response agency and profession, but also on how and when referrals between systems occur, and how the systems may be most effective in reducing or remitting harms from drinking. An active international literature in this area flourished for some time, involving some discussions of LMIC treatment systems (Klingemann et al., 1992; WHO, 2006), but there has been little recent research relevant to LMICs.

d. Trends in alcohol marketing and advertising in LMICs, and strategies for control. Alcohol advertising and marketing are relatively unregulated in many LMICs, and the growth of social media and other electronic promotion is posing new difficulties for effective public health-oriented controls (Room & O'Brien, 2021). Alcohol is increasingly glamourised and associated with economic wealth and prosperity, and advertising directed at women is associated with liberation. A study of Latin American and Caribbean countries found that there was less adolescent exposure to alcohol advertising in places with stronger alcohol advertising restrictions (Noel, 2020). But the ongoing global shift to promotion through social media poses new challenges – this form of promotion is much less amenable to national regulation and has much greater capability of audience targeting. An in-depth discussion is needed of the implications for control of alcohol marketing in LMICs of these developments and of the countervailing moves internationally to bring electronic media under governmental oversight, with attention also to the evidence on the potential effectiveness of mandated counter-advertising.

e. Processes of alcohol policy development in LMIC governments.

There is a substantial political science literature on policy advocacy and development, but there is no well-organised international literature on development, application and coordination of evidence-based alcohol policies. As a commodity which is profitable but which causes substantial and diverse harms, many branches of government have an interest and responsibility for aspects of alcohol policy – interests such as in public health and order, or in tax revenue and economic development, which may often conflict. Even if we focus just on government responses to alcohol problems, these include a diverse range of agencies, involving for instance the police, hospitals and welfare agencies. In the context of its strategy to prevent Non-Communicable Diseases, the World Health Organization promoted an approach in terms of “multi-sectoral action” which put all interests at the table for the policy decisions; but this approach proved problematic for alcohol, for instance in Malawi (Mwagomba et al., 2018), since there are conflicting interests at stake. An approach which names a lead agency for the area, preferably with dedicated resources, has proved effective, as for example with Thai Health and alcohol policy in Thailand (Thamarangsi, 2009). Case studies of different approaches and their results need to be brought together and reviewed to draw conclusions and make recommendations about the organisation of alcohol policy development in the interest of public health and welfare in the diverse political arrangements and environments of LMICs.

f. Lessons from experience with LMIC involvement in collaborative alcohol research. At least since WHO’s project on Community Response to Alcohol Problems in the late 1970s (Rootman & Moser, 1984), there has been wide experience with collaborative international research projects relevant to alcohol policies and their implementation, usually involving both parallel empirical studies in different countries and cross-national analyses and publications. Some such studies have been organised under WHO auspices, and others in association with international scholarly societies such as the Kettil Bruun Society (e.g., Wilsnack, 2012; Huckle et al., 2018). The organisation of the studies has varied from a loose collaboration of scholars with common interests to a centrally-directed project with a unified cross-national structure. Most projects have had a mixed organisation with central leadership but substantial autonomy for national project groups. So far there have been few attempts to collect and

draw on LMIC participants' experience with such studies, which taken together could provide substantial guidance for future efforts in this line. A useful step forward would be to collect qualitative accounts of participants' experience with working on such projects, and conclusions which could be drawn on approaches and organisation for future projects with a strong LMIC participation.

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