ALCOHOL-RELATED HARMS FROM OTHERS' DRINKING IN INDIA

by

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Abstract

Background: From 2005 to 2010, India faced a 19% increase in average adult per capita alcohol consumption. In a country where a large proportion of the population abstains from alcohol but heavy episodic consumption is common among those who drink, alcohol-related harms from others' drinking may be substantial.

Purpose: The purpose of this dissertation was to examine both the ethical issues raised in regards to harms from others drinking, and newly available epidemiological evidence about this in India. The main objectives were to: (1) apply a public health ethics framework to systematically consider the ethical implications of implementing policies to prevent alcohol-related harms to others; (2) understand the types of alcohol-related harms to children from adults' drinking across domains of physical abuse, psychological abuse, and neglect; and (3) assess various types of tangible and intangible harm from strangers' drinking and individuals' characteristics that predict experiences of such harms.

Methods: I examined public health ethics literature and generated evidence of harms from others' drinking by analyzing cross-sectional data from household interviews administered in five Indian states in 2011-2012.

Results: The compilation of data on harms from others' drinking can strengthen the ethical justification for evidence-based alcohol control policies. Harms to children from

adults' drinking are a serious problem in India: 44% of respondents reported at least one alcohol-related harm to children in the past year. Sixteen percent of respondents reported physical alcohol-related harms to children. Strangers are also affected by others' drinking: 63% of respondents experienced at least one tangible or intangible harm from strangers' drinking, with nearly 48% of respondents experiencing tangible harm.

Conclusions: Public health professionals have an obligation to consider the ethics associated with implementing alcohol control policies. The findings from this dissertation suggest that people with limited control over their exposure to another person's drinking, including children and strangers, are burdened by others' alcohol use. Interventions, such as increased use and enforcement of evidence-based alcohol control policies, are needed to prevent alcohol-related harms to children and strangers in India. Future research should use harms to others data for evaluating the effectiveness of alcohol policies.

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Chapter 1: Introduction

In a setting such as India, where there is both a high level of abstention from alcohol and a high prevalence of heavy episodic drinking among those who drink, evidence suggests that there may be substantial harms from others' alcohol consumption.[1-3] With the country's rapidly growing economy, increasing investments from global alcohol corporations,[4] a shrinking proportion of abstainers, and rising alcohol consumption, it is crucial to be able to fully document the health and social effects of alcohol use in order to establish effective population-level mechanisms for reducing and controlling alcohol-related harms. In high-abstention settings, alcohol-related harms to others is a critical domain for investigation. Therefore, the purpose of this dissertation is to examine both the ethical issues raised in regards to harms from others drinking, and newly available epidemiological evidence about this in India. The main objectives are to: (1) apply a public health ethics framework to systematically consider the ethical implications of implementing policies to prevent alcohol-related harms to others; (2) understand the types of alcohol-related harms to children resulting from adults' drinking across domains of physical abuse, psychological abuse, and neglect; and (3) assess various types of tangible and intangible harm from strangers' drinking and individuals' characteristics that predict experiences of such harms.

In this chapter, I first provide background on alcohol consumption in India. I then define harms from others' drinking, present evidence from the global literature on alcohol-related harms to children and strangers, and describe four public health ethics frameworks that are useful for deliberating policy proposals that aim to reduce alcohol-related harms to others. Following the overview of public health ethics frameworks, I discuss the theoretical and conceptual foundations for this dissertation. To hone in further on the Indian context of this dissertation, I provide an overview of the history of alcohol control in India, and review the Indian scientific literature on differences in alcohol consumption patterns by socio-demographic characteristics. I end by summarizing pertinent characteristics of the five sites from where study respondents were sampled and providing concluding remarks.

In Chapter 2, I discuss various methodological considerations. In Chapter 3, I deliberate ethical trade-offs of implementing alcohol control policies as a strategy to prevent alcohol-related harms to others. In Chapter 4, I present evidence on alcohol-related harms to children from adults' drinking. In Chapter 5, I describe harms imposed by strangers' drinking. In Chapter 6, I summarize the dissertation and offer concluding remarks.

Background

Globally, in 2012, alcohol consumption contributed to 3.3 million deaths, accounting for nearly 6% of all deaths.[5] In India, in 2010, alcohol use was the eighth leading cause of death, accounting for approximately 350,000 deaths.[6] The consumption of alcohol ranked among the country's top ten leading risk factors for disability-adjusted

life years (DALYs) and years of life lost (YLL), accounting for 14.2 million DALYs and 11 million YLL.[6] In recent decades, alcohol has become increasingly available and culturally accepted in India.[7,8] The escalation of alcohol use is concerning from a public health perspective because of the well-established associations between alcohol consumption and health and social problems, including HIV,[9-13] tuberculosis,[14,15] sexually-transmitted infections,[16,17] cancers,[18,19] fetal alcohol syndrome,[20] alcohol dependence,[21] suicide,[22] violence,[23-26] and injuries.[3,27,28]

In 2011, India ranked as the tenth leading country for the greatest absolute consumption of alcoholic beverages in the world, after experiencing a 5% increase in consumption in the prior year,[29] but little is known about whether that translates to net profits for the country. In 1998–1999, alcohol sales contributed to an average of 15% of states' revenue and became the second largest source of revenue following the sales tax.[30] The proportion of state revenue from alcohol is likely higher in more recent years due to the increase in alcohol sales[29] but updated estimates are not available. Using data from 2003–2004, researchers attempted to assess whether the Government of India profited from alcohol sales at the national level after accounting for the economic burden related to alcohol consumption. The authors concluded that the total excise revenue from alcohol for the Government of India was 216 billion Indian rupees (equivalent to US$3.5 billion)[2] accounting for approximately 4-6% of the revenue to the central (i.e., national) government.[31] However, the researchers estimated that the nationwide burden exceeded the revenue, equaling 244 billion rupees (equivalent to US$3.9 billion).[2]

An accurate estimate of per capita alcohol consumption in India must incorporate both recorded and unrecorded consumption. Unrecorded alcohol generally refers to home- or informally-produced alcohol, alcohol legally imported for personal use, and alcohol illicitly imported.[32] The World Health Organization (WHO) estimated that as of 2010, unrecorded alcohol in India made up 50% of the alcohol market.[5] Estimates that include recorded and unrecorded consumption suggest that adult per capita consumption is roughly 4.4 liters of pure alcohol.

This estimate of adult per capita consumption in India is 40% lower than the global average of 6.2 liters;[5] however, per capita consumption in India is not the most appropriate measure to describe the population's drinking patterns. With a population of more than 1.2 billion people,[33] Indian adult per capita consumption estimates should be interpreted cautiously because three-fourths of the adult population abstains from alcohol.[5] In 2010, the per capita consumption among drinkers was 28.7 liters of pure alcohol, more than 1.5 times greater than the global average among drinkers of 17.2 liters.[5] Studies consistently find that Indians commonly consume high quantities of alcohol per drinking occasion;[5,34,35] this pattern of drinking is associated with increased risk of negative outcomes, such as injuries, chronic and infectious diseases, and deaths.[15,16,27,28,36-38]

Defining alcohol's harm from others

Researchers have used various terms to describe alcohol-related harms from others' drinking, including social consequences,[39] social harm,[40] secondhand effects,[41]

externalities,[42] and alcohol's harms to others.[43,44] Traditionally, survey-based studies asked drinkers about the harms they caused to others,[45] in which the term "alcohol's harms *to* others" is logical. More recently, however, researchers have examined harms *from* others' drinking – from the perspective of the victim.[44,46,47] Definitions of harms from others' drinking vary slightly across studies, but can be thought of as "the harm experienced as a result of someone else's drinking, the associated costs or the perspectives of those secondarily affected"[44(p1603)] or "the damage from alcohol to people other than the drinker."[41(p1323)]

Ultimately, the important conceptual question in this line of research is: "Would removing the drinking have prevented the adverse event?"[45(p1866)] Alcohol does not need to be a causal factor, but rather a component cause in the behavior or action.[48] The harms from others' drinking include both tangible harms (e.g., physical abuse) and intangible harms (e.g., emotional distress).[49] Notably, victims of harm from others' alcohol use may or may not themselves be drinkers, and this line of research has argued that harms to these non-drinkers should also be included in calculating alcohol's burden on society.[42,50]

Global literature review on alcohol-related harms from others' drinking

An emerging body of global research documents harms from others' alcohol consumption, including evidence for harms to children and harms from strangers' drinking. In the following sections, I present the global evidence on the significance of the problem of alcohol-related harms to others, integrating the limited information available for the Indian context, and discuss limitations of the existing body of literature.

Alcohol-related harms to children

The harms to children from adults' alcohol use encompass the domains of child maltreatment as defined by the United Nations: "all forms of physical or mental violence, injury and abuse, neglect or negligent treatment, maltreatment or exploitation, including sexual abuse."[51(p6)]

As part of the Australian Alcohol's Harm To Others study,[49] researchers surveyed adults with parental responsibility for children aged 17 and younger about harms that their child experienced due to others' drinking in the past 12 months. Approximately 12% of Australian respondents reported children experiencing at least one of the types of harm assessed in the survey.[52] Among the specific alcohol-related harms to children measured, verbal abuse was the most common type reported, accounting for 51% of the harms, followed by lack of supervision (21%). In a harms to others study in New Zealand, 17% of the respondents with children reported that their child was negatively affected by others' drinking in the past year.[47] Verbal abuse was again the most prevalent harm to children, with 11% of respondents reporting its occurrence, and a child witnessing violence at home was the second most common (7%).[47] These studies on a wide range of alcohol-related harms to children suggest that children in high-income countries are experiencing harms from adults' drinking that span multiple domains.

A small number of studies have explored whether adults who drink are more likely to report harms to children. In Australia, after controlling for other socio-demographic characteristics, respondents' own frequency of drinking was not associated with reporting

alcohol-related harms to children.[52] The limited evidence available from Indian studies suggests that adults' drinking in that country may generally be associated with reporting harms to children, but which specific types of harms needs to be further explored. Gururaj et al. assessed the health, social and economic burden of alcohol consumption in rural, slum, town, and urban areas of Bangalore, in the south Indian state of Karnataka.[2] Drinkers attributed 44% of their abuse of their children to alcohol use. Compared to non-drinkers, drinkers were 6% more likely to report abusing their children (27% vs. 21%).[2]

Using data from the second wave of India's 1998-1999 National Family Health Survey and data on children's health care utilization, Bonu et al. examined specific types of harms to children.[53] The authors assessed associations between current alcohol and tobacco use and various health outcomes (e.g, child immunization, severe underweight and stunting, and infant mortality). The study showed that children from households with a tobacco and alcohol user were more likely to experience negative outcomes than children from households without a tobacco or alcohol user. However, when looking at children from only alcohol user households (and no tobacco user), children did not have measureable reductions in the assessed health outcomes; the authors suggest this may be due to differences in the characteristics of alcohol-only users compared to alcohol and tobacco users (e.g., non-tobacco users may be more health conscious).[53] The authors concluded that tobacco and alcohol use in the households explained 7% of the population's infant mortality.

Alcohol-related harms from strangers

In addition to the harms imposed on children from adults' drinking, a handful of recent studies have focused on harms caused by drinkers in their public role in society,[45] that is, harms to others from strangers' alcohol use. A nationally-representative study of Australian adults found that 70% of respondents were impacted by strangers' (i.e. people they do not know well) alcohol use.[44] The effects of strangers' drinking on others were broad, and included feeling unsafe in public places (24%), verbal abuse (19%), and, less frequently, physical abuse (4%). In another study in the Australian state of Victoria, respondents aged 16-24 reported a higher prevalence of tangible and intangible harms due to others' alcohol consumption in their community[54] compared to the general Australian population.[44] Approximately one-third of young adult respondents had been verbally abused in the past 12 months by a person under the influence of alcohol and 9% had been physically abused.[54] As for intangible harms, approximately half of the respondents reported harms from strangers' drinking such as feeling unsafe while waiting for public transport or being in a public space in the past 12 months.[54] New Zealanders also reported being affected by strangers' alcohol use, with 71% of adults experiencing one or more types of harms, such as feeling unsafe in public places, being threatened, and receiving unwanted sexual attention.[47] The respondents in New Zealand reported experiencing the various types of harms from strangers' drinking to a similar degree as those in Australia.[44]

Alcohol-related harms from strangers' drinking in other regions of the world have received little attention in the recent scientific literature, but older studies shed light on

the existence of these harms. In California in 1981, respondents reported harms from strangers' alcohol use, including 42% that reported property damage and 13% who were physically hurt.[55] In Canada in 1994, 34% of respondents reported the problem of noise or other bad behavior from a drinker and 22% reported having had a serious argument.[56] In Norway in 1999, 40% of adult respondents reported they had experienced harms from strangers' alcohol consumption – most commonly (21%) in the form of being kept awake at night by intoxicated people.[57] More recently, as part of a larger study on the externalities from others' drinking in the United States, data from the 2010 National Alcohol Survey revealed that in the past 12 months, less than 2% of respondents experienced property damage by someone who had been drinking and 0.3% were in a road traffic crash from others' drinking.[58]

Studies in high-income countries have found that a respondent's own heavy drinking is associated with greater odds of experiencing harms from strangers' alcohol use.[55,57,59] Evidence suggests that socio-demographic characteristics, such as gender, education, and income, are also associated with experiencing alcohol-related harms from drinkers they do not know.[56,57,59] These associations vary across cultures, and one study found that the victim's characteristics often mirrored those of the perpetrator.[55]

In India, the role of alcohol in public crimes and nuisances is not often studied.[2] One Indian study examined a range of alcohol-related harms from others, potentially capturing some negative effects associated with strangers' drinking; however, respondents were not asked to indicate their type of relationship with the perpetrator.[60] In the Andaman and

Nicobar Islands of India, the study found that approximately 20% of the respondents experienced alcohol-related harms from others' drinking, including physical and sexual abuse, or being insulted/disturbed.[60] Findings from a study in Goa showed that 7.7% of alcohol users had perpetrated violence, which was 2.9 times greater than the proportion of abstainers who reported perpetrating violence (2.7%).[25] Harmful drinkers (i.e. score ≥8 on the Alcohol Use Disorders Identification Test [AUDIT]) had the greatest likelihood of perpetrating violence; however, the authors did not assess the prevalence of violent victimization specifically associated with strangers' alcohol use.

Gaps in the current literature

Few studies have assessed a wide range of types of harms to children and harms from strangers' drinking, and a particular gap exists regarding evidence from low- and middle-income countries (LMICs). Alcohol consumption is generally highly prevalent across populations in high-income countries;[5] thus, the types and magnitude of alcohol-related harms from others' drinking may differ from people's experiences of such harms in LMICs that have other population level drinking patterns – such as in India, where only one-quarter of the population consumes alcohol but heavy episodic drinking is common among them.[5]

Currently, the small body of evidence from India suggests that adults' alcohol use may be associated with harms to children but studies have not yet comprehensively explored various types of harms or characteristics associated with reporting alcohol-related harms to children. Moreover, several Indian studies have examined alcohol-related violence;

however, the majority of the studies are limited to intimate partner violence,[23,61,62] and thus, research does not quantify alcohol-related violence that occurs between people who do not know each other well. Furthermore, in a densely populated country such as India, the harms from strangers' alcohol use are likely to extend beyond violence – the full spectrum of types of alcohol-related harms to strangers has not yet been documented. Additionally, the current literature does not shed light on socio-demographic characteristics or alcohol consumption patterns associated with experiencing alcohol-related harms from strangers' drinking in India.

With the emergence of data on a broad range of harms from others' drinking in higher-income countries and the many unanswered questions on the burden in LMICs, the WHO recognized this line of research as a priority for LMICs. This led the WHO, in collaboration with the Thai Health Foundation, to develop the *Harm to Others from Drinking Master Protocol.*[50] The methodology was modeled after the studies administered in Australia and New Zealand[47,49] and the protocol was approved by the Ethical Review Committee of the WHO to be administered in six LMICs, with India representing South-East Asia. Data for the second and third studies in this dissertation were collected using questions from the WHO protocol in India, thereby addressing the gap in the literature by facilitating the country's first systematic assessment of a range of types of harms from others' drinking, including harms imposed on children and strangers.

Research on harms from others' drinking in India may demonstrate the need for interventions. This evidence may also contribute to discussions of the ethical implications

associated with enhanced use of more effective alcohol control policies as an approach for prevention. In the next section, I discuss frameworks for considering ethical aspects of public health policy interventions.

Review of public health ethics frameworks

Recently, public health experts proposed a public health ethics framework for tuberculosis prevention programs in India.[63] The authors recommended that ethical deliberations be part of the public health decision-making process, expressing that ethical tradeoffs of public health programs are not commonly acknowledged in LMICs. Existing public health ethics frameworks may be useful to fill this gap and can be used for considering the ethical implications of policy proposals aimed at reducing alcohol-related harms to others in India. In chronological order of publication, I describe key components of four public health ethics frameworks[64-67] and I discuss their usefulness for considering the ethics of implementing more effective alcohol control policies in India.

Kass (2001)

Kass[65] provides a public health ethics framework can be used to conduct an ethical analysis of proposed interventions, including programs and policies. The framework is designed for public health professionals and is built on a six-step process, with each step guided by a question, as follows:

1. What are the public health goals of the proposed program?
2. How effective is the program in achieving its stated goals?
3. What are the known or potential burdens of the program?
4. Can burdens be minimized? Are there alternative approaches?

5. Is the program implemented fairly?
6. How can the benefits and burdens of the program be fairly balanced?

First, Kass indicates that proposed interventions should have a fundamental goal of improving public health by reducing morbidity or mortality. In this step, Kass explains that epidemiologic studies can ultimately contribute to the development of interventions that reduce morbidity or mortality of the public health problem being investigated. Additionally, she explains that the reduced morbidity or mortality from an intervention may be a result of either individuals' changing their behavior to protect themselves or individuals' changing their behavior to protect others.

Second, public health professionals and decision-makers should consider the available evidence of effectiveness for the intervention to accomplish its objective. According to Kass, there is no set rule for determining an acceptable quantity of evidence needed to move forward with implementing an interventions but a higher level of evidence is needed for interventions that pose burdens to individuals. Kass explains that with at least some evidence of effectiveness available, decision-makers can move forward to the third step in the framework. In this third step, decision-makers need to consider potential burdens of proposed interventions, such as those that increase the risks of reducing individuals' autonomy and reducing justice. The ethical implications of the potential burdens may differ if interventions that restrict individuals' liberties are designed to protect themselves versus designed to protect others.

Fourth, decision-makers should consider alternative interventions that may reduce the burdens, while not compromising the potential benefits. Fifth, the burdens and benefits of the proposed intervention should be distributed fairly across the population so that specific subgroups are not harmed or protected more so than other subgroups. In the sixth and final step, decision-makers should discuss a fair balance of the intervention's burdens and benefits, such as who is affected by the intervention and who is protected by the change in behavior that results from an effective intervention.

Childress et al. (2002)

In a more conceptually-oriented framework than Kass, Childress et al.[64] describe nine general moral considerations for deliberating public health issues. The authors aim to provide a framework applicable to public health professionals with a focus on population health, distinguishing from frameworks available in the clinical field that focus on individual level health. Aligning with the goals of public health, Childress et al. express that public health professionals should consider what the benefits are; ways to avoid or prevent harms; and ways to achieve a positive balance of benefits over burdens. These three considerations may, in some cases, be more important than other moral considerations, such as respect for individuals' autonomy and justice. In determining whether the public health goals of an intervention can ethically override the other moral principles, Childress et al. propose the following five considerations: effectiveness, proportionality, necessity, least infringement, and public justification. Childress et al. acknowledge that the weight of each moral consideration will vary across cultures and

situations, and in their paper, they consider the ethical implications for the context of the United States.

Nuffield Council on Bioethics (2007)

The Nuffield Council on Bioethics[66] proposed the stewardship model to discuss appropriate levels of intervention to increase the public's health. According to the Council, acceptable goals of public health interventions include issues such as reducing the risks of harms to others, reducing health risks by regulating environmental conditions, and paying attention to the health of vulnerable populations – including children. The Council also outlines constraints for public health interventions, such as not coercing adults to have healthy lifestyles and minimizing intrusiveness in ways that conflict with individuals' values. For considering an acceptable degree of government intervention, the Council provides an 'intervention ladder' that ranks the coerciveness and intrusiveness of interventions. The ladder starts at the bottom with the least intrusive interventions ('do nothing or simply monitor the current situation') and works up to the most intrusive interventions ('eliminate choice').

The Nuffield Council on Bioethics is the only one of the four frameworks that explicitly mentions the prevention of alcohol-related harms from others' drinking, as they use alcohol consumption as a case study for discussing acceptable levels of government regulations. After reviewing evidence on harms to drinkers and alcohol-related harms to others in the United Kingdom, the Council determined that it would be ethical for the

United Kingdom Government to implement the evidence-based population alcohol control policies recommended by the WHO.[68,69]

Tannahill (2008)

Tannahill[67] proposes a public health framework that focuses on the integration of evidence and ethics. The framework, in the form of a decision-making triangle, includes three elements to consider when evaluating policy interventions: theory, ethical principles, and evidence. Tannahill indicates that theory should be used to fill gaps where data are not available on the evidence of effectiveness of proposed policies, and advocates that policy decisions should be evidence-informed, rather than evidence-based. The distinction between evidence-informed and evidence-based is important, as it acknowledges that there is commonly inadequate data available; according to this framework, however, that should not prohibit the implementation of interventions that are theoretically sound and consistent with whatever evidence is available. For the ethical principles component, decision-makers should explicitly identify ethical principles when deciding whether to implement a proposed policy and Tannahill offers a list of ten broad ethical principles, such as 'do good' and 'do not harm.' Evidence on the effectiveness of the intervention serves to inform judgments about whether the ethical principles will be followed. Decision-makers should weigh out all components of the triangle to decide whether a proposed policy should be implemented.

Evaluating the usefulness of frameworks for considering the ethical implications of implementing more effective alcohol control policies in India

The four ethics frameworks just described[64-67] offer various options for public health professionals and decision-makers to use when determining whether to implement public health interventions. The notions of maximizing benefits and minimizing burdens, preventing harm, and respecting individuals' autonomy were common threads across the frameworks. Although the frameworks contained some similar components, the Kass framework[65] seems to be the most useful for this dissertation. Kass' framework offers a step-by-step tool for thinking through the ethical consequences of proposed policies. The framework is broad enough to allow for variation across cultures and contexts, yet still provides adequate structure to guide a thorough ethical analysis.

There are limitations to the other three public health ethics frameworks that reduce their usefulness for the purpose of the study in this dissertation. Childress et al.[64] provide a conceptual map of moral guidelines for considering conflicts associated with public health initiatives; however, the authors do not offer a tool for analyzing ethical implications. Moreover, the examples in their paper are focused on the United States, which may vary substantially from ethical choices in India. The Nuffield Council on Bioethics[66] proposes a stewardship model and an intervention ladder that can be used as an analytic tool; however, until more evidence is documented on harms from others' drinking in India, application of the intervention ladder for considering an acceptable degree of government intervention is challenging. Lastly, Tannahill[67] offers a decision-making triangle that is useful for informing judgments about policy implementation at a

high level, but the decision-making triangle provides less structure than the Kass framework[65] for considering the ethics of specific policy options.

Although I did not feel that Tannahill's decision-making triangle[67] was the most useful framework for the first study in this dissertation, the higher-level nature of the framework provides an ideal foundation for my dissertation's overall theoretical and conceptual framework.

Theoretical and conceptual framework

Figure 1.1 illustrates the theoretical and conceptual framework for this dissertation, including the integration of Tannahill's decision-making triangle[67] and Berkman and colleagues' socio-ecologic model.[70] As described above, the public health ethical framework by Tannahill[67] is useful for deciding whether to implement policy interventions, using a decision-making triangle with three components: ethical principles, evidence, and theory – as shown on the right side of Figure 1.1. With a focus on the ethical principles and evidence components of Tannahill's decision-making triangle, in this dissertation, I apply a public health ethics framework to discuss the ethical considerations of preventing harms from others' drinking in India by implementing more effective alcohol control policies (Aim 1). Following the study on public health ethics, I present evidence on harms to children (Aim 2) and to strangers (Aim 3) from others' drinking in India.

Ecological theories focus on environmental and political contexts and recognize social and physiological influences on health behaviors,[71] providing a theoretical foundation for

the present research on harms to children and strangers from others' drinking. In this dissertation, I apply the socio-ecological model by Berkman et al.[70] with the social-structural (macro), social networks (mezzo) and psychosocial (micro) levels – as shown in the left side of Figure 1.1. The various factors in the multiple levels of the socio-ecologic model contribute to our understanding of the associations between individual-level characteristics and reporting alcohol-related harms to children and experiencing harms from strangers' drinking that are explored in this dissertation.

Berkman et al.[70] propose several macro level factors, including culture (e.g., norms and values), socioeconomic factors (e.g., labor market structure), politics (e.g., alcohol policies), and social change (e.g., urbanization), which are likely to influence type and frequency of reporting and experiencing harms from others' drinking. To address some of these macro level factors, in this dissertation, I explore how reports of alcohol-related harms to children and experiences of harms from strangers' alcohol consumption vary by respondents' socioeconomic characteristics, including educational attainment and family income. I also examine whether reports and experiences of alcohol-related harms from others' drinking differ between respondents living in rural areas and those who reside in urban areas.

Moving to the mezzo level, characteristics of the social network structure (e.g., size and range), alcohol use among network ties (e.g., quantity and frequency of consumption), and characteristics of ties to the drinker (e.g., frequency and duration of contact) likely contribute experiences of harm from others' drinking. In this dissertation, I examine

alcohol-related harms resulting from two main types of relationships in respondents' social networks: adults imposing harm on children and strangers imposing harm on adults.

One level to the right displays the micro level factors that theoretically influence reports and experiences of harms due to others' alcohol use, including the extent of personal contact, social influences (e.g., peer pressure), social engagement (e.g., reinforcement of social roles, treatment of children), and access to resources and material goods (e.g., economic opportunity, housing). Although I do not directly explore the associations between these micro level factors and reports of alcohol-related harms to children and experiences of harms from strangers' drinking, these factors suggest the importance of the present dissertation – that is, first documenting epidemiologic evidence that alcohol-related harms from others' drinking varies by respondents' individual-level characteristics, and then looking to future research to examine how factors such as social influences and social engagement affect reports and experiences of harms from others' alcohol use.

The macro, mezzo, and micro level factors are theoretically established as broader contextual influences; however, little is known about how characteristics of the respondent are associated with reporting or experiencing harms from others' alcohol use. It is well-documented that alcohol consumption patterns vary by socio-demographic characteristics among Indians,[35,72] as discussed below, but individual characteristics that are associated with experiencing alcohol-related harms from others' drinking are under-

studied. The evidence on harms from others' alcohol consumption in the second and third aims of this dissertation help to provide information necessary to complete Tannahill's framework, thereby facilitating the process of justifying and implementing evidence-informed policies to reduce harms from others' drinking.[67]

The Indian context is famously complex, both culturally and politically. The history of alcohol control in India has its own particular complexities. In order to situate this dissertation historically and culturally, the following section provides an overview of the history of alcohol control in India, helping to contextualize the macro level factors of culture and politics pertaining to alcohol consumption and control in the country.

Historical context: Review of alcohol control in India

The history of alcohol regulation in India provides a foundation for understanding the nation's current alcohol situation. Historically, the prevalence of alcohol consumption was relatively low in India,[73] with strict regulations over who could drink, and when and where drinking was allowed.[36] During the 1800s, the middle and upper classes abstained from alcohol to separate themselves from the lower classes, reinforcing the caste hierarchy.[8] Alcohol consumption slowly increased during British colonialism[36] and in 1862, the country's first distillery was set up to manufacture alcohol.[74] The enactment the Bombay Abkari Act of 1878 and the Mhowra Act of 1892 led to taxation for toddy production, a locally produced alcoholic beverage, and prohibited other locally produced alcoholic drinks.[75] Alcohol became an important source of revenue for the colonial government with these two pieces of legislation. However, the policies did not yield

reductions in consumption, but rather led to an increase in illicitly produced alcohol and smuggling.[75] Meanwhile, manipulation of the alcohol supply by the colonial government, for purposes of both increasing revenue to the government and controlling the population's drinking behavior, contributed to deep and lasting ambivalence about alcohol among Indians.[8]

In 1937, several Indian states enacted alcohol prohibition policies, though all of the bans were abolished during World War II and alcohol excise taxes became the country's largest source of revenue.[76] Despite the revenue, the central Indian government developed an outline of necessary steps to achieve national prohibition by 1958 and several states re-introduced alcohol bans. Nevertheless, with economic and political changes in the mid-1960s, the ruling upper class became less supportive of prohibition policies; thus, by 1971, all states lifted the alcohol bans, except Gujarat.[76] The social stigma against the liquor market largely diminished by the late 1960s,[76] although some negative connotations about alcohol persist due to the association with British colonialism.[77] With globalization and the developing economy, alcohol is increasingly becoming part of Indian society.[8,34]

Influenced by Mohandas Gandhi's temperance movement,[78] alcohol control was included in one of the Directive Principles of State Policy under Article 47 of the Constitution of India, giving states control over alcohol policies.[79] The constitution dictates that: "The State shall regard the raising of the level of nutrition and the standard of living of its people and the improvement of public health as among its primary duties and, in

particular, the State shall endeavor to bring about prohibition of the consumption except for medicinal purposes of intoxicating drinks and of drugs which are injurious to health."[79] Today, four states (out of 29) and one Union Territory have complete alcohol prohibition.[80] The country's alcohol market is fragmented, as each of India's states in essence creates and regulates in its own unique way its alcohol market;[81] following from this, experiences of alcohol-related harms from others' drinking may vary across states. Evidence from Indian studies suggests that alcohol consumption also varies by socio-demographic factors; these differences as well may play a role in the epidemiology of people's experiences of harms from others' drinking.

Review of alcohol consumption in India and socio-demographic factors

At the national level, sales of alcohol and the prevalence of consumption have consistently increased during recent decades (Figure 1.2).[7,8,29] However, it is difficult to describe the patterns of alcohol consumption across the Indian subcontinent, since there are large variations by socio-demographic characteristics and region. The third wave of the National Family Health Survey (NFHS-3), a national survey that collected alcohol data across the states of India, was conducted in 2005–2006.[72] According to the NFHS-3, drinking alcohol was more common among Indian males older than the age of 34, compared to females and younger people. At the time of the survey, the nationwide average prevalence of current drinking was 32% among males and 2% among females. Data from the NFHS-3 suggest that living in a rural area, low educational attainment, having a low income, being part of a scheduled tribe, and being Christian are associated with a greater prevalence of alcohol consumption. In the sections that follow, I synthesize

the literature on alcohol consumption by the socio-demographic characteristics of sex, age, income and educational attainment, and rurality, and discuss regional variations. This review of the literature provides a basis for the key individual-level factors that may be associated with the reporting of alcohol-related harms to children and experiences harms from strangers' drinking that I explore in this dissertation.

Sex

Being male is one of the strongest socio-demographic characteristics associated with alcohol consumption in India. The findings from a household survey in India, the 1995-1996 National Sample Survey, indicate that men were nearly ten times more likely to report "regular" alcohol consumption than women, after adjusting for caste, income, residence, education, and age group.[82] Although the prevalence of alcohol use among men was consistently greater than that of women, the results from the NFHS-3 suggest that the prevalence estimates vary across states. In Jammu and Kashmir, located in the north and in the Himalayan Mountains, only 13% of men reported consuming alcohol. Alcohol use was more prevalent in the northeast, with 61% of men reporting drinking in Arunachal Pradesh.[72]

The NFHS-3 found that the prevalence of alcohol consumption among women was lowest in the states in the north-central region (≤0.2%), but equally low in Tamil Nadu in the south. As with men, the highest prevalence of alcohol use among women was in Arunachal Pradesh (34%), which was substantially higher than all other states. Women in another northeastern state, Sikkim, reported the second highest prevalence of drinking (19.1%).[72]

Another study assessed the sex-specific drinking patterns among people residing in the central state of Madhya Pradesh, the northern state of Uttar Pradesh, and the northeastern state of Manipur.[34] The prevalence of alcohol consumption in the past month among men ranged from 21% in Madhya Pradesh to 38% in Manipur, whereas the prevalence of drinking among women was less than 3%. Among drinkers, the prevalence of heavy drinking (i.e., consuming 75 ml or more of absolute alcohol) ranged from 80% in Uttar Pradesh to 89% in Manipur.[34]

Alcohol use is highly prevalent in the northeast, but is also prevalent in the south, particularly among men. Among nearly 3,000 respondents in a study of five districts in the southern state of Karnataka, 33% of men and 6% of women reported consuming alcohol at least once in the past 12 months.[35] Heavy drinking was common among drinkers, with 60% of the men and 47% of the women reporting the consumption of five or more drinks during a typical drinking occasion. The findings from a study in Tamil Nadu suggest that compared to Karnataka, alcohol consumption is more prevalent among men but less prevalent among women.[83] Among the 10,500 respondents in the Tamil Nadu study, 62% of men and less than 1% of women reported consuming alcohol in the past 12 months.

A consistent finding across the studies described above is that the prevalence of alcohol consumption is greater among men than women. Research often focuses on harms to women from others' drinking,[26,35,62] and in this dissertation, I expand the literature by

exploring the types of harms that both women and men experience as a result of strangers' alcohol use. I also assess how reports of alcohol-related harms to children vary by sex.

Age

Age is another factor associated with the prevalence of alcohol consumption and drinking patterns in India. In the NFHS-3, a greater prevalence of men aged 35-49 reported drinking once per week (30%) than men aged 15-19 (18%) and aged 20-34 (25%).[72] There were no significant differences in the frequency of drinking once per week by age group among women and was relatively stable at approximately 40% of female drinkers. The findings from the National Sample Survey indicated that the highest prevalence of regular alcohol consumption was reported among men aged 40-49 (15%), whereas the peak prevalence was reported among women aged 50-59 (2%).[82]

A systematic review of 31 Indian studies of persons aged 50 and older found that the prevalence of alcohol consumption generally declined in age groups beyond age 50.[84] Although the prevalence of drinking may decrease as people age, those who continue to drink after age 50 may do so more frequently than younger adults. One study in rural Haryana found that men over age 50 were more likely to drink daily or 3-4 times per week (30-33%) compared to men age 50 and younger (16-23%).[85]

The prevalence of drinking by age group also varies across regions. A greater proportion of young adults in the northeast consume alcohol than the national average. A study of

650 young adults aged 15-24, who worked on tea plantations in the northeastern state of Assam, found that one-third (44% of men and 25% of women) reported consuming alcohol.[86] The prevalence of alcohol consumption was nearly twice as high among those aged 20-24 (42%) compared to those aged 15-19 (22%).

In studies that have assessed drinking patterns in specific states, heavy drinking appears to be more common among middle-aged adults than young adults. In Karnataka, frequent heavy drinking (i.e., the consumption of five or more drinks on a typical occasion at least once a week) was more common among men aged 30-44 (22%), compared to men aged 15-29 (13%) and 45 or older (14%).[35] Among women in Karnataka, the prevalence of frequent heavy drinking was 1-2% across age groups. In another study with 1,899 men aged 18-49, in the western state of Goa, heavy drinking at least once per month was most common among the 40-49 year-old age group (36%) and least common among men aged 18-29 (23%).[62]

The combined evidence on the association between age and the prevalence of alcohol use and heavy drinking, as just described, suggests that middle-aged Indians generally consume more alcohol than young adults. This evidence of differences in alcohol consumption by age indicates that age is an important factor to control for when assessing alcohol-related harms from others' drinking.

Income and educational attainment

Lower income and lower educational attainment are generally associated with an increased risk of drinking compared to those who are wealthier and more educated.[35,62,72,82,87] According to both the NFHS-3 and the National Sample Survey, at the national level, the prevalence of alcohol consumption was most prevalent among those with the lowest wealth index and least prevalent among those with the highest wealth index.[72,82]

A similar trend exists based on education attained. In the NFHS-3, the prevalence of alcohol consumption ranged from 25% of men having 12 or more years of education to 43% among men with no education.[72] This same relationship between education and the prevalence of alcohol consumption existed for women, ranging from less than 1% of women having 12 or more years of education to 4% of women among those with no education. Consistent with the national trend, lower education was associated with a greater likelihood of drinking at least once a week among people in Karnataka [35] and higher risk drinking patterns among men in Goa.[62]

There is sparse literature on the association between alcohol use disorders and socio-demographic characteristics; however, a small amount of evidence suggests that lower education may be associated with a greater prevalence of alcohol use disorders.[88,89] Among 100 men who were receiving treatment for alcohol dependence in an outpatient department of a medical facility in Chennai, the greatest proportion (51%) completed the lowest level of education (i.e., grades 1-5).[88] Another study of 984 industrial workers in

Goa found that those who had not completed at least four years of school had 1.9 times greater odds of engaging in hazardous drinking (i.e., score of eight or more on the Alcohol Use Disorders Identification Test [AUDIT]).[89]

With income and educational attainment being indicators of socio-economic status, I am interested in understanding how such characteristics of respondents affect reports and experiences of harms from others' alcohol consumption. As India continues to develop economically,[8] data on how socio-economic status is associated with harms from others' drinking can be helpful in predicting the direction of the trend of this public health problem over time.

Rurality

Differences exist in the prevalence of alcohol consumption by rural or urban residence.[34,62,90] In the NFHS-3, 33% of rural men and 3% of rural women reported consuming alcohol compared to 31% of urban men and less than 1% of urban women.[72] Across the country, drinking is generally more common in rural areas than urban, but again, the national level statistics do not portray the alcohol situation across regions. Nearly 66% of men living in an urban slum of Kolkata in the eastern state of West Bengal consumed alcohol in the past year.[90] Moreover, the prevalence of regular weekly consumption was high among those living in the remote hills of northeastern Arunachal Pradesh: 64% of men and nearly 35% of women regularly consumed more than three drinks per week.[87]

A few studies have directly assessed differences in drinking by rurality among people in the same state. In northwestern Punjab, alcohol consumption was 2.4 times more common among rural men (60%) compared to urban men (25%).[91] Among men in the west coast state of Goa, drinking to intoxication at least once a week was 1.5 times more common among men in rural areas (9%) than men in urban areas (6%).[62]

Unlike the men in Punjab and Goa, in Karnataka, men living in rural areas were more likely to report current abstention from alcohol (77%) compared to men in urban areas (59%); however, there were no significant differences in current abstention between women in rural (96%) and urban areas (93%).[35] The researchers in Karnataka found that men in urban areas were more likely to report consuming five or more drinks during a typical occasion (63%) compared to men in rural areas (55%). Women reported the opposite pattern, such that rural women were more likely to consume five or more drinks during a typical occasion (59%) than urban women (40%).

The association between rurality and drinking patterns may also differ across age groups. The authors of a systematic review on alcohol consumption among adults older than age 50 qualitatively concluded that the prevalence of drinking was greater in urban settings than rural.[84]

Most of the evidence described above suggests that the prevalence and quantity of alcohol consumption is greater in rural areas than urban, with a few exceptions;[35,84] therefore, the burden of harms from others' drinking may be greater in rural areas than

urban. With approximately 70% of the Indian population living in rural areas,[33] it is critical to explore the types of harms that people are experiencing from others' drinking in these areas to guide prevention initiatives.

Evidence on the differences in the prevalence of alcohol consumption and patterns of drinking by socio-demographic characteristics, including sex, age, income and educational attainment, and rurality, suggests that socio-demographic characteristics may also be associated with varying reports and experiences of harms from others' drinking. For example, if the prevalence of alcohol consumption is higher among Indian men than women, do men also have greater odds of experiencing harms from strangers' alcohol use? If those with lower incomes and lower educational attainment have a greater prevalence of drinking than those with higher incomes and greater educational attainment, do people with those characteristics also have increased odds of reporting alcohol-related harms to children, and do children growing up in lower-income settings in India thus face additional elevated risks due to greater prevalence of harms from others' drinking? The present dissertation seeks to examine questions such as these.

A final critical area of variation in the current dissertation is the geopolitical location of the respondents. The parent survey was taken in five very different Indian states, with different alcohol control regimes, different population densities and balance between rural and urban dwellers, and so on. The penultimate section of this introduction seeks to provide the context necessary for understanding these regional variations, both generally and in terms of how alcohol use and sale are regulated in each state.

Contextual information on study settings

The parent study recruited participants from five states across India that had a lack of published research related to alcohol use: Cuttack, Odisha; Dhule, Maharashtra; Gangtok, Sikkim; Surat, Gujarat; and Visakhapatnam, Andhra Pradesh.[92] Table 1.1 provides a summary of site characteristics and brief descriptions follow.

Odisha

Odisha, in southeastern India, was the 11th most populous state in India as of the 2011 Census.[33] Alcohol was prohibited in Odisha in 1994-1995[93] after hundreds of people were killed and made ill from poisoned liquor in Cuttack. The government lifted the ban in 1995, likely due to revenue losses.[94,95] Odisha has a ban on alcohol sales and drinking in public places; a licensing system of places for sale and consumption; outlet density regulations; and a minimum legal purchase age (MLPA) of 21 (Table 1.1).[80] According to the NFHS-3, approximately 47% of adults aged 15 and older in Odisha currently [undefined] consumed alcohol (40% of males; 7% of females).[72] Cuttack, Odisha is the former state capital, but is now known as the state's business capital.[33] There is limited industrialization in Cuttack[96] and three-fourths of the city's population depend on agriculture as the main source of livelihood, supported by the surrounding Mahanadi River. The economy is largely driven by the exportation of cash crops.[97] Cuttack was selected as a site for this study due to sparse data available on alcohol use and to represent an area of the country that has a poor economy.[92]

Maharashtra

Maharashtra is a western state and was the second most populous state at the time of the 2011 Census.[33] In Maharashtra, there is a ban on sales and drinking in public places; a licensing system for places for sale and consumption, as well as hours and days of sales; outlet density regulations; retail sale limits; a MLPA of 25 years; an open system for the distribution of alcoholic beverages; state regulations on alcohol advertising; and prohibition of point of sale advertising (Table 1.1).[80] According to the NFHS-3, approximately 24% of adults aged 15 and older in Maharashtra currently [undefined] consumed alcohol (24% of males; 0.4% of females).[72] Dhule has a population of approximately two million[33] and is primarily an agricultural district[98] with limited industry, except for a cotton textile mill.[99] Dhule was selected as a site for this study because local knowledge suggests that the people are stricken with high levels of poverty and low education.[92]

Sikkim

Sikkim is a small, northeastern state in the Himalayan Mountains. In Sikkim, there is a ban on alcohol sales and drinking in public places; a licensing system for places of sale and consumption, as well as hours and days of sales; minimum pricing policies; outlet density regulations; retail sale limits; a MLPA of 18 years; and a licensing system for the distribution of alcoholic beverages (Table 1.1).[80] Data from the NFHS-3 suggest that nearly 65% of adults aged 15 and older in Sikkim currently (undefined) consumed alcohol (45% of males; 19% of females).[72] Gangtok is the capital of Sikkim, and the mountainous, cosmopolitan city thrives on tourism.[100] Gangtok was selected for this

study because of the expectation that a large proportion of the population consumes traditional home-brew or unrecorded alcohol.[92]

Gujarat

Gujarat, a northwestern state, is one of the four Indian states where alcohol is prohibited,[80] and prohibition has been consistent since 1949.[30] Despite the complete ban on alcohol, there is still a population of drinkers in the state, albeit a relatively low proportion (Table 1.1). The findings from the NFHS-3 indicate that approximately 17% of adults aged 15 and older in Gujarat currently (undefined) consumed alcohol (16% of males; 0.8% of females).[72] Surat is the state's second largest city and is an industrial city, known for their diamonds and textiles.[101] Surat was selected as a site for this study because of the unique prohibition policy.[92]

Andhra Pradesh

Andhra Pradesh, a southeastern Indian state, is to the south of Odisha's border. In 2011, Andhra Pradesh was the fifth most populous state in the country.[33] The Government of Andhra Pradesh has experimented with prohibition periods since the 1950s. Andhra Pradesh has a ban on sales and drinking in public places, licensing of places for sale and consumption, a MLPA of 21, restrictions on days and hours of sales, and minimum pricing and retail sale limits (Table 1.1).[80] Data from the NFHS-3 indicated that 54% of adults aged 15 and older (47% of males; 7% of females) in Andhra Pradesh currently (undefined) consumed alcohol.[72] Visakhapatnam is a port city on Andhra Pradesh's eastern coast, along the Bay of Bengal. As a port city, it is the base for the Indian Eastern

Naval Command and it is also an industrial city.[102] Visakhapatnam was selected as a study site because local knowledge and anecdotes suggest that there is a high prevalence of alcohol use and the economy is rapidly changing.[92]

Conclusions

In this chapter, I have provided the context for alcohol consumption in India, suggesting the public health problem of alcohol use in the country. Alcohol sales and the prevalence of alcohol consumption have substantially increased in recent decades;[7,8,29] the economic burden due to alcohol use in India exceeds the revenue;[2] and among Indians who drink, they drink more heavily than the global average.[5] I also presented global research on alcohol-related harms to children and strangers and discussed several gaps in the literature that studies in India can help to fill. I described four public health ethics frameworks and determined the most useful one to guide a discussion on the ethical implications of increased use of alcohol control policies to reduce alcohol-related harms to others. I also reviewed literature on how alcohol consumption patterns vary by socio-demographic characteristics, indicating the importance of exploring how these characteristics are associated with harms to others.

With the growth in alcohol consumption, it is likely that the harms from others' drinking are increasing, and more comprehensive assessments of alcohol-related harms to children and strangers are needed. In the following chapters, I discuss the ethical implications of increased use of evidence-based alcohol control policies as an approach for preventing harms from others' drinking. I also present new evidence on alcohol-related harms to

children and strangers in India. I will conclude this dissertation with recommendations for future studies and discuss the public health practice and policy implications.

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Table 1.1. Description of study setting characteristics

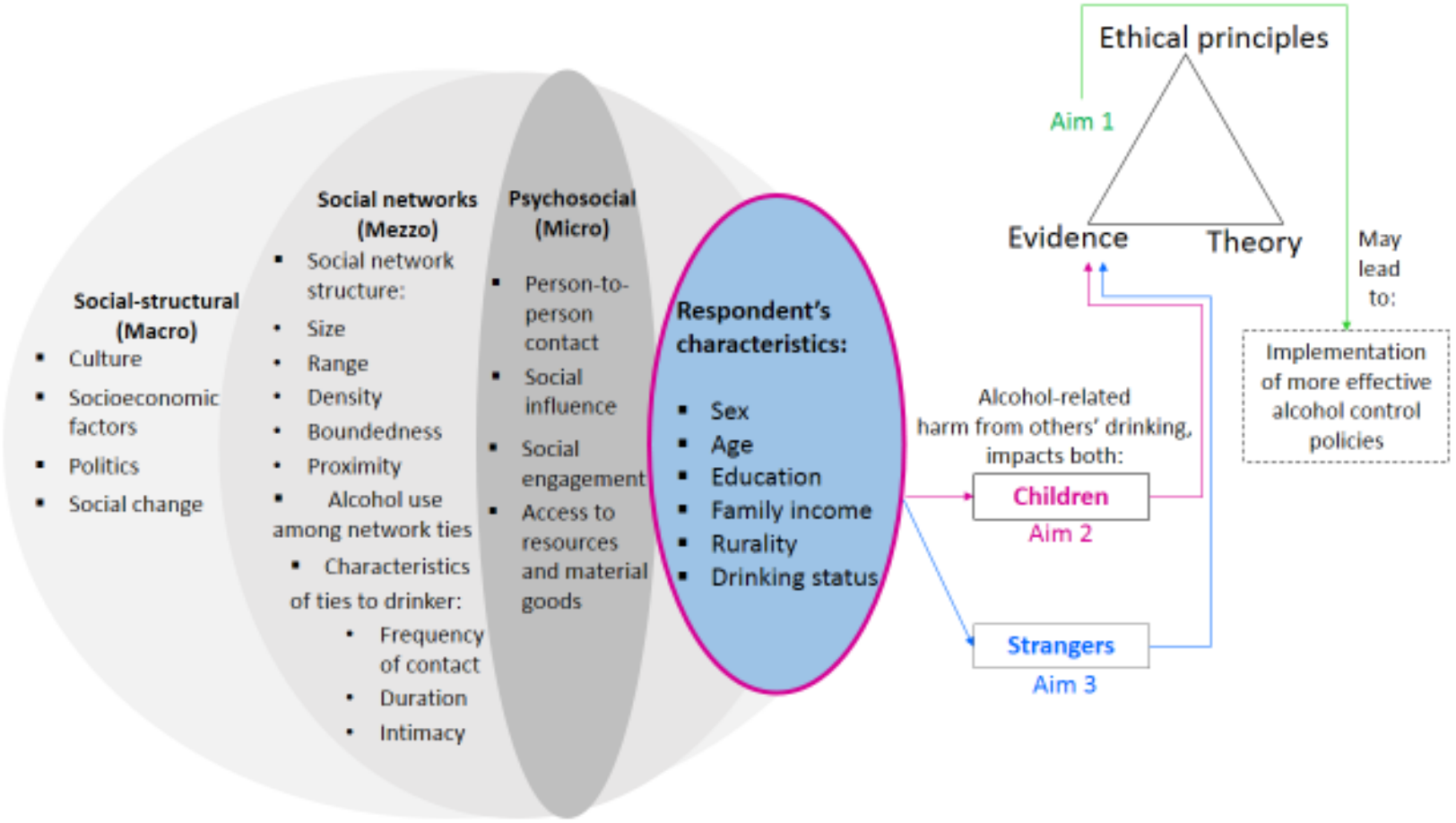
Indicator	Cuttack, Odisha	Dhule, Maharashtra	Gangtok, Sikkim	Surat, Gujarat	Visakhapatnam, Andhra Pradesh
Population	2.6 million	2.0 million	100,000	6.1 million	4.3 million
Livelihood	Agriculture and very limited industries	Agriculture and limited industries	Hospitality industry	Industries (e.g., diamonds, textiles)	Port and industries
State-level written alcohol control policies:					
Ban on sales/ drinking in public places?	Yes	Yes	Yes	Yes (total alcohol prohibition)	Yes
Regulations for production/ distribution/ sales	Licensing of places for sales commonly lottery system	Licensing system for places of sale/ consumption, with regulated hours and days of sales (specifics unknown); open system for distribution of alcoholic beverages	Licensing system for places of sale/ consumption, with regulated hours and days of sales; and licensing system for the distribution of alcoholic beverages (specifics unknown)	Total alcohol prohibition	Licensing of places for sales through alcohol tender system (biding) and regulated days and hours of sales; prohibit arrack production
Minimum pricing policies?	No	No	Yes	Total alcohol prohibition	Yes
Minimum legal purchase age	21 years	25 years	18 years	Total alcohol prohibition for all ages	21 years
State-level alcohol marketing restrictions?	None specified	State regulations on alcohol advertising; prohibition of point of sale advertising	None specified	None specified	None specified

(Table continues on next page)

Indicator	Cuttack, Odisha	Dhule, Maharashtra	Gangtok, Sikkim	Surat, Gujarat	Visakhapatnam, Andhra Pradesh
State-level current drinkers (≥ age 15)	47% (39.6% of males; 7.3% of females)	24% (24% of males; 0.4% of females)	65% (45% of males; 19% of females)	17% (16% of males; 0.8% of females)	54% (47.2% of males; 6.8% of females)
Hazardous drinking – drinkers only	45% of males; 41% of females	67% of males; 67% of females	55% of males; 41% of females	40% of males; 50% of females	27% of males; 40% of females
Top alcoholic beverage preference among drinkers	Locally-made beer/wine: 59%, Indian-made foreign liquors: 19%	Illicit liquor spirits: 35%, Legal country liquors: 26%	Indian-made foreign liquors: 35%, Locally-made beer/wine: 23%	Illicit liquor spirits: 49%, Indian-made foreign liquors: 23%	Indian-made foreign liquors: 36%, Legal country liquors: 31%
Reason for study site selection	Sparse alcohol data, poor economy	District with high prevalence of indicators of low socioeconomic status	Expected high levels of unrecorded alcohol use	State-level prohibition policy	Expected high prevalence of drinkers, rapidly changing economy

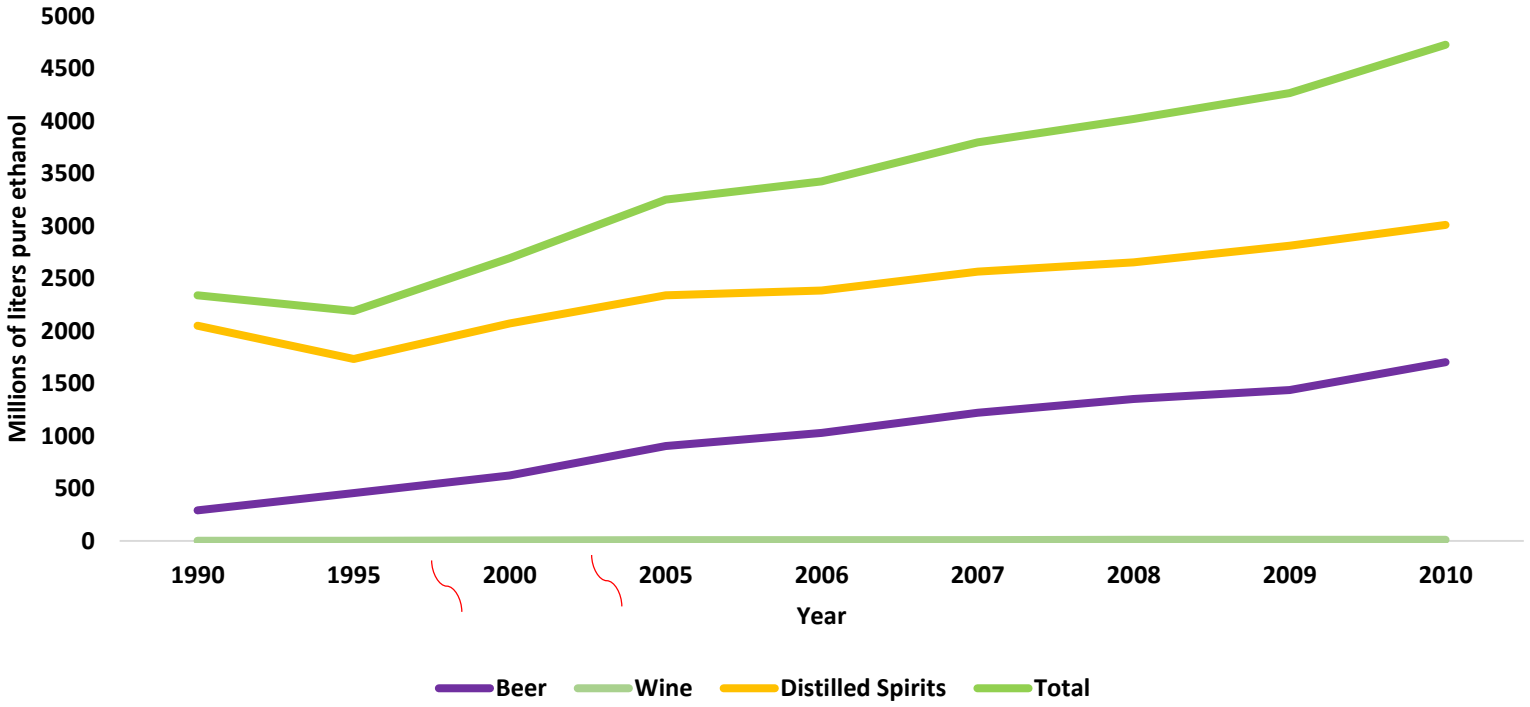
Sources: [33,72,80,92]

Figure 1.1. Theoretical and conceptual framework



Adapted from: Tannahill (2008)[67] and Berman et al. (2000)[70]

Figure 1.2. Trend of alcohol sales in India over time by type of alcoholic beverage



Source: Impact Databank (2012)[29]

Chapter 2: Methodological Considerations

Public health ethical framework

In the first manuscript of this dissertation, I apply a public health ethics framework as a means of considering the ethical implications of implementing policies to prevent alcohol-related harms to others. I discuss the significance of the problem of alcohol-related harms from others' drinking in India and present global evidence on the effectiveness of alcohol control policies that reduce the availability of alcohol. To address the primary aim of the study, searching in PubMed, Scopus, and Google Scholar, I sought out a framework that would be useful for applying a public health ethics perspective to the prevention of harms from others' alcohol use by implementing more effective alcohol control policies. I considered various ethical frameworks,[1-4] and found the Kass[2] framework to be the most useful, as it provides a clear six-step process for considering ethical issues in policy decisions.

While reading ethics literature, I found one study by Have et al. on useful public health ethics frameworks for evaluating obesity prevention interventions, and the authors provided a PubMed keyword search strategy for identifying frameworks.[5] To confirm that I did not omit any potentially useful ethical frameworks in my initial search, I searched PubMed using the following keywords that Have et al. provided:

> (((ethic*[ti] OR moral[ti] OR normative[ti]) AND ("decision making"[ti] OR framework*[ti] OR guideline*[ti] OR principle*[ti] OR code*[ti])) OR (("ethical

decision making" OR "ethical framework" OR "ethics framework" OR "ethical guideline" OR "ethical guidelines" OR "ethics guidelines" OR "ethical principle" OR "ethics principle" OR "ethical principles" OR "ethics principles" OR "ethical code" OR "ethics code" OR "ethical codes" OR "ethics codes" OR "moral framework" OR "normative framework" OR "moral guidelines" OR "normative guidelines" OR "moral principle" OR "normative principle" OR "moral principles" OR "normative principles" OR "moral code" OR "moral codes") AND ("guideline"[-Publication Type] OR "guidelines as topic"[MeSH Terms])) AND ("public health" OR "public health"[-mesh:noexp] OR "public health practice"[mesh]) AND 1995:3000[dp] AND eng[la]

The above search strategy resulted in 279 hits. I read the list of titles and reviewed the abstracts in potentially relevant studies to identify additional sources. I considered studies as relevant if they provided a framework that: (1) offered a structured approach for considering the balance between public health goals and ethical tradeoffs, and (2) were applicable for assessing the benefits and burdens of public health population-level policy interventions for a relatively broad range of public health issues (e.g., not specific to a particular public health problem that was not transferable to preventing alcohol-related harms to others). The majority of the studies were not relevant, as most related to screening programs, were specific to prevention programs for other health problems, or were designed for clinical settings. Five hits were related to India, although only one was somewhat relevant to my study.[6]

Overall, this search strategy did not yield any useful publications that I had not previously obtained; thus, I proceeded with my review of the four previously identified frameworks[1-4] (as summarized in Chapter 1) and the application of the Kass[2] framework in the study. In the study, I applied the Kass framework and follow the six steps as a guide for considering the ethical implications of implementing new alcohol control

policies that aim to reduce the availability of alcohol as a possible strategy for decreasing harms to children and strangers from others' drinking in India.

Parent study sampling methodology

Data for the second and third studies came from a case-control study administered by the Indian National Institute of Mental Health and Neuro Sciences (NIMHANS) and local collaborators. The aim of the parent study was to assess patterns and consequences of alcohol misuse in India. Between October 2011 and May 2012, participants were recruited for household interviews from five diverse regions (e.g., tribal, coastal, Himalayan Mountains) and the sites were selected to represent populations for which little information existed on a variety of alcohol consumption patterns. Figure 2.1 displays the sampling methodology. Each of the five sites employed purposive quota sampling[7] and aimed to recruit 2,000 participants (1,000 drinkers, 1,000 matched controls). A purposive technique was employed in order to reach segments of the population that may have been missed through probability sampling techniques (e.g., female drinkers and young drinkers). In two sites, less than 2,000 respondents were sampled because of logistical and administrative data collection issues. Aligning with the composition of the Indian population, 70% of participants were recruited from rural areas and 30% from urban areas. The determination of urban and rural areas was based on practices used by local medical colleges in the respective sites. Rural areas were defined as those with villages with populations of 1,000 to 5,000 people (approximately 200 to 500 households). In both urban and rural areas, field staff aimed to recruit roughly 10%, 50% and 40% from high, middle and low-income households. No consistent criteria were established to define the income groups, and the value of an Indian rupee fluctuates

across geographic areas. Field site coordinators worked with field staff to approximate the classification of households into income categories based on local knowledge.

Field staff recruited participants aged 15-70 years. In the case-control design, cases were considered drinkers if they consumed an alcoholic beverage at least one time in the past year. Due to the lower prevalence of alcohol consumption among females and younger adults, these groups of drinkers were more difficult to recruit,[8,9] so in households with multiple drinkers, interviewers prioritized drinkers who were female or were males younger than 25 (Figure 2.2). Amongst other adults, if there was more than one drinker from the same category, simple random sampling techniques were used to recruit one member. In this process, each individual was assigned a number and then a number was randomly selected to determine the individual to interview. Individuals who had not consumed an alcoholic beverage in the past 12 months were eligible to be included as a control. A minimum of three attempts were made before declaring a person as a non-responder. Of the 8,567 heads of households approached by interviewers, the parent study sample included 8,333 respondents, yielding a participation rate of 97.3%. Interviews were conducted in the local language or in English and lasted approximately 45 minutes. The interviewers collected verbal consent and did not offer incentives. The study was approved by the NIMHANS Ethical Committee and the Ethical Review Committee of the World Health Organization.

Power and sample size analysis

Power is the probability that the results of a statistical test will lead to a rejection of the null hypothesis when the null is false.[10] There are several socio-demographic characteristics of respondents that might be associated with reporting alcohol-related harm to children but I calculated the required sample size to assess differences in reporting such harms by respondents' drinking status, as it most directly relates to the outcome being assessed. Literature suggests that the proportion of abstainers reporting alcohol-related harm to children is approximately 12.0% and the average proportion of drinkers (including non-binge drinkers and binge drinkers) is 16.5%.[11] Based on the literature estimates, to assess differences by respondents' drinking status for reporting alcohol-related harms to children, the necessary sample size for a study with power of 0.80, assuming α=0.05 (two-sided), is a total of 1,982 respondents (Table 2.1). The required sample size may fluctuate to detect differences in reporting harms for each of respondents' socio-demographics characteristics so the greater sample sizes included in the second and third studies of this dissertation are advantageous to detect differences across the various characteristics. I also used respondents' drinking status to calculate the sample size required for detecting differences in experiencing harms from strangers drinking. Literature suggests that the proportion of abstainers (or very light drinkers) physically hurt from strangers' drinking is 1.30% and the average proportion among drinkers is 5.95%.[12] Using estimates on the proportion of respondents physically hurt from strangers' drinking to approximate estimates of various harms, to detect differences in experiencing alcohol-related harms from strangers' drinking by respondents' drinking status, the necessary sample size with power of 0.80 and α=0.05 (two-sided) is a total of 588 respondents (Table 2.2).

Statistical analyses

Analyses on reports of alcohol-related harms to children

Data for this study were collected in five regions of India, and as discussed in Chapter 1, each study site has unique characteristics. Descriptive statistics showed that respondents' reports of alcohol-related harm to children varied by location of residence (Figure 2.3). For instance, compared to respondents from other locations, adults' reporting of 3-5 of the five different types of alcohol-related harms to children was most common among respondents in Dhule (33.1%) and Gangtok (18.9%). In contrast, a greater proportion of respondents in Vizag (80.1%), followed by those in Surat (70.9%), reported no alcohol-related harm to children compared to respondents from other locations of residence.

Given these differences across locations, multilevel modeling[13] was used to explore associations between respondents' socio-demographic characteristics and drinking patterns and odds of reporting alcohol-related harms to children in the three domains of physical abuse, psychological abuse, and neglect, as well as odds of reporting multiple types of harms. Specifically, multilevel mixed effects logistic regression models were determined to be the appropriate statistical technique. Logistic regression is used for binary dependent variables[14] and the multilevel regression allows for group-level variability,[15] by modeling a random effect for the location of residence intercepts. The "mixed effects" regression allows for both fixed and random effects. While the random effects component models differences across locations, thereby accounting for similarities within locations, the fixed effects are regression coefficients for averages of the variables.[16]

The variables for the multilevel mixed effects logistic regression models were selected based on evidence in the literature showing their association with alcohol use and related harm, including sex, education, family income, rurality, location of residence, and respondent's own drinking.[8,17-19] I considered using backward stepwise selection statistical procedures to select covariates for multilevel mixed effects logistic regression models.[20] In backward stepwise regression, covariates with a p-value >0.05 are sequentially dropped from a full model, starting with the variable with the highest p-value. Using this statistical technique, education was dropped in all models and sex was dropped in all except reporting of alcohol-related psychological harm to children. All other variables were retained. Conceptually, this did not corroborate with the literature that showed differences in alcohol consumption by education and sex so stepwise regression was not used. The multilevel mixed effects logistic regression models for reporting of alcohol-related harm to children in domains of physical abuse, psychological abuse, and neglect, respectively, as well as reporting of multiple harms were defined as follows:

$$Y_i = \beta_0+\beta_1 X_{i1}+\beta_2 X_{i2}+\beta_3 X_{i3}+\beta_4 X_{i4}+\beta_5 X_{i5}+\beta_6 X_{i6}+\varepsilon_i, \text{ and}$$

$$\beta_0 = \alpha_o + \gamma_{0i}$$

Where:

$i = 1, 2, 3, 4, 5$ states

$X_{i1}, X_{i2},\ldots X_{ip}$ = set of p predictors in state i

Y_i = reporting of alcohol-related harm to children in domains of physical abuse, psychological abuse, and neglect, respectively, as well as reporting of multiple harms, in the i^{th} state

α = average of five states intercept

γ_i = state-specific variant

β_1 = coefficient for sex

β_2 = coefficient for education

β_3 = coefficient for family income

β_4 = coefficient for rurality

β_5 = coefficient for state

β_6 = coefficient for respondents' drinking pattern

Sensitivity analyses for reports of alcohol-related harms to children

The response options for reporting alcohol-related harms to children were 'never,' 'less than monthly,' 'monthly,' 'weekly,' and 'daily;' I collapsed the categories into 'never' versus 'ever occurred in past year' for the analyses in the study. I conducted a sensitivity analysis exploring an alternate collapsing of reports of harms into 'less than monthly' versus 'monthly or more frequently.' The relatively small proportion of the sample reporting children experiencing each specific harm monthly or more frequently (Table 2.3) supports the decision to use 'never' and 'ever occurred in past year' for my analyses.

Additionally, Table 2.4 shows the odds ratios from binary and multilevel mixed effects logistic regression for reporting children's experience of harms monthly or more frequently in the past year. Respondents' characteristics associated with the odds of reporting types of alcohol-related harm to children monthly or more frequently in the past year were generally consistent with the associations found in the study for the odds of reporting types of alcohol-related harm to children ever-occurring in the past year (Table 4.4). There were no major differences in direction of the associations by sex and rurality for reporting monthly or more frequent harms to children compared to reporting ever-

occurring harms in the past year, with only slight variations in the magnitude of the findings.

Moreover, similar to the findings for reporting ever-occurring harms to children, most of the adjusted odds ratios for family income quartiles were not significant for respondents reporting monthly or more frequent harms (Table 2.4). In the analysis for respondents' reporting of monthly or more frequent harms to children, there were, however, statistically significant lower odds of reporting neglect among those in the upper two income quartiles compared to the lowest quartile; this association was not significant in the analysis for respondents reporting neglect ever-occurring.

Furthermore, the trends were consistent for the associations between respondents' drinking patterns and reporting monthly or more frequent harms to children and reporting ever-occurring harms, although the magnitude of the associations were stronger in the analyses for reporting monthly or more frequently types of alcohol-related harms to children. More specifically, compared to binge drinkers, abstainers and non-binge drinkers had greater reductions in the adjusted odds for reporting monthly or more frequently alcohol-related harms to children compared to those reporting ever-occurring harms (Table 2.4). Additionally, there were generally consistent associations by location of residence for reporting monthly or more frequent types of harms to children and ever-occurring harms. However, the reduced odds of reporting neglect ever-occurring in both Surat and Vishakhapatnam were not significantly associated with reporting monthly or more frequent neglect.

I also explored how the findings differ using higher cut-points for respondents' reports of multiple types of alcohol-related harms to children. There were 1,153 respondents who reported three or more types of harms to children in the past year, slightly more than half the sample size of those reporting two or more types of harms (n=2,169). The trend of the associations between respondents' characteristics and reporting three or more harms to children (Table 2.5) was generally consistent with the trends for reporting two or more harms (Table 4.4).

I ruled out the cut-point of reporting four or more types of alcohol-related harms to children in the past year due to the small sample size (n=491). With this cut-point, the majority of adjusted odds ratios by respondents' characteristics were not significant and statistically significant findings need to be interpreted cautiously (Table 2.5). Respondents' drinking patterns were significantly associated with reporting four or more harms to children, following the same trend as for those reporting two or more harms, as well as three or more harms. The location of residence was also significantly associated with reporting four or more harms, generally following the same pattern as for those reporting two or more harms, as well as three or more harms – with the exception of respondents residing in Surat. Compared to respondents in Cuttack, respondents in Surat had 44% lower odds of reporting two or more types of harms to children and 28% lower odds of reporting three or more harms, but had 73% greater odds of reporting four or more harms. However, the sample size is too small to allow for meaningful analysis, with only 52 out of 1,220 respondents from Surat reporting four or more types of harms to

children. Therefore, in the study, I used the cut-point of those reporting two or more types of harms to children, as that threshold represents the population reporting greater than the mean number of harms.

Analyses of experiences of alcohol-related harms from strangers' drinking

The response options for experiencing each type of harm from strangers' drinking in the past year were never (0 times), occasionally (1-4 times), and frequently (5 or more times). In the analyses for the study, I collapsed occasionally and frequently to create dichotomous variables of ever experiencing each of the 12 harms in the past year. I chose to collapse responses of occasional and frequent experiences of harm because of the low proportion of respondents reporting frequent experiences of such harms. An average of only 5% of respondents reported frequently experiencing at least one type of harm from strangers' alcohol use, and for five of the 12 types of harms, less than 3% of respondents reported frequent experiences (Table 2.6). Collapsing occasional and frequent experiences of harm from strangers' drinking into ever experiencing such harms in the past year allowed for larger sample sizes for each characteristic included in the models.

Descriptive statistics revealed differences in the proportion of respondents' experiences of harm from strangers' drinking across locations of residence (Figure 2.4). In Dhule, 76% of respondents experienced at least one tangible harm from strangers' drinking in the past year, whereas 30% of respondents living in Surat and 22% of respondents living in Vizag experienced tangible harms. With this stark variation across locations of experiences of harm from strangers' drinking, multilevel mixed effects logistic regression

models were again determined to be the most appropriate technique. The multilevel mixed effects logistic regression models for experiencing physical harm, sexual harm, psychological harm, property damage, any tangible harm, or any intangible harm from strangers' drinking, respectively, were defined as follows:

$$Y_i = \beta_0+\beta_1 X_{i1}+\beta_2 X_{i2}+\beta_3 X_{i3}+\beta_4 X_{i4}+\beta_5 X_{i5}+\beta_6 X_{i6}+\beta_7 X_{i7}+\varepsilon_i, \text{ and}$$

$$\beta_0 = \alpha_o + \gamma_{0i}$$

Where:

$i = 1, 2, 3, 4, 5$ states

$X_{i1}, X_{i2}, \ldots X_{ip}$ = set of p predictors in state i

Y_i = reporting of alcohol-related harm to children in domains of physical abuse, psychological abuse, and neglect, respectively, as well as reporting of multiple harms, in the i^{th} state

α = average of five states intercept

γ_i = state-specific variant

β_1 = coefficient for sex

β_2 = coefficient for age group

β_3 = coefficient for education

β_4 = coefficient for family income

β_5 = coefficient for rurality

β_6 = coefficient for respondents' drinking pattern

β_7 = coefficient for state

I included respondents' location of residence as a control variable in the analyses. Table 2.7 shows adjusted odds ratios for experiencing harms from strangers' alcohol use by location of residence, as I did not present the estimates for this variable in the study.

After conducting multilevel mixed effects regression, ordered logistic regression was performed to look more closely at how the number of types of harms experienced varied by respondent's own drinking and sex.[21] Ordered logistic regression was determined to be the most appropriate technique because the dependent variable had more than two categories that were rank ordered.[22] Thus, ordered logistic regression models were used to generate the log-odds of experiencing none, one to two, or more than two harms from strangers' drinking, with the number of tangible and intangible harms modeled separately as the dependent variables. Sex and respondents' drinking patterns were included as independent variables, with two dummy variables for non-binge drinking and binge drinking. The log-odds generated by the ordered logistic regression are not interpretable so I conducted post estimation analyses to translate the log-odds into interpretable predicted probabilities.[23] The predicted probabilities show the sex-specific drinking patterns with predictive values of experiencing zero, one to two, or more than two different harms from strangers' drinking.

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Table 2.1. Sample size estimates by various levels of power for study on differences in reporting alcohol-related harms to children by respondents' drinking status

	Power (95% significance level)			
Required sample size	**80%**	85%	90%	95%
Abstainers	**991**	1127	1311	1610
Drinkers	**991**	1127	1311	1610
Total sample size	**1982**	2254	2622	3220

Note: Assumes a minimum power of 0.80 and α=0.05 (two-sided)

Table 2.2. Sample size estimates by various levels of power for study on experiencing alcohol-related harms from strangers' drinking by respondents' drinking status

	Power (95% significance level)			
Required sample size	**80%**	85%	90%	95%
Abstainers	**294**	331	380	459
Drinkers	**294**	331	380	459
Total sample size	**588**	662	760	918

Note: Assumes a minimum power of 0.80 and α=0.05 (two-sided)

Table 2.3. Proportion of respondents reporting harm to children by frequency in the past year and type of harm (n=7,882)

Harm to children	% (95% Confidence Interval)		
	Never	<Monthly	≥Monthly
How many times in the last one year, because of someone's drinking (including your own), was any child…			
Physical abuse			
Physically hurt because of someone's drinking?	84.0 (83.2-84.8)	12.2 (11.5-12.9)	3.8 (3.3-4.2)
Psychological abuse			
Witness serious violence in the home?	81.8 (80.9-82.6)	14.7 (13.9-15.5)	3.5 (3.1-4.0)
Yelled at, or verbally abused?	69.3 (68.3-70.4)	23.2 (22.2-24.1)	7.5 (6.9-8.1)
Neglect			
Left in a risky/unsafe situation due to poor supervision?	83.9 (83.1-84.7)	11.6 (10.9-12.4)	4.4 (4.0-4.9)
In difficulty as there was not enough money for the things needed by them?	85.6 (84.8-86.3)	10.5 (9.8-11.1)	4.0 (3.6-4.4)

Table 2.4. Odds of reporting types of alcohol-related harm to children monthly or more frequently in past year by socio-demographics and respondent's drinking (n=7,882[a])

Characteristic	Physically hurt[b] (n=296)		Psychological abuse[c] (n=787)		Neglect[d] (n=559)	
	Unadjusted OR (95% CI)	Adjusted OR[e] (95% CI)	Unadjusted OR (95% CI)	Adjusted OR[e] (95% CI)	Unadjusted OR (95% CI)	Adjusted OR[e] (95% CI)
Sex						
Female	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Male	1.28 (0.98-1.68)	1.10 (0.78-1.55)	0.97 (0.68-0.82)	0.63 (0.51-0.79)***	1.11 (0.92-1.34)	0.72 (0.55-0.95)*
Rurality						
Urban	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Rural	1.53 (1.17-2.00)**	1.28 (0.94-1.74)	1.16 (0.99-1.36)	0.96 (0.79-1.15)	1.66 (1.36-2.04)***	1.39 (1.09-1.76)**
Family income in rupees, past year (US$ equivalent)						
0-<35000 (US$ 0-<580)	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
35000-<70000 (US$580-<1160)	0.51 (0.37-0.69)***	0.75 (0.53-1.06)	0.67 (0.55-0.82)***	0.91 (0.72-1.16)	0.64 (0.51-0.81)***	0.89 (0.68-1.17)
70000-<110000 (US$ 1160-<1820)	0.50 (0.35-0.73)***	0.69 (0.46-1.04)	0.70 (0.56-0.89)**	0.88 (0.67-1.16)	0.57 (0.43-0.76)***	0.67 (0.48-0.92)*
≥110000 (US$ ≥1820)	0.64 (0.47-0.88)**	0.56 (0.38-0.83)	0.86 (0.71-1.08)	0.86 (0.66-1.11)	0.76 (0.60-0.97)*	0.56 (0.41-0.76)***
Education						
≤Primary	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
≥Secondary	0.91 (0.72-1.15)	0.95 (0.71-1.27)	0.86 (0.74-1.00)*	0.87 (0.72-1.06)	0.98 (0.82-1.16)	1.02 (0.81-1.28)
Respondent's drinking pattern[f]						
Binge drinker	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Non-binge drinker	0.38 (0.27-0.52)***	0.52 (0.37-0.73)***	0.27 (0.22-0.33)	0.29 (0.23-0.36)***	0.33 (0.26-0.43)***	0.36 (0.28-0.47)***
Abstainer	0.26 (0.19-0.34)***	0.31 (0.22-0.43)***	0.25 (0.21-0.29)***	0.23 (0.19-0.29)***	0.27 (0.22-0.33)***	0.25 (0.19-0.33)***

Characteristic	Physically hurt[b] (n=296)		Psychological abuse[c] (n=787)		Neglect[d] (n=559)	
	Unadjusted OR (95% CI)	Adjusted OR[e] (95% CI)	Unadjusted OR (95% CI)	Adjusted OR[e] (95% CI)	Unadjusted OR (95% CI)	Adjusted OR[e] (95% CI)
Location of residence						
Cuttack, Odisha	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Dhule, Maharashtra	2.16 (1.60-2.93)***	2.52 (1.80-3.55)***	2.42 (2.01-2.92)***	3.35 (2.70-4.16)***	5.28 (4.04-6.89)***	6.98 (5.18-9.40)***
Gangtok, Sikkim	2.23 (1.54-3.24)***	2.68 (1.74-4.13)***	0.89 (0.66-1.20)	0.94 (0.67-1.33)	2.98 (2.12-4.17)***	3.17 (2.14-4.71)***
Surat, Gujarat	0.62 (0.39-0.99)*	0.89 (0.55-1.46)	0.61 (0.46-0.81)**	0.78 (0.57-1.07)	0.95 (0.64-1.41)	1.31 (0.85-2.02)
Visakhapatnam, Andhra Pradesh	0.28 (0.16-0.47)***	0.29 (0.16-0.54)***	0.33 (0.25-0.45)***	0.54 (0.39-0.75)***	0.78 (0.55-1.13)	1.19 (0.79-1.78)

OR indicates odds ratio; CI indicates confidence interval.

*p<0.05, **p<0.01, ***p<0.001

[a] Missing responses were excluded from analyses so samples sizes do not add to 7,882 for all characteristics (average missing of approximately 2%).

[b] Odds ratios from binary and multilevel mixed effects logistic regression for reporting that a child was "physically hurt because of someone's drinking" monthly or more frequently in the past year.

[c] Odds ratios from binary and multilevel mixed effects logistic regression for reporting that a child experienced at least one form of psychological abuse ("Witness serious violence in the home" and/or "Yelled at, or verbally abused") monthly or more frequently in the past year.

[d] Odds ratios from binary and multilevel mixed effects logistic regression for reporting that a child experienced at least one form of neglect ("Left in a risky/unsafe situation due to poor supervision" and/or "In difficulty as there was not enough money for the things needed by them") monthly or more frequently in the past year.

[e] Multilevel mixed effects logistic regression adjusted for sex, rurality, family income, education, respondent's drinking pattern, and location of residence.

[f] Abstainers are defined as those who have not consumed an alcoholic beverage in the past year. Non-binge drinkers are defined as those who have consumed an alcoholic beverage in the past year but have not had five or more drinks during any occasion. Binge drinkers are defined as those who have consumed five or more drinks on any occasion in the past year.

Table 2.5. Odds of reporting multiple types of alcohol-related harm to children in past year by socio-demographics and respondent's drinking (n=7,882[a])

Characteristic	≥3 harm types vs. <3 harm types[b] (n=1,153)		≥4 harm types vs. <4 harm types[c] (n=491)	
	Unadjusted OR (95% CI)	Adjusted OR[d] (95% CI)	Unadjusted OR (95% CI)	Adjusted OR[d] (95% CI)
Sex				
Female	Ref.	Ref.	Ref.	Ref.
Male	1.02 (0.89-1.17)	0.83 (0.69-1.01)	1.06 (0.87-1.30)	0.84 (0.64-1.11)
Rurality				
Urban	Ref.	Ref.	Ref.	Ref.
Rural	1.64 (1.42-1.90)***	1.53 (1.28-1.82)***	1.40 (1.14-1.73)**	1.18 (0.92-1.50)
Family income in rupees, past year (US$ equivalent)				
0-<35000 (US$ 0-<580)	Ref.	Ref.	Ref.	Ref.
35000-<70000 (US$580-<1160)	0.54 (0.45-0.65)***	0.80 (0.65-0.99)*	0.54 (0.42-0.71)***	0.72 (0.53-0.97)*
70000-<110000 (US$ 1160-<1820)	0.76 (0.63-0.93)**	1.06 (0.84-1.34)	0.66 (0.49-0.89)**	0.79 (0.56 (1.10)
≥110000 (US$ ≥1820)	1.07 (0.90-1.28)	0.93 (0.74-1.18)	1.10 (0.86-1.41)	0.72 (0.52-0.99)*
Education				
≤Primary	Ref.	Ref.	Ref.	Ref.
≥Secondary	0.93 (0.82-1.05)	0.79 (0.66-0.93)**	1.09 (0.90-1.31)	0.96 (0.75-1.22)
Respondent's drinking pattern[e]				
Binge drinker	Ref.	Ref.	Ref.	Ref.
Non-binge drinker	0.43 (0.36-0.51)***	0.52 (0.43-0.63)***	0.32 (0.25-0.42)***	0.41 (0.31-0.55)***
Abstainer	0.32 (0.27-0.37)***	0.32 (0.27-0.39)***	0.28 (0.23-0.36)***	0.30 (0.23-0.38)***
Location of residence				
Cuttack, Odisha	Ref.	Ref.	Ref.	Ref.
Dhule, Maharashtra	4.16 (3.51-4.93)***	4.62 (3.79-5.63)***	5.09 (3.83-6.77)***	5.11 (3.73-7.01)***
Gangtok, Sikkim	1.97 (1.56-2.48)***	2.51 (1.92-3.28)***	3.85 (2.73-5.42)***	4.80 (3.29-6.98)***
Surat, Gujarat	0.68 (0.52-0.88)**	0.72 (0.54-0.96)*	1.41 (0.96-2.05)	1.73 (1.15-2.62)**
Visakhapatnam, Andhra Pradesh	0.24 (0.17-0.32)***	0.29 (0.21-0.41)***	0.35 (0.21-0.57)***	0.46 (0.26-0.79)**

OR indicates odds ratio; CI indicates confidence interval.
*p<0.05, **p<0.01, ***p<0.001

[a] Missing responses were excluded from analyses so samples sizes do not add to 7,882 for all characteristics (average missing of approximately 2%).
[b] Odds ratios from binary and multilevel mixed effects logistic regression for reporting ≥3 types of alcohol-related harm to children vs. reporting <3 types of harms.
[c] Odds ratios from binary and multilevel mixed effects logistic regression for reporting ≥4 types of alcohol-related harm to children vs. reporting <4 types of harms.
[d] Multilevel mixed effects logistic regression adjusted for sex, rurality, family income, education, respondent's drinking pattern, and location of residence.
[e] Abstainers are defined as those who have not consumed an alcoholic beverage in the past year. Non-binge drinkers are defined as those who have consumed an alcoholic beverage in the past year but have not had five or more drinks during any occasion. Binge drinkers are defined as those who have consumed five or more drinks on any occasion in the past year.

Table 2.6. Proportion of respondents reporting harm due to strangers' drinking in past year by frequency and type of harm (n=7,645)

Type of harm	% (95% Confidence Interval)		
	Never (0 times)	Occasionally (1-4 times)	Frequently (≥5 times)
Tangible			
Physical			
Been physically abused or hurt?	84.6 (83.8-85.5)	12.4 (11.7-13.2)	2.9 (2.6-3.3)
Been involved in a traffic accident because of someone else's drinking?	91.5 (90.1-92.1)	6.1 (5.5-6.6)	2.5 (2.1-2.8)
Sexual			
Received unwanted sexual attention?	96.6 (96.2-97.0)	2.3 (1.9-2.6)	1.2 (0.9-1.4)
Been forced or pressured into sexual activity?	96.7 (96.3-97.1)	2.4 (2.0-2.7)	1.0 (0.7-1.2)
Psychological			
Been verbally abused or threatened?	70.6 (69.6-71.6)	24.0 (23.0-24.9)	5.4 (4.9-5.9)
Been involved in a serious argument?	66.9 (65.9-68.0)	25.4 (24.4-26.3)	7.7 (7.1-8.3)
Property damage			
Had your house, car, or property damaged?	93.2 (92.7-93.8)	5.7 (5.2-6.2)	1.0 (0.8-1.3)
Intangible			
Experienced trouble or noise because of drinkers at a bar/drinking place?	82.2 (81.4-83.1)	12.8 (12.1-13.6)	4.9 (4.4-5.4)
Felt unsafe while using public transport or in any public place?	83.0 (82.2-83.9)	12.4 (11.7-13.2)	4.6 (4.1-5.0)
Gone out of your way to avoid drunk people or places where drinkers hang out?	74.9 (74.0-75.9)	17.3 (16.4-18.1)	7.8 (7.2-8.4)
Been annoyed be people vomiting, urinating, or littering after drinking?	81.9 (81.1-82.8)	12.1 (11.4-12.8)	6.0 (5.4-6.5)
Been disturbed or kept awake at night?	55.3 (54.2-56.5)	29.6 (28.6-30.7)	15.0 (14.2-15.8)

Table 2.7. Adjusted odds for experiencing alcohol-related harms from strangers' drinking in past year by domain of harm and location of residence

Characteristic	Tangible					
	Physical[a]	Sexual[b]	Psychological[c]	Property damage[d]	Overall tangible[e]	Overall intangible[f]
	Adjusted Odds Ratio[g] (95% Confidence Interval)					
Location of residence						
Cuttack, Odisha	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Dhule, Maharashtra	3.6 (3.0-4.3)***	5.0 (3.1-8.2)***	1.8 (1.5-2.0)***	6.4 (4.7-8.8)***	2.7 (2.3-3.1)***	2.9 (2.4-3.4)***
Gangtok, Sikkim	1.7 (1.3-2.2)***	7.9 (4.6-13.7)***	0.4 (0.3-0.5)***	2.5 (1.7-3.8)***	0.6 (0.5-0.8)***	0.8 (0.7-1.0)
Surat, Gujarat	0.8 (0.6-1.0)*	3.7 (2.1-6.3)***	0.4 (0.3-0.4)***	2.0 (1.3-3.1)**	0.4 (0.3-0.4)***	0.5 (0.4-0.6)***
Visakhapatnam, Andhra Pradesh	0.5 (0.4-0.6)*	3.0 (1.7-5.0)***	0.2 (0.2-0.2)***	0.4 (0.2-0.7)**	0.2 (0.2-0.2)***	0.3 (0.2-0.3)***

Ref.: Reference group

*p<0.05, **p<0.01, ***p<0.001

[a] Multilevel mixed effects logistic regression models for experiencing at least one type of physical harm, including "Been physically abused or hurt?" and/or "Been involved in a traffic accident because of someone else's drinking?"

[b] Multilevel mixed effects logistic regression models for experiencing at least one type of sexual harm, including "Received unwanted sexual attention?" and/or "Been forced or pressured into sexual activity?"

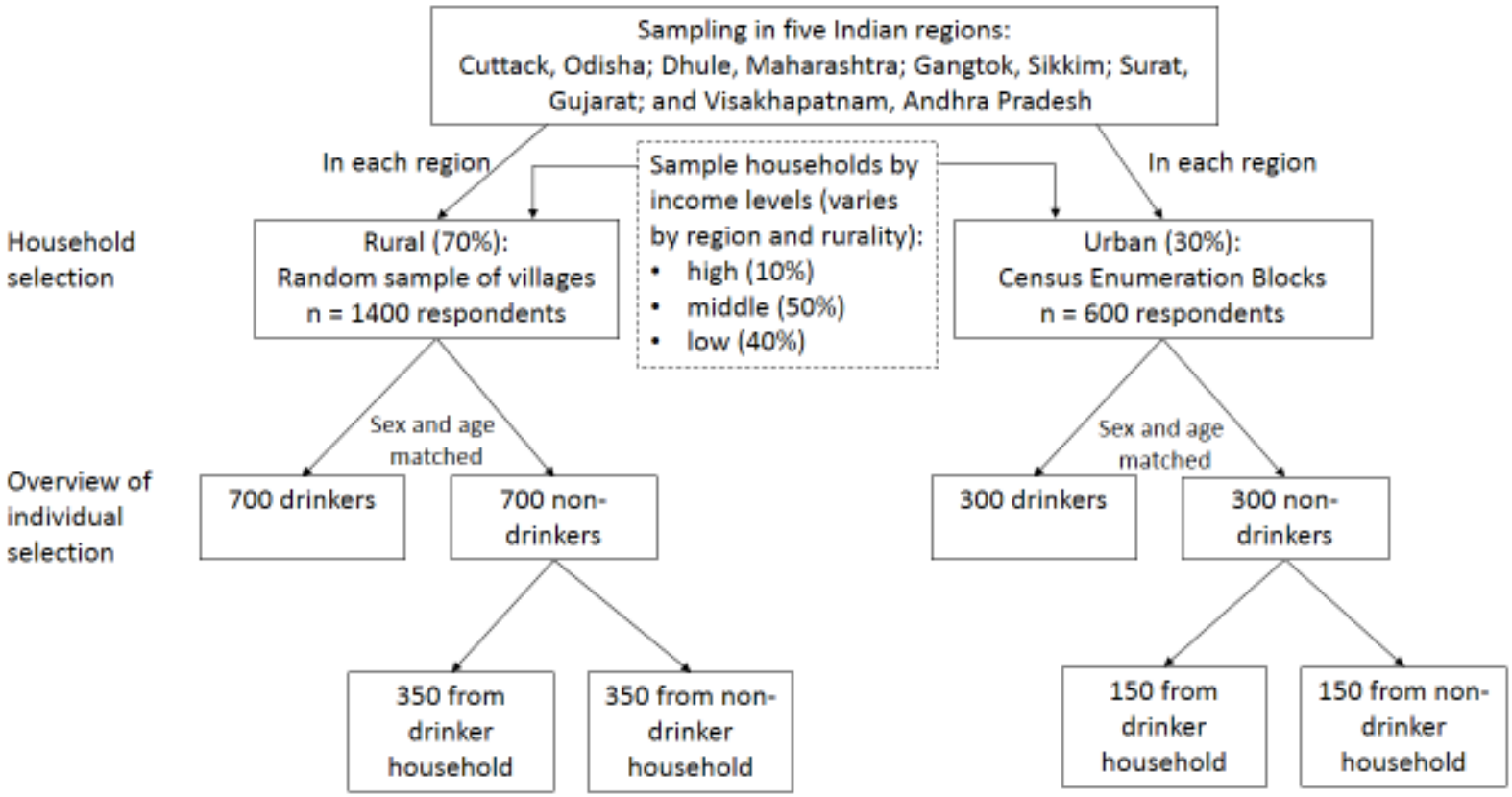
[c] Multilevel mixed effects logistic regression models for experiencing at least one type of psychological harm, including "Been verbally abused or threatened?" and/or "Been involved in a serious argument?"

[d] Multilevel mixed effects logistic regression models for reporting "Had your house, car, or property damaged?"

[e] Multilevel mixed effects logistic regression models for experiencing at least one of the seven types of tangible harms vs. none.

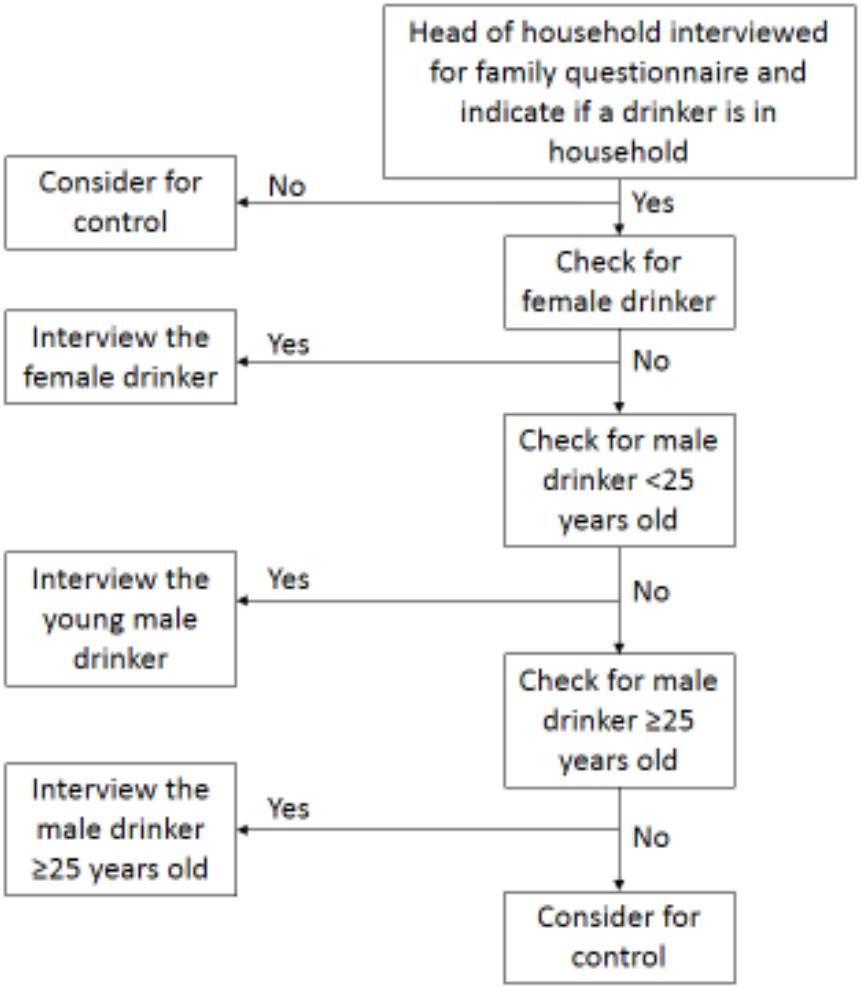
[f] Multilevel mixed effects logistic regression models for experiencing at least one of the five types of intangible harms vs. none.

Figure 2.1. Selection of households and individuals for the parent study



Source: Adapted from National Institute of Mental Health and Neuro Sciences (2012)[24]

Figure 2.2. Sampling process to select individual respondents for interviews in the parent study



Source: Adapted from National Institute of Mental Health and Neuro Sciences (2012)[24]

Figure 2.3. Proportion of respondents reporting alcohol-related harms to children in past year by number of types of harm and location of residence

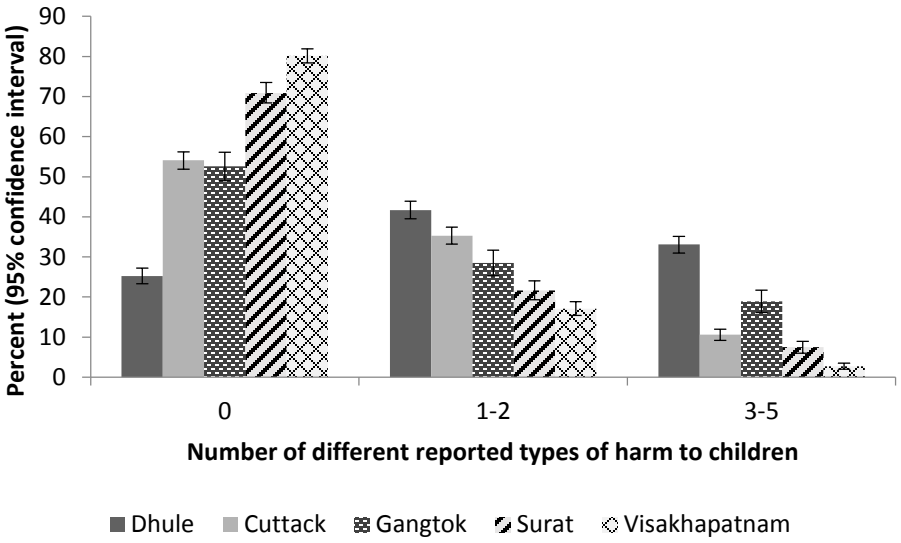
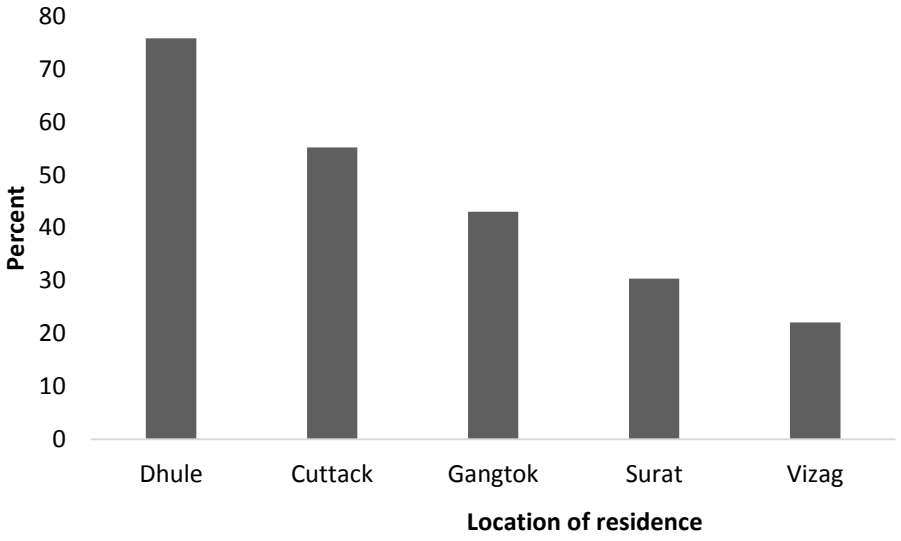


Figure 2.4. Proportion of respondents experiencing at least one tangible harm from strangers' drinking in past year by location of residence



Chapter 3: Preventing Alcohol-Related Harms to Others: Ethical Considerations for Implementing Physical Availability Alcohol Control Policy Interventions in India

Abstract

With multinational alcohol corporations expanding their consumer base in emerging markets, the secondhand effects of alcohol use, also known as alcohol-related harms to others, are likely increasing as well. Vulnerable populations are affected by others' drinking but the ethics of implementing alcohol control policies to reduce these harms has not yet been examined. The primary aim of this paper is to apply a public health ethics framework to systematically consider the ethical implications of implementing policies to prevent alcohol-related harms to others, using India as a case example. We discuss evidence of alcohol-related harms to others and present evidence on the effectiveness of alcohol policies that reduce alcohol's physical availability. We apply a public health ethics framework to explore the ethics of implementing more alcohol control policies in India to reduce harms from others' drinking. We conclude by recommending that public health professionals consider the ethical aspects of such prevention strategies.

Key words: alcohol consumption, alcohol-related harm, harms to others, policy, public health ethics, prevention

Introduction

In August 2014, the government of the south Indian state of Kerala voted in favor of taking steps to achieve state-wide total alcohol prohibition within the next decade.[1] Earlier that year, the government did not renew alcohol licenses for more than 400 bars and planned to terminate licenses for an additional 300 bars. Bars would only be permitted in five-star hotels, and they were barred from selling alcohol on Sundays.[2] Kerala's Chief Minister, Oommen Chandy, and the leading government party justified these policy proposals as a strategy to reduce average per capita alcohol consumption, as it was higher among Keralites compared to those in other Indian states.[1] Proponents of the alcohol bans argued that action was necessary to reduce alcohol-related harms, such as road traffic crashes and marital problems.[3] The effects of the closures of the first 418 bars were promising in terms of public safety, with a 31% reduction in crime rates.[4]

However, the prohibition policy plans were met with strong opposition from the alcohol industry, bar owners, and tourism sector.[2,5,6] The alcohol industry raised ethical concerns; Vice-Chairman and Chief Executive, Deepak Roy, of Allied Blenders and Distillers (a leading company that manufactures and sells Indian-made foreign liquors)[7] stated: "It's a retrograde measure that destroys the livelihood of thousands working in the sector and takes the right of choice away from consumers."[8] Bar owners and hoteliers feared the decline in business from tourists and claimed that the bans were discriminatory, and thus, brought their concerns to the Kerala High Court.[6] While the case was pending in the Kerala High Court, with less than two weeks advance notice, the government informed bar owners of non-five-star hotels that their businesses would soon be shut down.[9] Bar

owners urgently pleaded with India's (national) Supreme Court for permission to stay in business until the High Court reached a decision.[10] The Supreme Court questioned the legality and fairness of allowing licenses only in five-star hotels,[11] and said that prohibition policies should not differentiate by wealth status.[12] The Supreme Court thus permitted 730 bars to remain in business until the High Court issued a verdict,[12] however, the Kerala High Court would be the ultimate final decision-maker.

In October 2014, the Kerala High Court determined that the prohibition policy was a legal approach for reducing alcohol-related problems,[3] with the modification that bars in a broader range of hotels should be permitted.[13] The extent to which public health data were presented in either court is not publicly known. It appears that the Supreme Court's decision primarily focused on class discrimination as opposed to public health outcomes.[12] In contrast, Kerala's Chief Minister Oommen Chandy, as well as the national-level Union Health Minister Harsh Vardhan put more emphasis on reducing alcohol consumption in their support of prohibition policies.[14] However, what is not clear in either case is whether the ethical tradeoffs of the proposal were considered.

Although total prohibition is an extreme example, this recent situation in Kerala points to the responsibility of public health professionals and decision-makers for considering ethical implications when recommending the implementation of alcohol control policies – even if engaging in the ethical debate introduces issues that compete with public health values.[15] Therefore, the aim of this paper is to apply a public health ethics framework to systematically consider the ethical implications of implementing policies to prevent

alcohol-related harms to others, using India as a case example. We discuss the public health responsibility of preventing harms to others, and describe the Indian alcohol environment to establish the national and cultural context. We then review global evidence on the effectiveness of alcohol control policies that reduce the physical availability of alcohol. Appling a public health ethics framework, we explore the ethics of increasing the use of effective population-level alcohol control policies as a strategy for reducing harms from others' drinking, and conclude by recommending that public health professionals be prepared to address the ethical aspects of such prevention strategies.

Public health ethics and preventing harms to others

In 1879, ethical philosopher John Stuart Mill underscored the obligation for public health to prevent harm to others in his seminal essay, *On Liberty.*[16] A century later, another ethical philosopher, John Rawls, supported Mill's argument, stating that individuals have moral natural duties not to harm others.[17] Rawls asserted that natural duties apply to moral individuals "without regard to our voluntary acts" and "hold between persons irrespective of their institutional relationships; they obtain between all as equal moral persons."[17, p. 98-99] There is a general consensus that public health professionals have a responsibility to prevent harm to others, as a primary goal of public health is to improve the public good;[15] however, the extent to which public health can implement interventions that restrict individuals' autonomy as a means of achieving their goals is debated.[18,19] With the inherent population-focused nature of public health, governments commonly play a role in carrying out public health interventions, distinguishing government from the clinical field that seeks to improve the health of individuals.[20] Thus,

governments and public health professionals must consider unique ethical implications of their interventions, such as whether the expected benefit to the population outweighs the obligation to respect individuals' liberties.[21]

Emerging research on harm from others' alcohol consumption, or "the harm experienced as a result of someone else's drinking, the associated costs or the perspectives of those secondarily affected,"[22(p1603)] documents a broad range of harms,[22-25] including harms to those with limited control over their exposure to another person's drinking (e.g., children and strangers).[23,26-28] From prior research, it is evident that vulnerable populations are affected by others' alcohol consumption,[23,26,29-31] suggesting the importance of preventing these harms.

Context of Indian alcohol environment

With the globalization of the beverage alcohol industry,[32] alcohol use is becoming more widespread in low- and middle-income countries, including in the world's second most populous country of India.[33] Adult per capita consumption in India is 4.3 liters of pure alcohol, lower than the global average of 6.2 liters. However, annual per capita consumption among Indian drinkers is 28.7 liters of pure alcohol, which is 1.7 times greater than the global average of 17.2 liters, suggesting a high prevalence of heavy episodic drinking among those who drink.[33] The common heavy drinking among drinkers, and a large, but shrinking, proportion of the population that abstains from alcohol, provides a unique and important setting for studying the burden of and considerations for preventing harms from others' alcohol consumption.[34,35]

Alcohol-related harms to others in India and ethical considerations

Public health ethicists Bayer and Fairchild have stated: "For government to impose restrictions on those who represent a risk to others falls clearly within the broadly accepted exercise of state power in liberal societies and in principle entails no fundamental problem for the autonomy-focused perspective of bioethics. Problems emerge where the risk to others is uncertain."[19(p485)] To address this need for assessing the risk to others prior to imposing regulations, in the following section, we present evidence on the harms to children and strangers caused by others' drinking in India.

Alcohol-related harms to children

Adults' alcohol consumption can be associated with harms to children that span the domains of child maltreatment, which is defined by the United Nations as: "all forms of physical or mental violence, injury and abuse, neglect or negligent treatment, maltreatment or exploitation, including sexual abuse."[36(p6)] Experiences of child maltreatment are associated with increased risk for behavioral, emotional, and academic problems.[37,38] A large body of global evidence shows the impact of others' drinking on specific harms to children, such as fetal alcohol syndrome[39-41] and drink-driving.[42-46]

The limited evidence available from Indian studies suggests that adults' drinking may generally be associated with reporting of harms to children. Gururaj *et al*[30] assessed the burden of alcohol consumption in of the south Indian city of Bangalore and found that drinkers attributed 44% of their abuse to their children to alcohol consumption. Drinkers

were more likely than non-drinkers to report abusing their children (27% vs. 21%).[30] Another study among women in Goa found that 9% of respondents reported harm to their children due to their partners' drinking.[31]

Bonu *et al*[29] assessed specific types of harms to Indian children using data from India's second wave of the 1998-1999 National Family Health Survey and data on children's health care utilization. The authors empirically explored the associations between current alcohol and tobacco use and health outcomes (e.g, child immunization, severe underweight and stunting, and infant mortality) and found that children from households with a tobacco and alcohol user were more likely to experience worse outcomes compared to children from non-user households.[29]

From a public health ethics perspective, the key question is whether the evidence on the association between adults' alcohol consumption and increased risk of harms to children is strong enough to warrant the implementation of additional evidence-based alcohol control policies.

Alcohol-related harms from strangers

In India, alcohol's role in public crimes and nuisances is often overlooked; thus, there is limited evidence on the harms imposed on others from strangers' drinking.[30] Benegal *et al*[47] examined a range of alcohol-related harms from others, potentially including some adverse effects of strangers' drinking, but respondents did not specify their type of relationship with the perpetrator. In the Indian Andaman and Nicobar Islands, Benegal *et*

al[47] found that approximately 20% of respondents experienced alcohol-related harms from others' drinking, such as being physically or sexually assaulted or being insulted/disturbed. Another Indian study found that alcohol consumers were 2.9 times more likely to perpetrate violence, with 7.7% of drinkers reporting committing violence and 2.7% of abstainers.[48] However, this study did not examine the prevalence of violent victimization specifically from strangers' drinking.

Evidence suggests that socio-demographic characteristics, such as gender and income, are also associated with experiencing alcohol-related harms from people they do not know.[27,49,50] Examining the distribution of harms is important from a justice perspective, as it can show whether certain subgroups of the population experience a greater burden than others, for example, those in lower-income groups compared to their wealthier counterparts. It is possible that the implementation of more evidence-based population-level alcohol policies could reduce inequalities across groups in the Indian population, if such inequalities exist.[51]

Evidence base for effective alcohol control policies

The emerging evidence of harms from others' drinking suggests that the implementation of alcohol control policies to effectively prevent such harms needs to be considered. A strong body of evidence, mostly from high-income countries, suggests that environmental alcohol control policies can reduce alcohol-related problems amongst drinkers, as well as non-drinkers.[52] Based on this evidence, the World Health Organization recommends policies that decrease alcohol's physical availability, increase its price, and reduce

exposure to alcohol marketing.[33] In this paper, we focus on policies that reduce the physical availability of alcohol.[53-55] Policies to reduce the availability of alcohol include regulating the density of alcohol outlets, government monopoly systems, and days of sales restrictions. Theoretically, policies to regulate alcohol's physical availability affect the availability of alcohol in the environment by increasing the effort required for individuals to obtain alcohol, thereby reducing the quantity consumed and related harms.[52]

Alcohol outlets are places that sell alcohol for consumers to drink (e.g., bars or liquor stores). Outlet density regulation may entail reducing the density of existing alcohol outlets, limiting numbers of additional outlets, or both. Findings from a systematic review of 88 studies indicated that greater alcohol outlet density was associated with increased alcohol consumption and related health and social harms in the general population.[56] Toomey *et al*[57] explored the association between outlet density and violent (e.g., assault, robbery, rape) and non-violent crime (e.g., public alcohol consumption and drinking-driving)[58] in 83 neighborhoods of Minnesota, in the United States. The findings suggest a significant relationship between alcohol outlet density and both types of crime, such that reducing the density of alcohol outlets would result in decreased crime rates.

Another approach to reduce the availability of alcohol is to establish a government monopoly system over production, distribution or retail sales of alcohol, as opposed to a private system operating under government license. Monopolies inherently limit competition, and this limit is associated with reduced alcohol sales.[59] A systematic review

of 17 studies found that privatization was associated with a 44% median increase in per capita sales.[55] One study in the review examined the effects of the re-monopolization of alcohol sales in Sweden on alcohol-related harm, measured by hospitalizations. With the re-monopolization, the researchers found that alcohol-related hospitalizations (e.g., motor vehicle crashes and assaults) fell from 14.5% to 3.5%.[60]

Furthermore, maintaining limits on the days in which alcohol is sold can effectively reduce alcohol-related harms. Middleton *et al*[54] conducted a systematic review on the impact of changes in days of alcohol sales on alcohol consumption (e.g., removing a ban on Sunday alcohol sales) and related harms. Evidence from 14 studies suggested that revoking a day of sale ban was associated with increased alcohol use, motor vehicle crashes, and assaults. Therefore, maintaining regulations on days of allowable alcohol sales is likely to prevent increases in alcohol-related harms to others.

Robust data are not available from low- and middle-income countries on the effectiveness of alcohol control policies and there is some uncertainty about whether the effectiveness of specific policies is the same in these countries compared to high-income countries.[52,61] As discussed in the following sections, there is some evidence suggesting that policies to reduce the physical availability of alcohol are effective in the Indian context.[62-65] However, these policies have ethical implications that need to be considered.

Application of public health ethics framework

There is a perpetual tension in public health between the ethical principles of beneficence, respect for autonomy, and justice while implementing government regulations that promote population-level health.[66] In India, public health experts recently published an ethical framework for tuberculosis prevention programs, and they argued that ethical issues and unintended consequences of public health programs are too often overlooked in low- and middle-income countries, as there is common sentiment that public health interventions will be good for the public.[67] The authors suggested that ethical evaluations be brought to the attention of policymakers and public health decision-makers; this section of the paper contributes to achieving that goal for alcohol policies designed to prevent harm from others' drinking. We use Kass' six-step public health ethics framework (see Table 3.1) that provides "an analytic tool, designed to help public health professionals consider the ethics implications of proposed interventions, policy proposals, research initiatives, and programs"[18(p1777)] to consider the ethics of implementing alcohol control policies that reduce alcohol's physical availability.

Step 1

The first step of the Kass framework is that the proposed policy interventions should have a fundamental public health goal of reducing morbidity or mortality.[18] The objective of reducing morbidity or mortality aligns with the ethical principle of beneficence, which refers to the duty to prevent harm and promote goodness.[68] Indeed, the goal of alcohol control policies is to reduce alcohol-related problems to drinkers themselves, as well as to others, such as children and strangers.[69] Alcohol control policies would be harder to justify with the beneficence principle if only drinkers were impacted by the effects of the

regulations.[20] However, there is ethical support for policy interventions that have the potential to protect vulnerable populations unable to protect their own interests, such as children.[70] Applying the beneficence principle also suggests the importance of policies to prevent morbidity and mortality associated with alcohol-related harms from strangers' drinking. Experiences of harms from unknown people may affect how comfortable and safe citizens feel in their communities.[28] Harms from strangers' alcohol use are often unavoidable and people may not be able to protect themselves from these situations.

Step 2

In the second step, Kass indicates that the proposed policy intervention should have evidence of effectiveness at reducing morbidity or mortality.[18] As described above, many types of policies that reduce the physical availability of alcohol have been found to effectively decrease alcohol-related problems,[52,54-56] and for the purpose of applying this framework, we focus on policies that expand the government's control over alcohol outlets as a strategy to reduce harms from others' drinking. Consistent with the global evidence on the effectiveness of regulating alcohol outlet density,[56] evidence from an Indian study suggests that policies aiming to reduce the availability of alcohol by increasing the government's control over alcohol outlets may be an effective way to decrease alcohol-related problems.[63] The authors found that this type of policy is likely the most cost-effective strategy to increase revenue and reduce informal alcohol production and consumption, when compared to a system of auctioning licenses to alcohol outlet owners and increased taxation of alcoholic beverages. A policy intervention that reduces the production and consumption of informal alcohol, or alcohol

outside of the regulated market, is likely to be associated with reduced alcohol-related morbidity.[71,72]

Step 3

In the third step, Kass states that potential burdens of the proposed policy should be acknowledged.[18] In this step, it is important to consider the ethical principle of individual autonomy, which refers to self-ruling and the freedom from external control.[68] In the context of alcohol use, this suggests not placing restrictions on when and where individuals can legally consume alcohol, recognizing individuals' rights to act in accordance with their own values and beliefs.[66] The primary burden associated with enhanced government control over alcohol outlets would be from the perspective of private alcohol outlet owners. With reduced privatization, alcohol outlet owners would experience reduced autonomy to run their businesses without government oversight. Greater government control could also lead to increased bureaucratic procedures and result in inefficient business practices for alcohol outlet owners, as India's governmental bureaucracy continues to draw criticism from advocates of economic development for its stifling and outdated routines.[73]

Step 4

In the fourth step, Kass indicates that public health professionals and policymakers should make an effort to reduce the burdens and consider alternatives that lessen the burdens.[18] Among the many evidence-based alcohol control policy options,[33,52] examples of other policies to reduce harms from others' drinking by decreasing the availability of

alcohol include limiting the days of alcohol sales or partial prohibition (e.g., prohibiting sales of specific types of alcoholic beverages).

India has designated "dry days" when alcohol sales are not permitted, including many national holidays and days near governmental elections. Scientific evidence of effectiveness on Indian dry days is not available; however, local knowledge suggests that dry days may have limited effectiveness at reducing alcohol-related problems because people are able to stock-up on alcohol beforehand.[74] Evidence from a systematic review suggests that limiting availability on one day each week may be an effective strategy to reduce alcohol-related harms, concluding that the repeal of bans on Sunday alcohol sales was associated with increased alcohol consumption.[54] A Canadian study also found that banning alcohol sales on Sundays was not associated with increased consumption on other days of the week.[75] The ethical barriers to banning alcohol sales one day per week include the burdens to alcohol outlet merchants, such as the loss of revenue due to reduced alcohol sales and the reduced individual freedom to work each day. Individual liberties of alcohol consumers would also be reduced, as they would not be able to legally purchase alcohol seven days per week.

Partial prohibition, including bans on sales of specific types of alcohol, is another policy option; however, it would be more coercive than increasing the government's control over alcohol outlets, as it restricts consumers' choice of beverages. One Indian study found that complete bans on alcohol consumption were associated with a 22% reduction in alcohol consumption; however, in states with partial prohibition, there was evidence

that some drinkers simply switched to another beverage type.[64] Thus, partial prohibition may not yield reductions in harms from others' drinking; the case for this policy approach is weaker from an ethical standpoint, as there is less rationale for reducing individuals' autonomy.

Enhancing individuals' liberties was apparently a contributing factor in recent policy decisions in Kerala, as the government feared that infringing on individuals' autonomy to purchase alcohol would reduce tourism. In December 2014, the state government lessened the restrictiveness of their prohibition policies by allowing all levels of hotels to apply for licenses to sell beer and wine and revoking bans on Sunday alcohol sales, stating that "the decision was taken to attract tourists and protect jobs."[76]

Step 5

In the fifth step, Kass states that the proposed policy should follow the principle of distributive justice and be implemented fairly.[18] The principle of justice refers to fairness, equity, and unbiased distribution in society.[66] From a justice perspective, governmental policy interventions should be implemented fairly, which in the context of preventing harms from others' drinking, means that alcohol control policies should be implemented uniformly across populations.[68] Policies that increase the government's control over alcohol outlets should be implemented at the population level and not be targeted towards certain areas or specific groups of people; these types of policies are ethically preferable to targeted policies, as they result in a fair distribution of benefits and burdens.

Alcohol control policies that reduce access to alcohol by regulating the density of alcohol outlets thus appear to fulfill the justice principle if they are implemented uniformly across populations.[52] However, some might argue that even population-wide implementation will affect some groups more than others since alcohol consumption is not evenly distributed across the population. For example, in India, the prevalence of alcohol consumption is higher among men, those living in rural areas, and those earning lower incomes,[77] thus, members of these groups may be impacted by the implementation of evidence-based alcohol control policies to a greater extent than those who drink less. Notably though, the heavier drinkers are likely causing greater harm to society compared to lighter drinkers,[78,79] so the potential benefit to members of these groups is also high.

Step 6

In the sixth step, Kass indicates that benefits and burdens of the proposed policy should be fairly balanced, as determined by a democratic process.[18] Protecting the individual's autonomy is one of the core ethical principles;[66] however, infringements on an individual's freedoms may be justified if policy interventions offer protection to a significant number of people[80] – consistent with the classic 'harm principle.'[16] Importantly, even when policy interventions are proposed to protect vulnerable populations, policymakers should carefully select interventions with the least infringement on individuals' autonomy.[20] Additional studies on the specific types of harms resulting from others' drinking in India would facilitate a more thorough discussion in this step, as the evidence would help the public and policymakers decide

whether enhanced government control over alcohol outlets could yield population-level benefits that outweigh reducing individuals' autonomy.

Limitations

Our paper has limitations. First, we did not interview policymakers about the type of evidence that would lead them to enact more evidence-based alcohol control policies or test the use of the ethics framework in the Indian context. Second, we focused on the domain of policies that limit the availability of alcohol as an example but policy options in other domains of evidence-based alcohol control policies[52] may introduce unique ethical implications to consider. Third, we only discussed one public health ethics framework; some public health professionals and decision-makers may find other frameworks more useful.[20,81,82]

Conclusions

With multinational alcohol corporations expanding their consumer base in emerging markets such as India,[32,83,85] prevalence of harms from others' drinking is likely increasing as well.[86] Evidence on harms from others' alcohol use adds an important dimension to debates over alcohol policies, and can be used to inform discussions on the ethical implications of implementing evidence-based population-level preventive measures and policies. As shown by the recent debates over proposed alcohol policy changes in Kerala, India, public health professionals and decision-makers need to carefully consider the balance between public health values and ethical principles when forming recommendations and implementing policy interventions. Future studies could

qualitatively examine policymakers' opinions about how evidence and ethical implications contribute to their decisions for enacting alcohol control policies. Public health professionals will be better able to carry out their responsibility to address harms from others' drinking if they can also communicate effectively with the public and policymakers about the ethical implications of using effective policies to reduce those harms.

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Table 3.1. Six steps of Kass' public health ethics framework for deliberating policy interventions

Step number	Ethical considerations
1	What are the public health goals of the proposed policy intervention?
2	How strong is the evidence of effectiveness for the proposed policy intervention to accomplish its intended goals?
3	What are the burdens associated with the proposed policy intervention?
4	How can the burdens be reduced? Are there alternative options to consider?
5	Will the proposed policy intervention be implemented fairly, in regards to the principle of distributive justice?
6	How can the benefits and burdens of the proposed policy intervention be fairly balanced?

Source: Kass[18]

Chapter 4: Physical Abuse, Psychological Abuse, and Neglect: Evidence of Alcohol-Related Harm to Children in Five States of India

ABSTRACT

Importance: In India, alcohol consumption has been increasing in recent years and child maltreatment is highly prevalent; however, information on various types of harms to children resulting from adults' drinking is limited.

Objective: To assess the burden of alcohol-related harm to children spanning domains of physical abuse, psychological abuse, and neglect, and predictors for adults' reporting such harms.

Design: Cross-sectional, secondary data analysis.

Setting: Household interviews in five Indian regions, conducted from October 2011-May 2012.

Participants: 7,882 Indian adults, ages 18-70 (69.7% male). A stratified, two-stage sampling technique was employed: first, households in Census Enumeration Blocks (for urban, 30%) or in a random sample of villages (for rural, 70%); second, individuals within households. Respondents who reported consuming an alcoholic beverage at least once in the past year were sex and age matched with respondents who did not report consuming alcohol. The participation rate was 97.3%.

Main Outcome and Measures: Adult respondents' reports of five types of alcohol-related harm to children (respondents were not necessarily the perpetrators of the harms) and characteristics associated with reporting harms.

Results: Forty-four percent (3,492) of adults reported at least one alcohol-related harm to children in the past year; among them, 62.1% reported multiple. Sixteen percent reported physical harm (95%CI: 15.2-16.8). Children witnessing serious violence at home was also common (18.2%, 95%CI: 17.4-19.1). Approximately 16% (95%CI: 15.3-16.9) of respondents reported children being left in a risky/unsafe situation due to poor supervision. Controlling for other factors, living in a rural area was associated with 1.29 greater odds of reporting physical harm ($p<0.01$) and 1.73 greater odds of reporting neglect ($p<0.001$). For otherwise similar respondents, compared to binge drinkers, non-binge drinkers had 39% reduced odds of reporting physical harm, 35% reduced odds of reporting psychological harms, and 47% reduced odds of reporting neglect ($p<0.001$ for all).

Conclusions and Relevance: A substantial proportion of adults, across five Indian states, reported harm to children from adults' drinking, including physical abuse, psychological abuse, and neglect. Documenting a wide range of types of alcohol-related harms to children and characteristics of adults reporting such harms can guide the development of preventive interventions.

Keywords: alcohol-related harm, harm to others, child abuse, child maltreatment, alcohol consumption, India

INTRODUCTION

Estimates from the 2010 Global Burden of Disease Study suggest that among 5-19 year-olds in India, alcohol is involved in 5,900 deaths and more than 407,000 years of life lost.[1] However, alcohol's role is underestimated in the Global Burden of Disease findings, as it only accounts for tangible outcomes (e.g., injuries)[2,3] and does not include less tangible harms (e.g., neglect).[4] A growing body of global evidence suggests that adults' drinking is associated with a wide range of tangible and less tangible alcohol-related harms to children.[5-7] Among respondents who had parental responsibility for children (≤17 years-old), 12% of Australians[8] and 17% of New Zealanders[6] reported that their child experienced one or more of the specified harm types resulting from others' drinking in the past year.

Child maltreatment, which can span domains of physical, psychological, and sexual abuse, as well as neglect,[9,10] is a severe problem throughout the world,[10,11] including India;[12,13] however, little is known about alcohol's role in child maltreatment in Indian society. In 2007, the Government of India studied the prevalence of child abuse among 17,200 children from 13 states.[12] The report indicated that two-thirds of Indian children experienced physical abuse, more than half experienced some form of sexual abuse, and half experienced psychological abuse; these high estimates are a major concern for children's development. A meta-analysis of 124 studies on non-sexual child maltreatment found evidence of causal relationships with long-term health consequences including mental health, substance use, suicide, and risky sexual behavior.[14] The authors also

indicated that some evidence suggests child neglect can be as severe as physical and emotional harm.

With the documented problem of child abuse in the country, the Government of India called for more research on risk factors of its various forms.[12] Seven years later, the role of adults' alcohol consumption in child abuse remains understudied. One study in the southern city of Bangalore assessed the societal burden of alcohol consumption; the findings showed that drinkers attributed 44% of child abuse to alcohol consumption and drinkers were 25% more likely to report abusing a child (26.6%) compared to non-drinkers (21.3%).[15]

In a country such as India, where alcohol consumption is rising,[16-18] studies documenting the types of alcohol-related harms that children are subjected to from others' drinking are needed to inform prevention strategies. The primary objective of this study was to assess the types of alcohol-related harms to children occurring across domains of physical abuse, psychological abuse, and neglect. The secondary objective was to explore adults' socio-demographic characteristics and drinking patterns associated with reporting such harms.

METHODS

Data for this cross-sectional study came from a case-control study that was administered by the Indian National Institute of Mental Health and Neuro Sciences (NIMHANS) and local partners from October 2011 to May 2012. The original study examined drinking

patterns and alcohol-related consequences and details about the study methodology are available elsewhere.[19] In brief, of the 8,333 adults in the parent study, data for this study were available from 7,882 Indians, ages 18-70. Participants from five regions of India (Cuttack, Odisha; Dhule, Maharashtra; Gangtok, Sikkim; Surat, Gujarat; and Visakhapatnam, Andhra Pradesh) were interviewed. The samples were smaller in two sites (Gangtok and Surat) due to logistical and administrative aspects of data collection. Interviewers recruited drinkers as cases (i.e., consumed an alcoholic beverage at least one time in the past year) and non-drinkers as controls (i.e., had not consumed an alcoholic beverage in the past year), matched by sex and age.

A stratified, two-stage sampling technique was employed. Households were selected in Census Enumeration Blocks (for urban, 30%) or in a random sample of villages (for rural, 70%) in stage one. Individuals in each household were chosen in stage two. In households with a female drinker or a male younger than 25 years old, priority was given to interviewing these individuals because of the small proportion of drinkers in those groups in the Indian population.[20] The participation rate was 97.3%. Interviewers obtained verbal consent and carried out the interviews in the local language or in English, lasting around 45 minutes. Incentives were not offered. The Ethical Review Committee of the WHO and the NIMHANS Ethical Committee approved the original study. The Johns Hopkins Bloomberg School of Public Health Institutional Review Board (IRB) determined that IRB oversight was not required for the secondary analysis of these data.

The interview questions analyzed in this study were from the World Health Organization (WHO) *Harm to Others from Drinking Master Protocol.*[21] To measure alcohol-related harms to children (hereinafter referred to as harms), interviewers asked adult respondents, "How many times in the last one year, because of someone's drinking (including your own), was any child… *[specific harm]*." The respondent was not necessarily the perpetrator of the harms. The interviewer assessed the frequency of five types of harms (see Table 4.2 for exact questions). Response options were 'never,' 'less than monthly,' 'monthly,' 'weekly,' and 'daily;' we collapsed the categories into 'never' versus 'ever occurred in past year' for our analyses.

We categorized the five harm types into three domains: physical abuse, psychological abuse (i.e., witness of serious violence and verbal abuse), and neglect (i.e., left in a risky/unsafe situation due to poor supervision, and not enough money for a child's needs). For each respondent, we calculated the sum of the non-never responses for each of the five harm types. We created a dichotomous variable from the total number of harm types reported to assess predictors for adults' reporting of greater than the mean (≥2) harm types versus none.

We assessed respondents' socio-demographic characteristics and drinking patterns and created dummy variables for characteristics with more than two levels (family income, location of residence, and respondent's drinking). Abstainers were defined as 'never' having consumed an alcoholic beverage in the past year; non-binge drinkers were defined as those who had not consumed ≥5 drinks during any occasion, but had consumed an

alcoholic beverage in the past year; and binge drinkers were defined as those who had consumed ≥5 drinks on an occasion in the past year.

We calculated the proportion and 95% confidence intervals (CI) of respondents reporting each harm within the past year. We conducted binary logistic regression[22] and multilevel mixed effects logistic regression[23] to explore associations between respondents' socio-demographic characteristics and drinking patterns and odds of reporting harms in the three domains, as well as odds of reporting multiple types of harms. The multilevel mixed effects logistic regression analyses modeled a random effect for the location of residence intercepts, allowing for group-level variability.[24] Variables of theoretical importance selected for the models included sex, rurality, family income, education, respondent's drinking pattern, and location of residence.[16,20,25,26] In the regression analyses involving respondents' drinking patterns, binge drinkers were used as the reference group since we hypothesized that binge drinkers would have greater odds of reporting harm than non-binge drinkers and abstainers. Results were considered significant at $p<0.05$.

If respondents had missing socio-demographic or drinking pattern data that could not be imputed using information from other questions, it was treated as missing and excluded from analyses (average missing was approximately 2%). Analyses were conducted in Stata-12.1.[27]

RESULTS

The study population included 7,882 adults (69.7% male) (Table 4.1). Twenty-seven percent of respondents had consumed an alcoholic beverage in the past year but did not binge drink, while 19.7% of respondents reported binge drinking.

[Insert Table 4.1]

Forty-four percent of respondents reported that a child experienced one or more types of alcohol-related harm. Sixteen percent (95%CI: 15.2-16.8) reported physical harm (Table 4.2). Psychological harms were commonly reported (37.0%, 95%CI: 35.9-38.0), including a child witnessing serious violence at home (18.2%, 95%CI: 17.4-19.1) and verbal abuse (30.7%, 95%CI: 29.6-31.7). Respondents also reported alcohol-related child neglect (24.6%, 95%CI: 23.7-25.6), such that 16.1% (95%CI: 15.3-16.9) reported a child being left in a risky/unsafe situation due to poor supervision and 14.5% (95%CI: 13.7-15.2) reported there not being enough money for a child's needs.

[Insert Table 4.2]

Of the respondents who reported that a child experienced at least one type of alcohol-related harm, 62.1% reported multiple harms. The common co-occurrence of multiple harm types suggests the substantial cumulative impact on children experiencing such harms. Among those reporting a child being physically hurt, 44.2% also reported a child being left in a risky/unsafe situation due to poor supervision (Table 4.3). Likewise, among the respondents reporting that a child witnessed serious violence at home, 40.7% also reported there not being enough money for a child's needs.

[Insert Table 4.3]

Controlling for other factors, compared to females, males had 29% lower odds of reporting that a child experienced alcohol-related psychological harm (OR=0.71, 95%CI: 0.62-0.82) and 28% lower odds of reporting neglect (OR=0.72, 95%CI: 0.62-0.85), but no significant difference in reporting physical harm (Table 4.4). Living in a rural area was associated with 1.29 greater odds of reporting a child experiencing alcohol-related physical harm (95%CI: 1.10-1.52) and 1.73 greater odds of reporting neglect (95%CI: 1.50-2.00), for otherwise similar respondents.

[Insert Table 4.4]

Few associations were found between family income and reporting harms, controlling for other factors, although having middle to high income was generally associated with reduced odds of reporting harms compared to those in the lowest income quartile (Indian Rs.<35000, equivalent to US$<580) (Table 4.4). Having a family income of Rs.35000-<70000 (US$580-1160) was associated with 28% reduced odds of reporting multiple harms (OR=0.72, 95%CI: 0.59-0.86) compared to the lowest income quartile. Those in the highest income group (Rs.≥110000, US$ ≥1820) had 22% lower odds of reporting psychological harms (OR=0.78, 95%CI: 0.65-0.94), and 28% lower odds of reporting multiple harms (OR=0.72, 95%CI: 0.58-0.90). Income was not significantly associated with reporting physical harm or neglect, for otherwise similar respondents.

Binge drinking was associated with reporting a child's experience of alcohol-related harm in each domain and with reporting multiple harms (Table 4.4). For otherwise

similar respondents, non-binge drinkers had 39% reduced odds of reporting physical harm (OR=0.61, 95%CI: 0.50-0.73), 35% reduced odds of reporting psychological harms (OR=0.65, 95%CI: 0.56-0.77), and 47% lower odds of reporting neglect (OR=0.53, 95%CI: 0.45-0.63), compared to binge drinkers. Abstainers had 64% reduced odds of reporting physical harm (OR=0.36, 95%CI: 0.30-0.43), as well as neglect (OR=0.36, 95%CI: 0.31-0.43), and 66% reduced odds of reporting psychological harms (OR=0.34, 95%CI: 0.30-0.40) compared to binge drinkers.

Reports of children's experiences of alcohol-related harms also varied by location (Table 4.4). For otherwise similar respondents, compared to those in Cuttack, living in Dhule was associated with 2.39-7.66 greater odds of reporting harms, ranging from reporting physical harm to reporting multiple harms ($p<0.001$). Living in Gangtok, compared to Cuttack, was associated with at least double the odds of reporting physical harm and neglect ($p<0.001$), but reduced odds of reporting psychological harms ($p<0.01$). In contrast, compared to living in Cuttack, living in Surat or Visakhapatnam was associated with reduced odds of reporting harms in all domains ($p<0.001$), except reporting physical harm in Surat was not significantly different.

COMMENT

Our findings demonstrate that alcohol is a factor in child maltreatment in India, covering three of the four main types of child maltreatment (physical abuse, psychological abuse, and neglect).[9,10] We found that 44% of adults reported a child's experience of at least one alcohol-related harm in the past year, and among them, 62% reported multiple harms,

suggesting that children experiencing any alcohol-related harm are likely experiencing multiple harms. Sixteen percent of respondents reported a child's experience of physical alcohol-related harm, 37% reported psychological harms, and nearly 25% reported child neglect, demonstrating the negative impact that Indian adults' drinking has on children. The extent to which respondents reported each harm is disconcerting and the cumulative impact of children experiencing multiple alcohol-related harms is likely to have detrimental consequences on their growth and development, with lasting negative impacts through adulthood.[14,28,29]

Several characteristics of respondents were associated with reporting a child's experience of alcohol-related harms, such as being female, living in a rural area, having low income, and being a binge drinker. Adjusting for other factors, compared to females, males had reduced odds of reporting psychological harms and child neglect. Two scenarios may explain potential sex differences. First, males may spend less time around children than females since they are not typically the primary caretaker, and therefore, observe less harm. Second, males may observe the same harms as females but less commonly identify them as harmful.

Our study shows that living in a rural area was associated with increased odds of reporting harms in most domains. Consistent with other studies that document risky drinking patterns in rural areas,[25,26] our findings suggest that children living in rural areas may be at greater risk for experiencing harm from adults' drinking than children in urban areas. Furthermore, those in the middle to upper income quartiles generally had lower

odds of reporting harms compared to those in the lowest quartile, suggesting that children in the lives of adults who have low income levels may be more vulnerable for experiencing harms from adults drinking. This corroborates with other studies that have found lower income to be a risk factor for alcohol consumption.[17,20]

Additionally, we found that non-binge drinkers had less than one-third the odds of reporting harms than binge drinkers and abstainers had less than half the odds. Consistently, another Indian study found that a greater proportion of respondents reported child abuse in households with a drinker compared to non-drinker households.[15] Binge drinking is widely recognized as a risky pattern of drinking associated with increased harm to others[26,30] and our study emphasizes the resulting burden on children.

Our study findings show substantial differences in the odds of reporting children's experiences of alcohol-related harms by location, which may be due to important characteristics of these locations. Compared to those in Cuttack, respondents in Dhule and Gangtok had greater odds of reporting harm across nearly all domains and multiple harms. Dhule is characterized by a high prevalence of poverty and low educational attainment,[31] which has been found to be associated with a greater prevalence of alcohol use in India.[32] Additionally, Gangtok, the capital of Sikkim, thrives on tourism,[33] and breweries and distilleries are among the four leading industries.[34] These characteristics may create risky alcohol environments for children, thus increasing adults' reporting of harm. In contrast, respondents in Surat and Visakhapatnam had lower odds of reporting harms in each domain and of reporting multiple harms. Key characteristics of the alcohol

environment in these locations may offer some protection against children's experiences of alcohol-related harms. Surat is in Gujarat, which has had statewide alcohol prohibition since 1949,[35] and total prohibition is associated with lower population-level consumption.[36] Additionally, respondents in Visakhapatnam reported the lowest proportion of binge drinking, suggesting that perhaps drinkers in Visakhapatnam have less risky drinking patterns compared to other study locations. These location-specific findings suggest that characteristics of children's environments may affect their risk of experiencing harm from adults' drinking; therefore, the implementation of well-enforced environmental alcohol control policies may reduce such harms.[37]

The proportion of respondents reporting a child's experience of at least one alcohol-related harm (44%) was substantially larger than the prevalence in Australia (12%)[8] and New Zealand (17%).[6] While this could be further evidence of the major problem of child maltreatment in under-resourced countries,[10-13] a methodological difference interferes with direct comparisons. The studies in Australia and New Zealand asked about harms to children attributable to the drinking of people other than the respondent, while this study asked respondents to also consider their own drinking.

This study has limitations. First, challenges exist in measuring alcohol's role in harm to others,[38] with a substantial degree of subjective interpretation involved. In this study, data were based on self-reported perceptions of harms and the types of harms were not explicitly defined, which would have reduced the subjectivity of the responses. Second, the respondents may or may not have been reporting about their own perpetration of

harms to children, it is also possible that respondents reported, for example, about their partners' perpetration of harm. Thus, respondents' characteristics associated with greater odds of reporting harm may vary slightly from characteristics of those perpetrating harm. Third, there were no data to determine whether a child was more negatively affected by frequent occurrences of potentially lower-severity harm versus infrequent severe harm (e.g., frequently being yelled at versus infrequent physical harm). Fourth, data were available on three of the four domains of child maltreatment[9,10] (physical abuse, psychological abuse, and neglect) but sexual abuse was not included, limiting our ability to document the full scope of alcohol-related child maltreatment. Fifth, since non-probability sampling techniques were used, our findings may not be generalizable to the entire Indian population.[39]

This research has global implications, as it adds to efforts to monitor adherence to the United Nations Convention on the Rights of the Child, which is recognized in 194 countries[40] and gives children the right to be protected from maltreatment.[41] This is the first multi-region Indian study showing alcohol's involvement in various forms of child abuse. India has child protection services,[42] as well as acts protecting children from sexual abuse.[43] There are also international initiatives to end violence against children in the region.[44] However, these results indicate that more efforts should be directed towards reducing excessive alcohol consumption among adults as a strategy to reduce harm to children – as recommended by the United Nations and the WHO.[10,11]

Based on strong evidence for reducing alcohol consumption and alcohol-related harms, the WHO recommends population level alcohol control policies.[37,45,46] Our findings suggest that the reduced availability of alcohol in Gujarat may help to create a lower-risk alcohol environment for children. In states where alcohol is not prohibited, policies to reduce the density of alcohol outlets or that limit when and where alcohol may be sold can decrease the availability of alcohol—potentially preventing children's experiences of alcohol-related harms.[46-50] This study demonstrates the urgent need for evidence-based alcohol policies to reduce alcohol-related harms to children. Future research could study children who are subjected to alcohol-related harms from others' drinking and examine how experiences of such harms impact their development. Additional studies should also include measures on child sexual abuse to provide a more comprehensive assessment of harms to children due to adults' alcohol consumption.

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Table 4.1. Characteristics of the study sample among adults in five Indian states

Characteristic	No. (%)		
	Female (n=2,350)	**Male** (n=5,493)	**Total** (n=7,882[a])
Age group			
18-24	369 (15.9)	568 (10.4)	937 (12.0)
25-34	778 (33.5)	1,444 (26.5)	2,222 (28.6)
35-44	641 (27.6)	1,679 (30.8)	2,320 (29.8)
45-54	345 (14.9)	1,187 (21.8)	1,532 (19.7)
55-70	191 (8.2)	580 (10.6)	771 (9.9)
Rurality			
Urban	776 (33.4)	1,775 (32.7)	2,551 (32.9)
Rural	1,548 (66.6)	3,662 (67.4)	5,210 (67.1)
Family income in rupees, past year (US$ equivalent)			
0-<35000 (US$ 0-<580)	607 (27.0)	927 (17.2)	1,534 (20.0)
35000-<70000 (US$580-<1160)	722 (32.1)	1,948 (36.0)	2,670 (34.9)
70000-<110000 (US$ 1160-<1820)	400 (17.8)	1,094 (20.2)	1,494 (19.5)
≥110000 (US$ ≥1820)	522 (23.2)	1,436 (26.6)	1,958 (25.6)
Education			
None	968 (41.6)	1,302 (24.0)	2,270 (29.3)
Primary	314 (13.5)	613 (11.3)	927 (11.9)
≥Secondary	1,046 (44.9)	3,518 (64.8)	4,564 (58.8)
Respondent's drinking pattern[c]			
Abstainer	1,757 (81.9)	2,081 (41.4)	3,838 (53.5)
Non-binge drinker	212 (9.9)	1,712 (34.1)	1,924 (26.8)
Binge drinker	177 (8.3)	1,233 (24.5)	1,410 (19.7)
Location of residence			
Cuttack, Odisha	940 (40.0)	1,047 (19.1)	1,987 (25.3)
Dhule, Maharashtra	509 (21.7)	1,466 (26.7)	1,975 (25.2)
Gangtok, Sikkim	381 (16.2)	369 (6.7)	750 (9.6)
Surat, Gujarat	441 (18.8)	768 (14.0)	1,209 (15.4)
Visakhapatnam, Andhra Pradesh	79 (3.4)	1,843 (33.6)	1,922 (24.5)

[a] Missing responses were excluded from analyses so samples sizes do not add to 7,882 for all characteristics (average missing of approximately 2%).

[c] Abstainers are defined as those who have not consumed an alcoholic beverage in the past year. Non-binge drinkers are defined as those who have consumed an alcoholic beverage in the past year but have not had five or more drinks during any occasion. Binge drinkers are defined as those who have consumed five or more drinks on any occasion in the past year.

Table 4.2. Proportion of respondents reporting alcohol-related harm to children in the past year by type of harm (n=7,882)

Harm to children	% (95% Confidence Interval)	
	Never	Ever occurred in past year
How many times in the last one year, because of someone's drinking (including your own), was any child…		
Physical abuse		
Physically hurt because of someone's drinking?	84.0 (83.2-84.8)	16.0 (15.2-16.8)
Psychological abuse	**63.0 (62.0-64.1)**	**37.0 (35.9-38.0)**
Witness serious violence in the home?	81.8 (80.9-82.6)	18.2 (17.4-19.1)
Yelled at, or verbally abused?	69.3 (68.3-70.4)	30.7 (29.6-31.7)
Neglect	**75.4 (74.4-76.3)**	**24.6 (23.7-25.6)**
Left in a risky/unsafe situation due to poor supervision?	83.9 (83.1-84.7)	16.1 (15.3-16.9)
In difficulty as there was not enough money for the things needed by them?	85.6 (84.8-86.3)	14.5 (13.7-15.2)
Overall	**No. (%)**	
Total respondents reporting at least one harm to a child		3,492 (44.3)

Table 4.3. Respondents' reporting of multiple types of alcohol-related harms to children (n=7,882)

Types of harms to children	No. (%[a])				
	Physically hurt (n=1,259)	**Witness of violence (n=1,436)**	**Yelled at/verbal abuse (n=2,417)**	**Left in risky/unsafe situation due to poor supervision (n=1,267)**	**Not enough money for child's needs (n=1,140)**
Physically hurt	--[b]				
Witness of violence	620 (49.3)	--[b]			
Yelled at/verbal abuse	790 (62.8)	938 (65.3)	--[b]		
Left in risky/unsafe situation due to poor supervision	557 (44.2)	548 (38.2)	897 (37.1)	--[b]	
Not enough money for child's needs	584 (46.4)	584 (40.7)	819 (33.9)	467 (36.9)	--[b]

Note: Cells in the top half of the table are intentionally blank as the data on the same pairs of harms are presented in the bottom half.

[a] The proportions in parenthesis are based on a denominator of respondents who reported the type of alcohol-related harm to children listed along the horizontal axis and a numerator of respondents who also reported the type of alcohol-related harm to children listed along the vertical axis. For instance, among those who reported the alcohol-related harm to children of being physically hurt, 620 (49.3%) also reported the alcohol-related harm to children of witnessing serious violence.

[b] Comparison of the same types of harms so data are not applicable.

Table 4.4. Odds of reporting types of alcohol-related harm to children and ≥2 types in past year by socio-demographics and respondent's drinking (n=7,882[a])

Characteristic	Physically hurt[b] (n=1,259)		Psychological abuse[c] (n=2,915)		Neglect[d] (n=1,940)		≥2 harm types vs. none[e] (n=2,169)	
	Unadjusted OR (95% CI)	Adjusted OR[f] (95% CI)	Unadjusted OR (95% CI)	Adjusted OR[f] (95% CI)	Unadjusted OR (95% CI)	Adjusted OR[f] (95% CI)	Unadjusted OR (95% CI)	Adjusted OR[f] (95% CI)
Sex								
Female	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Male	1.13 (0.99-1.30)	0.97 (0.81-1.16)	0.82 (0.74-0.90)***	0.71 (0.62-0.82)***	0.89 (0.79-0.99)*	0.72 (0.62-0.85)***	0.88 (0.78-0.98)*	0.72 (0.61-0.85)***
Rurality								
Urban	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Rural	1.38 (1.20-1.57)***	1.29 (1.10-1.52)**	1.27 (1.15-1.40)***	1.06 (0.93-1.20)	1.75 (1.56-1.97)***	1.73 (1.50-2.00)***	1.70 (1.52-1.92)***	1.57 (1.34-1.83)***
Family income in rupees, past year (US$ equivalent)								
0-<35000 (US$ 0-<580)	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
35000-<70000 (US$580-<1160)	0.66 (0.56-0.79)***	0.90 (0.74-1.10)	0.68 (0.60-0.77)***	0.88 (0.75-1.02)	0.59 (0.51-0.68)***	0.86 (0.73-1.02)	0.54 (0.47-0.62)***	0.72 (0.59-0.86)***
70000-<110000 (US$ 1160-<1820)	0.84 (0.69-1.01)	1.14 (0.91-1.43)	0.77 (0.67-0.90)**	0.90 (0.75-1.08)	0.66 (0.56-0.78)***	0.89 (0.73-1.09)	0.66 (0.56-0.78)***	0.82 (0.66-1.03)
≥110000 (US$ ≥1820)	1.01 (0.93-1.31)	0.94 (0.76-1.18)	0.99 (0.86-1.13)	0.78 (0.65-0.94)**	0.92 (0.80-1.07)	0.83 (0.68-1.01)	0.98 (0.84-1.13)	0.72 (0.58-0.90)**

Characteristic	Physically hurt[b] (n=1,259)		Psychological abuse[c] (n=2,915)		Neglect[d] (n=1,940)		≥2 harm types vs. none[e] (n=2,169)	
	Unadjusted OR (95% CI)	Adjusted OR[f] (95% CI)	Unadjusted OR (95% CI)	Adjusted OR[f] (95% CI)	Unadjusted OR (95% CI)	Adjusted OR[f] (95% CI)	Unadjusted OR (95% CI)	Adjusted OR[f] (95% CI)
Education								
≤Primary	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
≥Secondary	0.97 (0.85-1.10)	0.88 (0.75-1.03)	0.87 (0.79-0.95)**	0.85 (0.75-0.96)*	0.84 (0.76-0.94)**	0.80 (0.70-0.92)**	0.84 (0.75-0.93)**	0.76 (0.65-0.89)***
Respondent's drinking pattern[g]								
Binge drinker	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Non-binge drinker	0.49 (0.42-0.58)***	0.61 (0.50-0.73)***	0.49 (0.42-0.56)***	0.65 (0.56-0.77)***	0.46 (0.40-0.54)***	0.53 (0.45-0.63)***	0.40 (0.34-0.47)***	0.49 (0.40-0.60)***
Abstainer	0.33 (0.28-0.38)***	0.36 (0.30-0.43)***	0.34 (0.30-0.38)***	0.34 (0.30-0.40)***	0.38 (0.33-0.44)***	0.36 (0.31-0.43)***	0.28 (0.24-0.32)***	0.26 (0.22-0.32)***
Location of residence								
Cuttack, Odisha	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Dhule, Maharashtra	2.43 (2.07-2.86)***	2.39 (1.98-2.88)***	2.68 (2.36-3.05)***	3.41 (2.93-3.97)***	4.30 (3.73-5.00)***	5.50 (4.65-6.51)***	5.26 (4.52-6.11)***	7.66 (6.36-9.23)***
Gangtok, Sikkim	2.18 (1.77-2.69)***	2.56 (2.01-3.27)***	0.67 (0.56-0.80)***	0.76 (0.62-0.94)*	1.72 (1.42-2.08)***	2.20 (1.76-2.75)***	1.20 (0.99-1.47)	1.51 (1.19-1.92)**
Surat, Gujarat	0.78 (0.62-0.97)*	0.87 (0.68-1.11)	0.43 (0.36-0.50)***	0.49 (0.41-0.58)***	0.57 (0.46-0.69)***	0.66 (0.52-0.83)***	0.46 (0.38-0.56)***	0.56 (0.45-0.70)***
Visakhapatnam, Andhra Pradesh	0.40 (0.32-0.50)***	0.43 (0.33-0.56)***	0.23 (0.20-0.27)***	0.27 (0.23-0.32)***	0.38 (0.31-0.46)***	0.47 (0.37-0.59)***	0.21 (0.17-0.26)***	0.27 (0.21-0.34)***

OR indicates odds ratio; CI indicates confidence interval.

*p<0.05, **p<0.01, ***p<0.001

[a] Missing responses were excluded from analyses so samples sizes do not add to 7,882 for all characteristics (average missing of approximately 2%).

[b] Odds ratios from binary and multilevel mixed effects logistic regression for reporting a child being "Physically hurt because of someone's drinking?"

[c] Odds ratios from binary and multilevel mixed effects logistic regression for reporting psychological abuse, including 2 alcohol-related harms to children: "Witness serious violence in the home?" and "Yelled at, or verbally abused?"
[d] Odds ratios from binary and multilevel mixed effects logistic regression for reporting neglect, including 2 alcohol-related harms to children: "Left in a risky/unsafe situation due to poor supervision?" and "In difficulty as there was not enough money for the things needed by them?"
[e] Odds ratios from binary and multilevel mixed effects logistic regression for reporting ≥2 types of alcohol-related harm to children vs. none.
[f] Multilevel mixed effects logistic regression adjusted for sex, rurality, family income, education, respondent's drinking pattern, and location of residence.
[g] Abstainers are defined as those who have not consumed an alcoholic beverage in the past year. Non-binge drinkers are defined as those who have consumed an alcoholic beverage in the past year but have not had five or more drinks during any occasion. Binge drinkers are defined as those who have consumed five or more drinks on any occasion in the past year.

Chapter 5: Harm Resulting from Strangers' Alcohol Consumption in Five States of India

ABSTRACT

Objective: We sought to assess respondents' experiences of various tangible and intangible harms from strangers' drinking and respondents' characteristics associated with experiencing harm.

Methods: We analyzed cross-sectional data from household interviews administered in five states of India between October 2011 and May 2012 (n=7,645).

Results: In the year prior to the interview, 63.3% of respondents experienced alcohol-related harms from people not well-known to them (i.e., strangers), with 47.5% of respondents experiencing at least one tangible harm. Approximately 20% of respondents experienced physical harm, 41.7% experienced psychological harm, 4.6% experienced sexual harm, and 6.8% had their property damaged. Thirty-seven percent of alcohol abstainers experienced a tangible harm from strangers' drinking. Compared to abstainers, binge drinkers had 2.1 greater odds of experiencing physical harms ($p<0.001$), 1.7 greater odds of sexual harms ($p<0.01$), and 2.7 greater odds of psychological harms ($p<0.001$). In addition to tangible harms, 57.2% of respondents experienced at least one intangible harm.

Conclusions: Indians are experiencing a range of tangible and intangible alcohol-related harms from strangers' drinking. Policies to reduce alcohol's availability are needed to reduce such harms in India.

Keywords: alcohol consumption, heavy drinking, harm to others, social consequences, India

INTRODUCTION

Between 2005 and 2010, India faced a 19% increase in average per capita consumption of alcohol among those age 15 and older – by 2010, the per capita consumption among drinkers was 1.7 times greater than the global average.[1] The country's increasing alcohol consumption has been documented,[2,3] but little is known about the types of alcohol-related harms resulting from others' drinking in Indian communities.

Since 1879, when John Stuart Mill wrote *On Liberty*,[4] ethical philosophers have been discussing the responsibility for public health to prevent harm to others. Although the notion of harm to others is centuries old, alcohol-related harms to others, beyond drinking-driving, were largely overlooked by epidemiologists until the past two decades. Alcohol does not have to be the direct cause of an action or behavior, rather, alcohol-related harm to others suggests that alcohol was present when the action or behavior occurred.[5] The harms may be tangible (e.g., road traffic injury) or intangible (e.g., psychological suffering).[6,7]

These 'second-hand effects' of alcohol have been documented in societies where alcohol consumption is prevalent at the population level, such as Canada, the United States, Australia, New Zealand, and the Nordic countries.[8-12] In India, where alcohol abstention is common but those who drink typically consume high quantities per occasion,[1,13,14] evidence also suggests that drinking impacts people in their lives.[15-19]

Evidence also shows that alcohol use poses harms to strangers.[10-12,20] A synthesis of seminal studies on alcohol-related harms from strangers' drinking published prior to 2004 has been written elsewhere,[21] so we focus on the research that has emerged in the past decade. The findings from population-based studies indicate that the prevalence of such harms varies across societies. In the United States, 9% of respondents reported problems from others' drinking, some of whom were strangers.[9] A national survey of Norwegian adults showed that 40% of respondents had been harmed by strangers' alcohol use,[21] and 70% of Australians[11] and 71% of New Zealanders also reported such harm.[10]

Most studies have found associations between respondents' drinking and experiences of alcohol-related harms from others' drinking, such that respondents who drank heavily, relative to other respondents, had increased odds of reporting a greater number of harms.[9,21] However, in one Australian study there were no significant differences between abstainers and drinkers regarding likelihood of reporting being negatively affected 'a lot' by others' drinking, without controlling for other factors.[11] Further exploration is needed to understand how respondents' drinking patterns are associated with alcohol-related harms from strangers.

India provides a unique context for exploring the impact of strangers' drinking on others because three-fourths of the population abstains from alcohol[1] but heavy drinking is prevalent among those who drink.[2,13,22] The purpose of the present study was to assess various types of tangible and intangible alcohol-related harms that respondents' experienced due to strangers' drinking and respondents' characteristics that were

associated with experiences of harm. In this paper, strangers refers to any person not well-known to respondents (e.g., not relatives, friends, nor colleagues).

METHODS

Sampling and design

Cross-sectional data were analyzed from 7,645 adults (age 15-70 years) who responded to 12 questions on alcohol-related harms from strangers' drinking, collected by the Indian National Institute of Mental Health and Neuro Sciences (NIMHANS) and local partners in a case-control study from October 2011-May 2012. The original study recruited 8,333 respondents to assess patterns and consequences of alcohol consumption in five Indian states (Odisha, Maharashtra, Sikkim, Gujarat, and Andhra Pradesh), with a participation rate of 97.3%. Details of the methodology are described elsewhere.[18]

From each of the five states, field staff recruited approximately 1,000 cases and 1,000 controls, matched by sex and age, for household interviews. Cases were defined as those who had consumed an alcoholic beverage at least once in the past year. Controls were defined as those who had not consumed an alcoholic beverage in the past year. The study was approved by the Ethical Review Committee of the World Health Organization (WHO) and the NIMHANS Ethical Committee. The Johns Hopkins Bloomberg School of Public Health Institutional Review Board (IRB) determined that IRB oversight was not required for the secondary analysis of data from this study.

Measures

The questions on alcohol-related harms from strangers' drinking came from the WHO's *Harm to Others from Drinking Master Protocol.*[23] Interviewers stated, "We would now like to ask you about strangers/people you don't know well. In the last one year, how many times, because of some strangers' drunken behavior, have you *[experienced specific harm]*?" Twelve types of harms were assessed; we categorized seven of them as tangible and five as intangible, consistent with the classification of harms in other studies.[7,20] Tangible harms were defined as those involving direct contact or an observable outcome, whereas intangible harms were those involving perceptions of fear or discomfort[7] (see exact questions in Table 5.2). The response options were 'never,' 'occasionally,' and 'frequently.' We collapsed occasionally and frequently due to the low proportion of frequent experiences, creating dichotomous variables of experiencing each of the 12 harms in the past year (0=no, 1=yes).

We further categorized the tangible harms into four domains (physical, sexual, psychological, and property damage) (see Table 5.2). We formed six dichotomous variables to assess independent predictors for experiencing harm in each of the four tangible domains, any tangible harm, or any intangible harm. For two ordered logistic regression models, we also created two three-level variables to explore how respondents' drinking patterns were associated with experiencing zero, one to two, or more than two types of tangible and intangible harm.

We assessed relationships between socio-demographic characteristics and respondents' drinking patterns and experiences of tangible or intangible harm. Dummy variables were

used for characteristics with more than two levels (family income and respondents' drinking patterns). Respondents who had not consumed an alcoholic beverage in the past year were defined as abstainers; those who had an alcoholic beverage but had not consumed ≥5 drinks on any occasion in the past year were defined as non-binge drinkers; and those who had consumed ≥5 drinks on any occasion in the past year were defined as binge drinkers.

Analysis

Analyses were undertaken using Stata 12.1.[24] We calculated the proportion and 95% confidence intervals of respondents who experienced each of the 12 harms by respondents' drinking patterns. We performed binary and multilevel mixed effects logistic regression to model associations between characteristics and experiences of harm by the four domains of tangible harm, any tangible harm, or any intangible harm.[25,26] Multilevel mixed effects models, with intercepts of the region where participants resided as the random effect, were used to account for variability by region.[27] To control for confounding, we selected variables with theoretical importance (sex, age group, education, family income, rurality, respondent's drinking, and region of residence).[15,22,28] Missing data on socio-demographic or drinking pattern variables were dropped from analyses. Differences were defined as significant at $p<0.05$.

To explore how the number of types of harms experienced varied by respondent's own drinking, we used ordered logistic regression models to generate the log-odds of experiencing zero, one to two, or more than two harms, with the number of tangible and

intangible harms modeled separately as the dependent variables.[29] Sex and respondents' drinking patterns were included as independent variables, with two dummy variables for non-binge drinking and binge drinking. Ordered logistic regression is the most appropriate technique when the dependent variable has more than two categories that are rank ordered.[30] We conducted post estimation analyses to translate the log-odds into interpretable predicted probabilities.[31] The predicted probabilities show the sex-specific drinking patterns with predictive values of experiencing zero, one to two, or more than two harms.

RESULTS

Of the 7,645 respondents in this study, 70% were male and 68% lived in a rural area (Table 5.1). Forty-seven percent reported any drinking in the past year and 20% reported binge drinking.

[Insert Table 5.1]

The majority of respondents (63.3%) experienced alcohol-related harms from strangers' drinking in the past year, with 47.5% of respondents reporting at least one tangible harm and 57.2% reporting at least one intangible harm (Table 5.2). Respondents experienced an average of 1.0 tangible and 1.2 intangible harms (standard deviation=1.4 for both) in the past year from strangers' drinking. Approximately 20% of respondents experienced physical harms from strangers' drinking in the past year, 41.7% experienced psychological harms, 4.6% experienced sexual harms, and 6.8% had their property damaged. A greater proportion of binge drinkers experienced each harm type than

abstainers and non-binge drinkers; however, abstainers also experienced harms from strangers. Approximately 37% of alcohol abstainers experienced at least one tangible harm, including nearly 14% of abstainers who experienced physical harms from strangers' drinking. Additionally, 52.1% of abstainers experienced at least one intangible harm.

[Insert Table 5.2]

There were differences in the unadjusted socio-demographic characteristics associated with the domains of tangible harms, any tangible harm, and any intangible harm (see supplemental Table 5.S1). Controlling for sex, age group, education, family income, rurality, respondent's drinking, and region, compared to females, males had 30% greater odds of experiencing physical harms from strangers' drinking (OR=1.3, $p<0.05$) and 20% lower odds of experiencing intangible harms (OR=0.8, $p<0.001$) (Table 5.3). For otherwise similar respondents, living in a rural area was associated with 40% greater odds of experiencing sexual harms from strangers' drinking (OR=1.4, $p<0.05$), but 20% decreased odds of experiencing psychological harms (OR=0.8, $p<0.001$) and 40% reduced odds of intangible harms (OR=0.6, $p<0.001$).

[Insert Table 5.3]

Education and income were associated with harms from strangers' drinking in some domains. Compared to having primary education or less, having at least secondary education was associated with 20% lower odds of experiencing psychological harms (OR=0.8, $p<0.01$) but not significantly associated with experiencing other harms,

controlling for other factors (Table 5.3). Compared to those in the lowest income quartile, members of the middle income quartiles had 20% lower odds of experiencing physical harms (second quartile, $p<0.01$; third quartile, $p<0.05$), and 70% lower odds of reporting property damage ($p<0.001$). Those in the second quartile had 20% lower odds of experiencing intangible harms (OR=0.8, $p<0.05$) while odds were greater among those in the third quartile (OR=1.2, $p<0.05$) and highest quartile (OR=1.3, $p<0.05$). Those in the upper quartile had 50% lower odds of property damage than those in the lowest income quartile (OR=0.5, $p<0.001$) but differences were not significant in the other tangible domains. Sexual harms and any tangible harms were not associated with family income.

Respondent's drinking was associated with significantly greater odds of harms in all tangible and intangible domains of harm compared to abstainers, except that odds of having experiencing property damage was not significantly different between abstainers and non-binge drinkers (Table 5.3). Binge drinking was associated with greater odds of harms from strangers' drinking than non-binge drinking in all domains except sexual harm, and with greater odds than abstainers of experiencing physical harms (OR=2.1, $p<0.001$), sexual harms (OR=1.7, $p<0.01$), psychological harms (OR=2.7, $p<0.001$), property damage (OR=2.4, $p<0.001$), any tangible harm (OR=2.9, $p<0.001$), and intangible harms (OR=2.3, $p<0.001$).

With ordered logistic regression analyses, we modeled the likelihood of experiencing different numbers of types of tangible and intangible harms as a function of respondents' sex and drinking patterns (Figure 5.1). Abstainers accounted for 28-40% of the predicted

probabilities for experiencing 1-2 types of tangible and 1-2 types of intangible harms, varying by sex. Binge drinkers had the highest probabilities of experiencing more than two different tangible and intangible harms, irrespective of sex. There was a 25.4% probability that a female who binge drinks would experience more than two different tangible harms, whereas a non-binge drinking female had a 15.8% probability and an abstainer had an 8.4% probability; this trend was also true for intangible harms and among males.

[Insert Figure 5.1]

DISCUSSION

In India, where heavy episodic drinking is common among those who drink,[13,22] our study shows that drinkers' alcohol use often affects people that they do not know; 63% of respondents experienced an alcohol-related harm from strangers' drinking in the past year, and nearly half experienced tangible harm. Current media discourse in India has acknowledged alcohol's involvement violence, rape, and road traffic crashes[32-35] and our study affirms alcohol's role in a broad range of harms to strangers. Approximately 20% of respondents experienced physical harms from strangers, nearly 42% experienced psychological harms, 5% experienced sexual harms, and 7% had their property damaged. The finding that more than one out of every five respondents experienced alcohol-related physical harm from strangers is disconcerting. Experiences of this physical harm were not limited to those who drink; 14% of alcohol abstainers experienced at least one physical harm from strangers' drinking.

Earlier Indian studies have found alcohol use to be associated with violence among intimate partners[36-39] and likelihood of perpetuating violence more generally,[22] as well as a risk factor for injuries.[15] Together with the global evidence on the nexus between alcohol and aggressive behavior and violence,[22,40,41] our finding that even those who do not drink are experiencing alcohol-related physical harm from strangers highlights the need for action to prevent this serious harm in India.

In most low- and middle-income regions around the world, there are few preventive strategies targeting psychological abuse, as any available resources are usually devoted towards the prevention of physical harm.[42] The types of psychological harms from strangers' drinking may seem less severe than some of the other tangible harms; however, they should not be dismissed as harmless. A six-country study found that verbal abuse is one of most common forms of psychological violence, which can lead to unrelenting suffering.[42] One study found that emotional abuse by family members was associated with a six-fold increase in the risk of suicide in India[43] and Indian case studies suggest that having a spouse who drinks is a common factor in completed suicides.[44] Although the impact of emotional abuse from strangers is not likely to be as strong as that from family members, this evidence suggests the potential severity of psychological harm. Moreover, in our study, binge drinking was associated with 2.7 greater odds for experiencing psychological harms compared to abstainers, which is alarming because evidence suggests alcohol use is a risk factor for suicides.[45,46]

We found differences in the types of harms associated with living in rural and urban areas. Living in rural areas was associated with greater odds of experiencing sexual harms from strangers' drinking compared to those living in urban areas. Evidence indicates that frequent heavy drinking is more common in rural areas of India than urban,[38,47] and is a drinking pattern that increases the risk of alcohol-related problems.[13,48] Moreover, an Indian national survey found that a greater prevalence of women in rural areas (9.7%) experienced sexual violence compared women in urban areas (5.9%); however, only 0.9% reported a stranger as the perpetrator[49] – thus, the role of alcohol in sexual harm caused by strangers in rural areas warrants deeper investigation. Respondents living in urban areas had greater odds of reporting psychological harms compared to their rural counterparts, which as previously mentioned, poses major threats to their quality of life.

Somewhat consistent with Indian studies that have found alcohol consumption to be associated with people who have less education and lower income,[13,22,49] our findings showed that having at least secondary education was associated with lower odds of experiencing psychological harms from strangers' drinking; however, education was not significantly associated with experiencing harms in other domains, for otherwise similar respondents. We found that those in the middle and upper income quartile had reduced odds of experiencing physical harm and property damage but generally experienced increased odds of intangible harms, while experiencing sexual harms and any tangible harms from strangers' drinking were not significantly associated with family income. Additional research is needed to further explore how educational attainment and family

income are associated with experiences of alcohol-related harms from strangers' drinking.

Our findings also suggest that respondents' own alcohol use was associated with up to 2.9 greater odds for experiencing alcohol-related harms from strangers compared to abstainers – and the relationship increased linearly, with binge drinkers having the greatest odds in all domains except sexual harms. Other studies have also found that heavier drinkers tend to experience more harms compared to lighter drinkers and abstainers,[9,21] which may be a result of them putting themselves into risky alcohol environments and surrounding themselves by other heavy drinkers. A 14-country study of injured patients in emergency departments further supports this explanation: the percent of violence-related injuries caused by someone's drinking was higher when both the perpetrator and the victim had consumed alcohol, compared to violence-related injuries caused by one person's drinking.[50]

Compared to abstainers, respondents' drinking was associated with increased odds of experiencing harms from strangers' drinking; however, abstainers were far from escaping such harm. More than one out of every three abstainers experienced a tangible harm and 52% experienced an intangible harm. We found that abstainers had a 28-32% probability of experiencing 1-2 types of tangible harms, varying by sex. It is likely that binge drinkers actually did experience more types of harms than abstainers, though our assessment measures were subjective. Since the harms were not explicitly defined, some of the variation between binge drinkers and abstainers in reported experiences of harms

may be explained by differences in perceiving a behavior or action to be a harm, as well as differences in perceiving the harm to be attributed to alcohol.[51]

The concept of 'drunken comportment' suggests that perceptions of the behaviors resulting from intoxication vary across societies, but also can vary across contexts within the same society.[52] This may be relevant to the reporting of harms from strangers' drinking[53] – binge drinkers are around alcohol more often than abstainers, so it is possible that they are more likely to assume the involvement of alcohol in their experiences or interactions with strangers. There are challenges in the ability to measure all types of alcohol-related harms,[54] but attributing harm as being related to strangers' alcohol consumption is particularly challenging.[55]

Our study has limitations. The assessment of harms from strangers' drinking was based on self-reports, which are inherently subjective. The questions were open to respondents' interpretations, presenting challenges not just in drawing definitive conclusions about the harms experienced but also about alcohol's involvement. Additionally, we did not explore how associations between socio-demographic characteristics and experiences of harms from strangers' drinking varied by frequency of experiencing such harms. A weighted index that accounts for both the severity and frequency of each type of harm could be used to more closely examine associations with various socio-demographic characteristics.

Despite these limitations, our findings on experiences of alcohol-related harms from strangers' drinking are worthy of attention; subjective experiences impact people's lives, as they influence one's comfort in his or her environment and one's opinions about alcohol consumption.[20] Notably, participants were from five regions of the country and the locations were intentionally selected to capture populations from differing alcohol environments, including Gujarat where alcohol sales are completely prohibited.

To our knowledge, this is the first study assessing a range of tangible and intangible harms from strangers' drinking in a low- or middle-income country. Our findings also provide new information on respondents' socio-demographic characteristics and drinking patterns associated with experiencing such harms. Regarding potential interventions, from an ethical perspective there is rationale for implementing alcohol control policies as a strategy to reduce alcohol-related harms from strangers' drinking. The WHO developed the stewardship model, which aims to reduce the likelihood of people imposing ill health on others. Within the framework of the stewardship model, the WHO suggests that an approach to reduce harm to others is to exert influence over individuals through regulatory action.[56] Furthermore, in the well-known 'harm principle,' Mill posited that it is justified to interfere with individuals' liberties if the purpose is to prevent harm to others.[4]

With this established ethical foundation for policy interventions, surveillance and monitoring of alcohol-related harms from strangers becomes critical, as such evidence can be used to determine an appropriate degree of intervention.[57] This study and others[15-

[19,28] provide a rationale for widespread implementation of evidence-based alcohol control policies in India (in states where alcohol is not completely banned), including those that have been found to effectively reduce alcohol consumption and related-harms in other low- and middle-income countries.[58] Consistent with the global recommendations of the WHO, it is likely that environmental policy interventions that impact the general population, such as those that reduce the availability of alcohol, including regulating the number of licensed alcohol outlets and reducing the days and hours of alcohol sales, could effectively reduce alcohol-related harms from strangers' drinking.[1,59] In India, and in other countries with jurisdiction-specific alcohol control regulations (e.g., United States), additional research could examine the effectiveness of state-specific policy interventions at reducing alcohol-related harms from strangers' drinking, as our findings do not shed light on the association between experiencing such harms and the effectiveness of alcohol control policies.

In conjunction with a "top-down" public health-oriented approach for implementing alcohol control policies, "bottom-up" community empowerment initiatives may also help reduce harms from strangers' drinking.[60] Empowering and mobilizing communities to openly acknowledge such harms and engage in initiatives that support the implementation of evidence-based alcohol control policies could help create safer environments.

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Table 5.1. Description of respondents' socio-demographic characteristics by respondents' drinking pattern and overall (n=7,645[a])

	Respondent's drinking pattern[b]			
Characteristic	Abstainer	Non-binge drinker	Binge drinker	Overall
	n (%)			
Overall	3,755 (53.4)	1,870 (26.6)	1,402 (20.0)	7,027 (91.9)
Sex				
Female	1,724 (46.2)	213 (11.4)	182 (13.0)	2,119 (30.3)
Male	2,009 (53.8)	1,652 (88.6)	1,216 (87.0)	4,877 (69.7)
Age group (years)				
15-34	1,631 (43.8)	665 (35.8)	545 (39.1)	2,841 (40.7)
35-70	2,089 (56.2)	1,195 (64.3)	848 (60.9)	4,132 (59.3)
Education				
≤Primary	1,507 (40.5)	756 (40.8)	650 (46.7)	2,913 (41.8)
≥Secondary	2,210 (59.5)	1,096 (59.2)	743 (53.3)	4,049 (58.2)
Family income, in rupees, past year (US$ equivalent)				
0-<35000 (US$ 0-<580)	767 (21.0)	267 (14.5)	335 (24.1)	1,369 (19.9)
35000-<70000 (US$580-<1160)	1,268 (34.8)	707 (38.4)	416 (29.9)	2,391 (34.8)
70000-<110000 (US$ 1160-<1820)	692 (19.0)	403 (21.9)	277 (19.9)	1,372 (19.9)
≥110000 (US$ ≥1820)	921 (25.3)	462 (25.1)	364 (26.2)	1,747 (25.4)
Rurality				
Urban	1,188 (31.9)	566 (30.5)	488 (35.1)	2,242 (32.2)
Rural	2,531 (68.1)	1,291 (69.5)	903 (64.9)	4,725 (67.8)

[a] Missing responses were excluded from analyses so samples sizes do not add to 7,645 for all characteristics.

[b] Abstainer is defined as not consuming an alcoholic beverage in the past year. Non-binge drinker is defined as having consumed an alcoholic beverage in the past year but not having had five or more drinks during any occasion. Binge drinking is defined as consuming five or more drinks on one occasion in the past year.

Table 5.2. Proportion of respondents experiencing alcohol-related harms from strangers' drinking in past year by respondents' drinking pattern and type of harm (n=7,645)

Type of harm	% (95% Confidence Interval)			
	Abstainer	**Non-binge drinker**	**Binge drinker**	**Overall**
Tangible	37.1 (35.6-38.6)	52.5 (50.2-54.8)	67.2 (64.7-69.6)	47.5 (46.4-48.7)
Physical	13.7 (12.6-14.8)	22.9 (21.0-24.8)	28.8 (26.4-31.2)	20.3 (19.4-21.2)
Been physically abused or hurt?	9.5 (8.6-10.4)	17.7 (16.0-19.4)	21.4 (19.3-23.5)	15.4 (14.5-16.2)
Been involved in a traffic accident because of someone else's drinking?	6.3 (5.5-7.1)	7.5 (6.3-8.7)	14.2 (12.4-16.0)	8.5 (7.9-9.1)
Sexual	2.6 (2.1-3.1)	5.8 (4.7-6.8)	3.9 (2.8-4.9)	4.6 (4.1-5.0)
Received unwanted sexual attention?	1.8 (1.3-2.2)	4.5 (3.6-5.5)	3.3 (2.3-4.2)	3.4 (3.0-3.8)
Been forced or pressured into sexual activity?	1.6 (1.2-2.0)	4.5 (3.6-5.4)	2.6 (1.7-3.4)	3.3 (2.9-3.7)
Psychological	32.0 (30.5-33.5)	45.4 (43.1-47.6)	60.3 (57.8-62.8)	41.7 (40.6-42.8)
Been verbally abused or threatened?	22.2 (20.9-23.5)	28.9 (26.9-31.0)	45.9 (43.3-48.5)	29.4 (28.4-30.4)
Been involved in a serious argument?	24.3 (22.9-25.7)	35.5 (33.3-37.6)	51.8 (49.2-54.4)	33.1 (32.0-34.1)
Property damage				
Had your house, car, or property damaged?	4.8 (4.2-5.5)	4.9 (3.9-5.9)	12.5 (10.8-14..2)	6.8 (6.2-7.3)
Intangible	52.1 (50.4-53.7)	56.4 (54.1-58.6)	71.2 (68.9-73.6)	57.2 (56.1-58.3)
Experienced trouble or noise because of drinkers at a bar/drinking place?	14.1 (13.0-15.2)	16.5 (14.8-18.2)	28.6 (26.2-31.0)	17.8 (16.9-18.6)
Felt unsafe while using public transport or in any public place?	16.5 (15.3-17.6)	13.2 (11.7-14.7)	22.3 (20.1-24.5)	17.0 (16.1-17.8)
Gone out of your way to avoid drunk people or places where drinkers hang out?	25.4 (24.0-26.8)	22.4 (20.5-24.3)	29.4 (27.0-31.8)	25.1 (24.1-26.0)
Been annoyed be people vomiting, urinating, or littering after drinking?	14.6 (13.5-15.8)	18.4 (16.7-20.2)	24.9 (22.6-27.2)	18.1 (17.2-18.9)
Been disturbed or kept awake at night?	40.6 (39.0-42.2)	41.0 (38.7-43.2)	58.3 (55.8-60.9)	44.7 (43.5-45.8)

Table 5.3. Adjusted odds for experiencing alcohol-related harms from strangers' drinking in past year by domain of harm and respondents' socio-demographics and drinking pattern

	Tangible					
	Physical[a]	**Sexual[b]**	**Psychological[c]**	**Property damage[d]**	**Overall tangible[e]**	**Overall intangible[f]**
Characteristic	**Adjusted Odds Ratio[g] (95% Confidence Interval)**					
Sex						
Female (n=2300)	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Male (n=5309)	1.3 (1.1-1.5)*	0.7 (0.5-1.1)	1.0 (0.9-1.2)	1.1 (0.8-1.4)	1.1 (1.0-1.3)	0.8 (0.7-0.9)***
Age group (years)						
15-34 (n=3082)	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
35-70 (n=4502)	0.9 (0.8-1.1)	0.6 (0.5-0.8)**	1.0 (0.9-1.1)	1.0 (0.8-1.2)	1.0 (0.9-1.1)	0.8 (0.7-0.9)***
Education						
≤Primary (n=3135)	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
≥Secondary (n=4429)	1.0 (0.8-1.1)	1.2 (0.8-1.6)	0.8 (0.7-0.9)**	1.2 (0.9-1.5)	0.9 (0.8-1.0)	1.0 (0.9-1.2)
Family income (in rupees, past year)						
0-<35000 (n=1369)	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
35000-<70000 (n=2391)	0.8 (0.6-0.9)**	1.3 (0.9-2.0)	1.1 (0.9-1.3)	0.3 (0.2-0.4)***	1.0 (0.9-1.2)	0.8 (0.7-1.0)*
70000-<110000 (n=1372)	0.8 (0.6-1.0)*	1.2 (0.8-1.9)	1.2 (1.0-1.6)*	0.3 (0.2-0.5)***	1.2 (1.0-1.4)	1.2 (1.0-1.5)*
≥110000 (n=1747)	0.9 (0.7-1.1)	1.1 (0.7-1.8)	1.0 (0.8-1.2)	0.5 (0.4-0.7)***	1.1 (0.9-1.4)	1.3 (1.1-1.5)*
Rurality						
Urban (n=2444)	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Rural (n=5129)	1.2 (1.0-1.3)	1.4 (1.1-2.0)*	0.8 (0.7-0.9)***	1.1 (0.9-1.4)	1.0 (0.9-1.1)	0.6 (0.6-0.7)***

Characteristic	Tangible					Overall intangible[f]
	Physical[a]	Sexual[b]	Psychological[c]	Property damage[d]	Overall tangible[e]	
	Adjusted Odds Ratio[g] (95% Confidence Interval)					
Respondent's drinking pattern[h]						
Abstainer (n=3755)	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Non-binge drinker (n=1870)	2.0 (1.7-2.3)***	2.8 (2.0-3.9)***	2.1 (1.8-2.4)***	1.1 (0.8-1.5)	2.3 (2.0-2.7)***	1.6 (1.4-1.8)***
Binge drinker (n=1402)	2.1 (1.7-2.5)***	1.7 (1.2-2.6)**	2.7 (2.3-3.1)***	2.4 (1.9-3.2)***	2.9 (2.5-3.4)***	2.0 (1.7-2.3)***

Ref.: Reference group

*p<0.05, **p<0.01, ***p<0.001

[a] Multilevel mixed effects logistic regression models for experiencing at least one type of physical harm, including "Been physically abused or hurt?" and/or "Been involved in a traffic accident because of someone else's drinking?"

[b] Multilevel mixed effects logistic regression models for experiencing at least one type of sexual harm, including "Received unwanted sexual attention?" and/or "Been forced or pressured into sexual activity?"

[c] Multilevel mixed effects logistic regression models for experiencing at least one type of psychological harm, including "Been verbally abused or threatened?" and/or "Been involved in a serious argument?"

[d] Multilevel mixed effects logistic regression models for reporting "Had your house, car, or property damaged?"

[e] Multilevel mixed effects logistic regression models for experiencing at least one of the seven types of tangible harms vs. none.

[f] Multilevel mixed effects logistic regression models for experiencing at least one of the five types of intangible harms vs. none.

[g] Multilevel mixed effects logistic regression controlling for sex, age group, education, family income, rurality, respondent's drinking, and region of residence.

[h] Abstainer is defined as not consuming an alcoholic beverage in the past year. Non-binge drinker is defined as having consumed an alcoholic beverage in the past year but not having had five or more drinks during any occasion. Binge drinking is defined as consuming five or more drinks on an occasion in the past year.

Table 5.S1. *(For online supplement only)* Unadjusted odds for experiencing alcohol-related harms from strangers' drinking in past year by domain of harm and respondents' socio-demographics and drinking pattern

	Tangible					
	Physical[a]	**Sexual[b]**	**Psychological[c]**	**Property damage[d]**	**Overall tangible[e]**	**Overall intangible[f]**
Characteristic	**Unadjusted Odds Ratio (95% Confidence Interval)**					
Sex						
Female (n=2300)	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Male (n=5309)	1.4 (1.2-1.6)***	1.2 (0.9-1.5)	1.0 (0.9-1.1)	1.2 (1.0-1.4)	1.1 (1.0-1.2)*	0.7 (0.6-0.8)***
Age group (years)						
15-34 (n=3082)	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
35-70 (n=4502)	1.1 (1.0-1.2)	0.9 (0.7-1.1)	0.9 (0.9-1.0)	1.1 (0.9-1.3)	0.9 (0.8-1.0)	0.8 (0.7-0.9)***
Education						
≤Primary (n=3135)	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
≥Secondary (n=4429)	1.2 (1.0-1.3)**	1.4 (1.1-1.7)**	0.9 (0.8-1.0)*	1.2 (1.0-1.5)*	1.0 (0.9-1.1)	1.2 (1.1-1.3)***
Family income (in rupees, past year)						
0-<35000 (n=1369)	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
35000-<70000 (n=2391)	0.6 (0.5-0.7)***	1.0 (.7-1.4)	0.9 (0.8-1.0)*	0.3 (0.2-0.3)***	0.8 (0.7-0.9)***	0.7 (0.6-0.8)***
70000-<110000 (n=1372)	0.7 (0.6-0.8)***	1.0 (0.7-1.4)	1.0 (0.9-1.2)	0.4 (0.3-0.5)***	1.0 (0.8-1.1)	1.1 (1.0-1.3)
≥110000 (n=1747)	1.2 (1.0-1.4)*	1.3 (0.9-1.8)	1.1 (1.0-1.3)	0.8 (0.7-1.0)	1.3 (1.1-1.5)***	1.6 (1.4-1.9)***
Rurality						
Urban (n=2444)	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Rural (n=5129)	1.3 (1.2-1.5)***	1.6 (1.2-2.1)***	1.0 (0.9-1.1)	1.4 (1.2-1.8)**	1.1 (1.0-1.2)	0.7 (0.6-0.8)***

Characteristic	Tangible					Overall intangible[f]
	Physical[a]	Sexual[b]	Psychological[c]	Property damage[d]	Overall tangible[e]	
	Unadjusted Odds Ratio (95% Confidence Interval)					
Respondent's drinking pattern[g]						
Abstainer (n=3755)	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Non-binge drinker (n=1870)	1.9 (1.6-2.2)***	2.3 (1.7-3.0)***	1.8 (1.6-2.0)***	1.0 (0.8-1.3)	1.9 (1.7-2.1)***	1.2 (1.1-1.3)**
Binge drinker (n=1402)	2.6 (2.2-3.0)***	1.5 (1.1-2.1)*	3.2 (2.8-3.7)***	2.8 (2.3-3.5)***	3.5 (3.1-4.0)***	2.3 (2.0-2.6)***

Ref.: Reference group

*p<0.05, **p<0.01, ***p<0.001

[a] Binary logistic regression models for experiencing at least one type of physical harm, including "Been physically abused or hurt?" and/or "Been involved in a traffic accident because of someone else's drinking?"

[b] Binary logistic regression models for experiencing at least one type of sexual harm, including "Received unwanted sexual attention?" and/or "Been forced or pressured into sexual activity?"

[c] Binary logistic regression models for experiencing at least one type of psychological harm, including "Been verbally abused or threatened?" and/or "Been involved in a serious argument?"

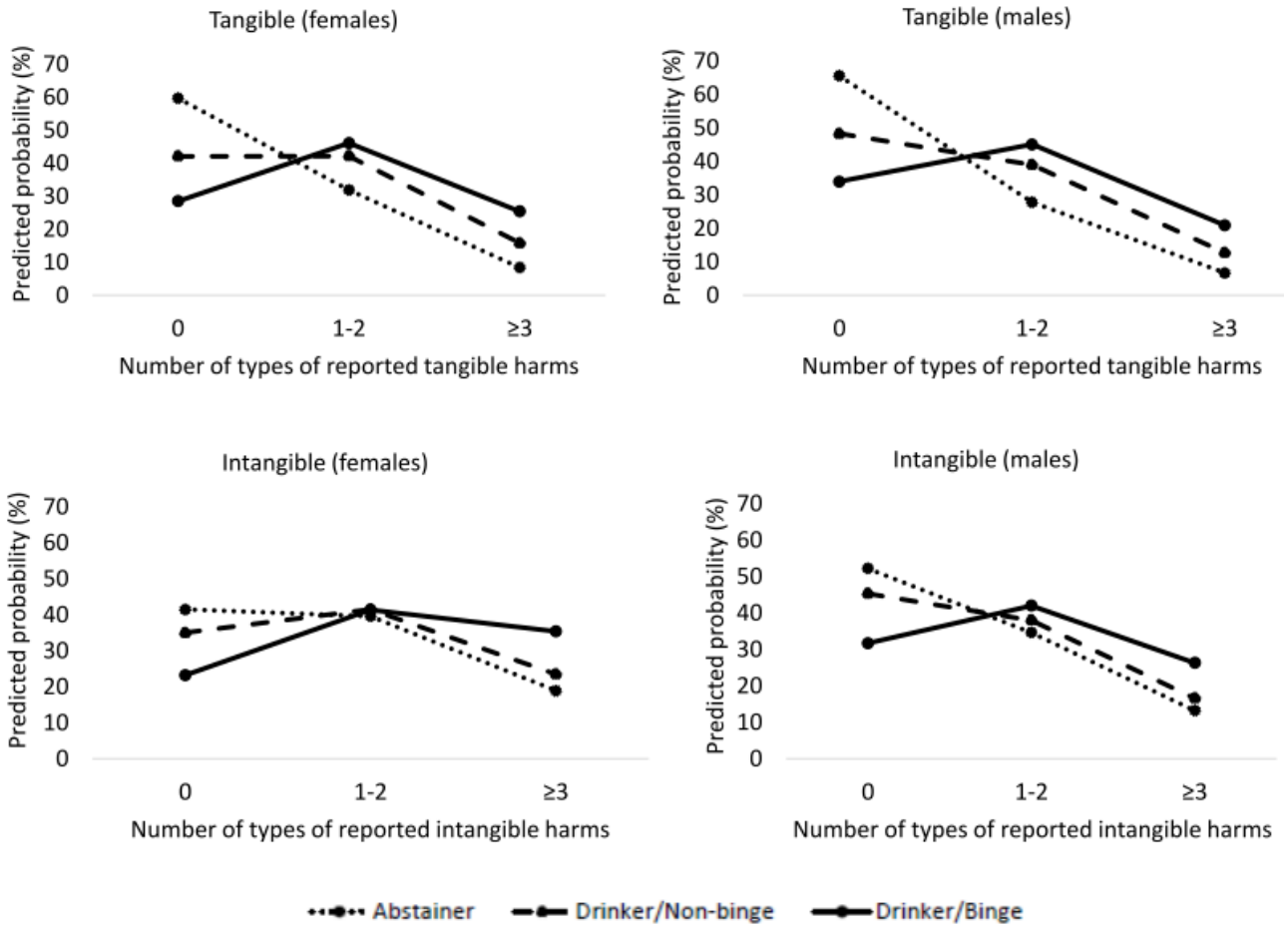
[d] Binary logistic regression models for reporting "Had your house, car, or property damaged?"

[e] Binary logistic regression models for experiencing at least one of the seven types of tangible harms vs. none.

[f] Binary logistic regression models for experiencing at least one of the five types of intangible harms vs. none.

[g] Abstainer is defined as not consuming an alcoholic beverage in the past year. Non-binge drinker is defined as having consumed an alcoholic beverage in the past year but not having had five or more drinks during any occasion. Binge drinking is defined as consuming five or more drinks on an occasion in the past year.

Figure 5.1. Predicted probabilities of experiencing tangible and intangible harms resulting from strangers' drinking by respondents' sex and drinking patterns[a]



[a] Predicted probabilities are calculated based on post estimations of the log-odds coefficients from two ordered logistic regression models (separate models for tangible and intangible harms). Percent can be interpreted as, for example, among females who binge drink, there is a 25.4% probability that they will experience ≥3 different tangible harms and 35.4% probability of experiencing ≥3 different intangible harms.

Chapter 6: Integrative Summary

In the past two decades, alcohol consumption has risen substantially in India[1] and emerging evidence from Indian studies has suggested that people are experiencing alcohol-related harms from others' drinking.[2-5] With heavy episodic alcohol use being a highly prevalent pattern of drinking among Indians who do drink,[6] and the high rates of reported child abuse in the country,[7,8] I anticipated that harms to children and strangers from others' drinking might be substantial. Therefore, in this dissertation, I examined ethical aspects related to preventing alcohol-related harms to others and evidence of these harms in India. Specifically, first, I applied a public health ethics framework to systematically consider the ethical implications of implementing policies to prevent alcohol-related harms to others. Second, I explored the types of alcohol-related harms to children resulting from adults' drinking across domains of physical abuse, psychological abuse, and neglect. Third, I assessed various types of tangible and intangible alcohol-related harms from strangers' drinking and individuals' characteristics that were associated with experiences of harm.

In Chapter 1, I presented evidence from the global literature on alcohol-related harms to children and strangers, and discussed options for selecting a public health ethics framework that is most useful for deliberating ethical implications of policy proposals that aim to reduce alcohol-related harms to others. I described how the integration of Tannahill's decision-making framework[9] and Berkman and colleagues' socio-ecologic

model[10] served as the theoretical foundation for this dissertation. I also reviewed the historical context of alcohol consumption and alcohol control policies in India and described socio-demographic characteristics associated with a greater prevalence of drinking.

In Chapter 2, I presented pertinent methodological considerations. I described the methodology for each study and provided details about the parent study related to the second and third studies in this dissertation. I also explained the statistical analyses that I conducted for the studies and presented findings from sensitivity analyses.

In Chapter 3, drawing on a series of recent alcohol policy proposals in Kerala, India, I established that public health professionals have a responsibility to consider the ethical implications of their public health policy recommendations. I discussed evidence of alcohol-related harms from others' drinking in India to demonstrate the risks that alcohol consumption poses to others. To explore whether the implementation of evidence-based policy interventions could be an effective strategy for preventing alcohol-related harms to others, I synthesized global evidence on the effectiveness of alcohol control policies that reduce alcohol's physical availability.

After presenting evidence of alcohol-related harms to vulnerable populations and discussing some of that the evidence-based policy options that exist, I applied a public health ethics framework as a means of considering ethical aspects of implementing more effective population-level alcohol control policies in India to prevent harms from others'

drinking. The study highlighted the tension between public health values of preventing harm to others and respect for individuals' autonomy. I concluded by suggesting that public health professionals have an obligation to consider the ethical aspects of enhanced use of evidence-based alcohol control policies as a prevention strategy.

In Chapter 4, I examined types of alcohol-related harms to children across domains of physical abuse, psychological abuse, and neglect. I also explored socio-demographic characteristics and adults' drinking patterns associated with reporting alcohol-related harms to children. The findings showed that alcohol is a factor in child abuse in India and respondents commonly reported multiple types of alcohol-related harms to children. I also found that respondents living in rural areas and those who binge drink had greater odds of reporting alcohol-related harms compared to those in urban areas and abstainers. Furthermore, I found differences in the odds of reporting alcohol-related harms to children across locations, for otherwise similar respondents, which suggests that the alcohol environment may contribute to the risk of harm to children. For example, respondents residing in the state of Gujarat, where there is a longstanding statewide alcohol prohibition policy,[11] had reduced odds of reporting alcohol-related harms to children. In contrast, respondents residing in the state of Sikkim, where breweries and distilleries are among the four leading industries,[12] had increased odds of reporting harms to children from adults' drinking. These findings allude to the notion that the availability of alcohol may be associated with alcohol-related harms to children, and thus I postulate that the implementation of alcohol control policies that reduce alcohol's physical availability may be an effective strategy for reducing harms to children.

In Chapter 5, I assessed various types of tangible and intangible alcohol-related harms resulting from strangers' drinking and individuals' characteristics that predicted experiences of such harm. I found that binge drinkers had greater odds of reporting physical, sexual, and psychological harms than abstainers. However, alcohol abstainers did not escape the harm from strangers; approximately one-third of alcohol abstainers experienced a tangible harm.

The findings from this dissertation are of paramount importance. With a growing body of global evidence on harms from others' drinking, this dissertation brings attention to the issue of the ethical tradeoffs associated with preventing alcohol-related harms to others by implementing more effective alcohol control policies – a topic which is yet to be addressed in prior literature, but one that public health professionals have a responsibility to consider.[13] Furthermore, this dissertation addresses a critical gap in the literature, as it is the first systematic research that I am aware of on a wide range of harms from others' drinking in low- or middle-income country (LMIC). Taken together, the findings suggest the importance and feasibility of researching harms from others' alcohol consumption in the context of LMICs, which is immediately relevant with the dynamic alcohol environment in India,[1,14] as well as in other LMICs.[15-17]

In this chapter, I have summarized the findings from this dissertation and will next discuss the public health implications in terms of practice and health policy, as well as

put forward recommendations for future research. I also discuss the dissertation's limitations and strengths.

Public health implications

Public health practice and health policy

As India develops economically, India's young population and the emerging middle class are increasingly consuming alcohol,[1,18] but perhaps not yet to the extent of those with lower socio-economic status. The Indian National Institute of Mental Health and Neuro Sciences (NIMHANS) previously published a report that summarized alcohol-related harms in India and discussed policy options for prevention.[19] With the country's rapidly changing alcohol environment, explicit surveillance of harms resulting from others' drinking is critical to guide prevention initiatives. The findings from this dissertation demonstrate that adults' alcohol use imposes harms on children and strangers, highlighting the urgent need for action to prevent such harms and can be used to help direct effective responses. The new evidence from this dissertation may help public health professionals and decision-makers in weighing the public health value of implementing more evidence-based alcohol policies to prevent harms due to others' alcohol use and the ethical implications.

Potential alcohol control policy interventions to consider should be those aimed at the population level and based on evidence of effectiveness for reducing the availability of alcohol, such as reducing the number of alcohol outlets and restricting the days and hours of alcohol sales – consistent with recommendations from the World Health Organization (WHO) and the United Nations.[20-23] When considering the ethics of implementing

evidence-based alcohol control policies, it is noteworthy to acknowledge that most of the evidence on the effectiveness of the population level alcohol control policies at reducing alcohol-related problems comes from high-income countries.[24] In India, where approximately half of the alcohol consumed is unrecorded and outside of the regulated market,[23] it is possible that these policies might not be as effective at reducing alcohol-related harms to others compared to in high-income countries.

However, recent policy changes across the south Indian state of Kerala that led to the closure of hundreds of bars and an associated decline in recorded alcohol sales provide promising data on the effectiveness of population level policies that reduce the availability of alcohol.[25] Although data are not available on whether drinkers have increased their consumption of unrecorded alcohol, it appears that population level policies can reduce alcohol sales, presumably yielding decreases in consumption even if some people switch to consuming unrecorded alcoholic beverages. The apparent reductions in alcohol consumption are supported by the state government's crime records, as there was a 31% reduction in crime rates associated with the closure of 418 bars.[26]

Recognizing the potential barriers to effectively preventing alcohol-related harms in India, the implementation of policies that reduce the availability of alcohol at the population level is still recommended by Indian public health-oriented institutions, including NIMHANS.[19] The WHO, however, cautions that alcohol control policies that reduce alcohol's availability should not be so restrictive that they promote growth in the informal alcohol market[22] – which is particularly important in a country such as India,

where it is estimated that approximately half of the country's alcohol consumed is unrecorded.[23] To prevent the expansion of the informal alcohol market, the WHO recommends that communities establish systems for monitoring unrecorded alcohol, in conjunction with appropriate enforcement activities.[22]

Community mobilization is also a strategy that can help to guard against the growth of unrecorded alcohol and should be used to enhance the effectiveness of alcohol control policies for preventing harms from others' drinking.[22] Community empowerment and mobilization have been found to be successful strategies for improving a range of health issues in India.[27-30] In regards to preventing alcohol-related harms to others in India, community empowerment and mobilization initiatives can make communities aware and responsive to evidence of effectiveness that can reduce the likelihood of alcohol-related harms to others. These initiatives are likely to make the most impact if the missions support alcohol control policies that are based on evidence of effectiveness at reducing alcohol consumption and related problems. To empower and mobilize communities, public health professionals can work with local leaders to develop an advocacy campaign for a specific evidence-based alcohol control policy, disseminate messages through mass media to increase awareness, and form a basis for collective action that supports the implementation of more effective alcohol control policies.[28,29]

The 2010 WHO *Global Strategy to Reduce the Harmful Use of Alcohol* calls for collaborative global action and increased international cooperation to reduce harms from alcohol consumption at local, national, regional, and international levels.[22] The Global

Strategy also calls for monitoring and surveillance of alcohol-related harms at these various levels. Strengthening the evidence base of harms is a critical element of the Global Strategy, as it encourages the development and implementation of alcohol control policy interventions. Therefore, evidence from this dissertation on harms from others' alcohol use in India should be brought into the global alcohol policy dialogue to provide an avenue for countries to share lessons learned on what has been successful for reducing alcohol-related harms. This line of research can be conducted in other LMICs as well; public health professionals can partner with colleagues in other countries to develop systems for the surveillance and monitoring of alcohol-related harms to others, which would help in determining the need for more evidence-based alcohol control policies around the globe.

Furthermore, global dissemination of evidence of harms from others' alcohol consumption can raise awareness of the issue internationally, potentially increasing the likelihood of policymakers addressing the prevention of harms from others' drinking in their own jurisdiction. The global alcohol industry is attracted to countries with rapidly growing economies[14,31,32] so it is critical that India, as well as other emerging markets, strengthen their public health infrastructures to ensure that alcohol policies are developed independent of commercial interests.[32-34]

Future research

Estimates on the prevalence of alcohol-related harms to children and strangers from others' drinking have not yet been examined using a probability sample. Data for this

dissertation were from a case-control sample in five states, and thus, the results do not provide prevalence estimates for the respective states. Since national surveys indicate that the prevalence of alcohol consumption varies in each state,[35,36] future studies could explore variations in the prevalence and types of alcohol-related harms from others' drinking in states using a probability sample to enhance the generalizability of the findings at the state-level.[37] State-specific prevalence estimates of alcohol-related harms to children and harms from strangers' drinking across domains of harms could help to further understand the extent of this public health problem.

While there is a substantial evidence base globally for what is effective in controlling and reducing alcohol problems, there is little such evidence in the Indian context. Harms to others data can play a critical role as outcomes in evaluating the effectiveness of different mixes of alcohol policies. The role of these different mixes of state-level alcohol control policies in state-specific levels of harms from others' drinking is thus another area for additional research. The Indian alcohol market is fragmented by state and alcohol policies are controlled by the state governments[38] so future studies could explore whether people experience a lower prevalence of harms from others' drinking in states where there are more effective and better enforced alcohol policies.

Data for this dissertation were not used to assess how socio-demographic characteristics associated with reporting alcohol-related harms to children and experiencing harm from strangers' drinking varied by severity and frequency. This dissertation did not explore the extent to which respondents' were negatively affected by, for example, infrequently

being physically harmed from a strangers' drinking compared to frequently experiencing various intangible harms, such as feeling unsafe while using public transit and going out of their way to avoid drunk people – which could substantially affect their daily routines. Future research could develop a weighted index to account for the severity and frequency of harms and quantify alcohol-related harms from others' drinking in terms of personal health and well-being. In addition, qualitative methods, such as semi-structured individual interviews could be useful for further understanding how others' drinking affects respondents' perceptions of their own health status.

Additionally, studies on the societal economic burden would be useful in advocating for policy changes to provide concrete evidence on the adverse impacts of others' alcohol consumption in a LMIC. Researchers have not yet begun to explore questions such as: What are the cumulative healthcare costs of those who had to seek medical care as a result of their interaction with an intoxicated person? What are the costs of lost productivity due to experiencing harm from others' alcohol use?

Limitations and strengths

There are several limitations to this dissertation. To illustrate an approach for considering the ethical implications of alcohol control policies to prevent alcohol-related harms to others, I applied one public health ethics framework; however, the extent to which policymakers in India would be influenced by the ethical debate is unknown. In addition, the epidemiologic findings may not be generalizable to other parts of India because the sample was not selected through population level probability sampling techniques. However, participants were purposefully selected from sites with diverse alcohol

environments in five different regions of India to broaden the transferability of the findings. Although the findings cannot be interpreted as prevalence estimates since a case-control approach was used, the study design and complex sampling methodology were selected to assure that data from people in smaller subgroups (e.g., female drinkers) were captured.

Data were based on self-reported alcohol-related harms from others' drinking and perceived harms to children, which involves a substantial degree of subjective interpretation. The types of harms were not defined for respondents during the interviews, so respondents likely had different perceptions of what constitutes a harm, as well as different beliefs about whether the harm could be attributed to alcohol.[39] The subjectivity is less critical in this dissertation because I was not attempting to determine the prevalence of alcohol-related harms to others, but rather was interested in examining associations between socio-demographic characteristics and respondents' drinking patterns and reports of such harm. Furthermore, documenting subjective experiences is also useful, as such experiences of harm influence perceived comfort in their environment and their attitudes about consuming alcohol.[40]

Despite these limitations, this dissertation has many strengths. The first study fills a gap in the current literature on harms from others' drinking regarding the importance of considering the ethical issues associated with alcohol control policy recommendations to reduce these harms. This dissertation contributes to the body of scientific evidence on alcohol-related harms imposed on others, which might help public health professionals in

their ability to frame the need for more effective alcohol control policies as a prevention strategy. To my knowledge, no other studies in India, or in any other LMIC, have documented the role of alcohol in a wide range of types of alcohol-related harms to children and strangers. This dissertation, thus, not only marks the first of its kind in India, but also in any LMIC. The questions to assess the epidemiology of alcohol-related harms from others' drinking came from the WHO protocol,[41] which will enable cross-country comparisons as this line of research expands to other LMICs.

Conclusions

My dissertation demonstrates that alcohol consumption in India is associated with harms that span beyond the adverse effects to the drinker. This new evidence may enhance public health professionals' ability to consider the ethical implications of recommending evidence-based alcohol control policies, and may strengthen the rationale for implementing such policies as a possible approach to prevent harms from others' drinking. This dissertation shows that adults' alcohol use negatively affects children, across the domains of physical abuse, psychological abuse, and neglect. Additionally, the findings suggest that Indian adults are experiencing tangible and intangible harms due to strangers' drinking. A public health-oriented approach for preventing harms from others' drinking in Indian communities, such as by developing and implementing evidence-based alcohol control policies, may simultaneously decrease alcohol-related problems among those who drink.

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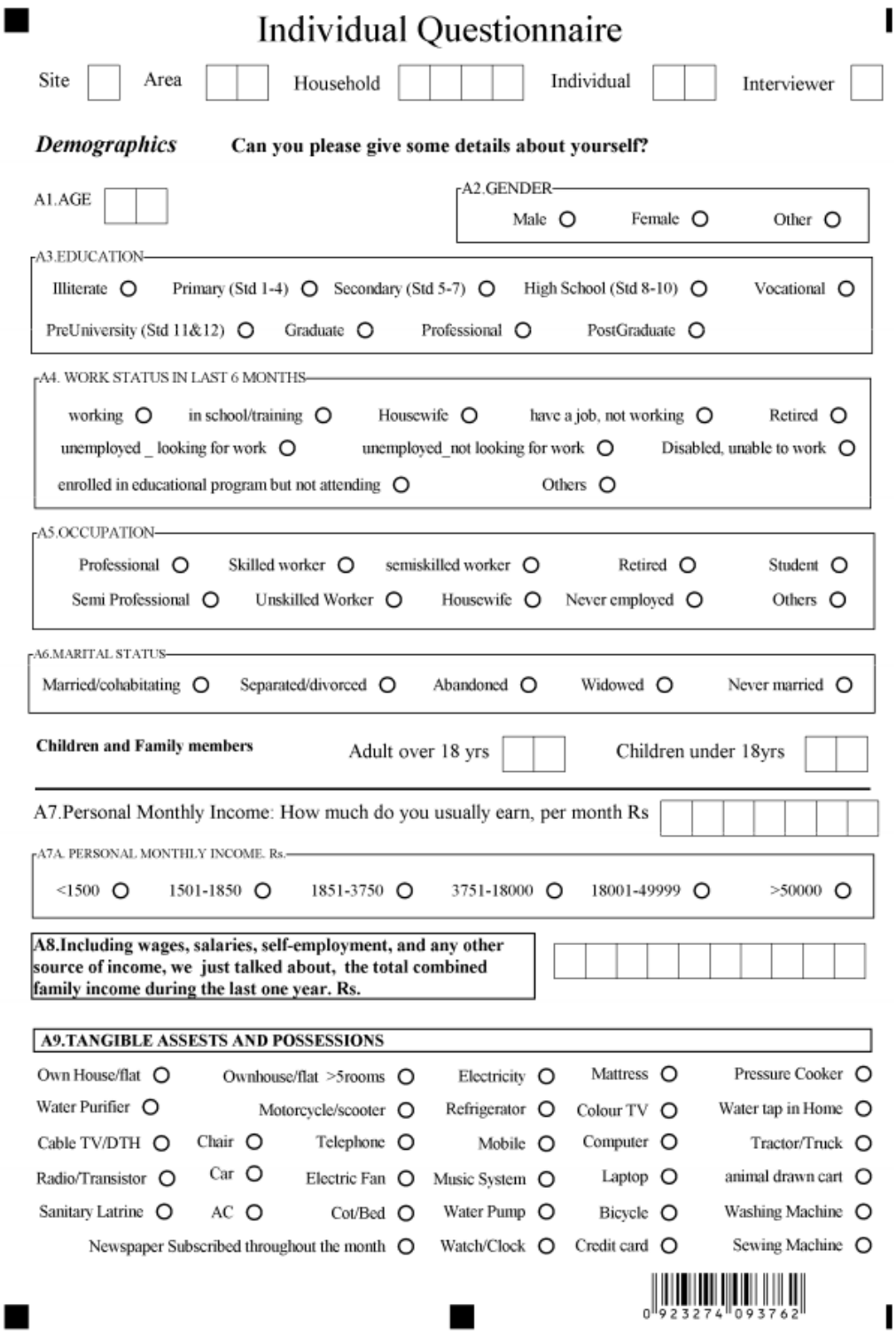
Appendices

Appendix 1: Selected sections of relevance from parent study interview guide



Individual Questionnaire

Site ☐ Area ☐☐ Household ☐☐☐☐ Individual ☐☐ Interviewer ☐

Demographics **Can you please give some details about yourself?**

A1.AGE ☐☐

A2.GENDER
Male ○ Female ○ Other ○

A3.EDUCATION
Illiterate ○ Primary (Std 1-4) ○ Secondary (Std 5-7) ○ High School (Std 8-10) ○ Vocational ○
PreUniversity (Std 11&12) ○ Graduate ○ Professional ○ PostGraduate ○

A4. WORK STATUS IN LAST 6 MONTHS
working ○ in school/training ○ Housewife ○ have a job, not working ○ Retired ○
unemployed _ looking for work ○ unemployed_not looking for work ○ Disabled, unable to work ○
enrolled in educational program but not attending ○ Others ○

A5.OCCUPATION
Professional ○ Skilled worker ○ semiskilled worker ○ Retired ○ Student ○
Semi Professional ○ Unskilled Worker ○ Housewife ○ Never employed ○ Others ○

A6.MARITAL STATUS
Married/cohabitating ○ Separated/divorced ○ Abandoned ○ Widowed ○ Never married ○

Children and Family members Adult over 18 yrs ☐☐ Children under 18yrs ☐☐

A7.Personal Monthly Income: How much do you usually earn, per month Rs ☐☐☐☐☐☐☐

A7A. PERSONAL MONTHLY INCOME. Rs.
<1500 ○ 1501-1850 ○ 1851-3750 ○ 3751-18000 ○ 18001-49999 ○ >50000 ○

A8.Including wages, salaries, self-employment, and any other source of income, we just talked about, the total combined family income during the last one year. Rs. ☐☐☐☐☐☐☐☐☐☐

A9.TANGIBLE ASSESTS AND POSSESSIONS

Own House/flat ○	Ownhouse/flat >5rooms ○	Electricity ○	Mattress ○	Pressure Cooker ○
Water Purifier ○	Motorcycle/scooter ○	Refrigerator ○	Colour TV ○	Water tap in Home ○
Cable TV/DTH ○	Chair ○	Telephone ○	Mobile ○	Computer ○	Tractor/Truck ○
Radio/Transistor ○	Car ○	Electric Fan ○	Music System ○	Laptop ○	animal drawn cart ○
Sanitary Latrine ○	AC ○	Cot/Bed ○	Water Pump ○	Bicycle ○	Washing Machine ○
Newspaper Subscribed throughout the month ○			Watch/Clock ○	Credit card ○	Sewing Machine ○

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D. TOBACCO

D1. Does someone in your household or workplace smoke in closed areas (in the building) when you are present? Yes ○ No ○

D2. Do you currently smoke tobacco (cigarette/bidi) or use smokeless tobacco products (khaini, Hans, zarda)

No ○ Smokeless ○ Smoke ○ Both ○

IF THE PERSON IS NOT USING TOBACCO, THEN SKIP TO E1

D3.At what age did you start regular use (at least once a month)?

>45years ○ 35-45years ○ 26-34years ○ 21-25years ○ 16-20years ○ <16years ○

D4. In the past 4 weeks how much have you spent on buying tobacco products (bidi, cigarette, zarda, khaini, Hans etc)? Rs. | | | | | | | |

D5.How soon after you wake up do you have your first cigarette/ smokeless tobacco ?

After 60 min ○ 31-60 min ○ 6-30 min ○ with in 5 min ○

D6. Which cigarette/smokeless tobacco would you hate most to give up? First one in the morning ○ Any other ○

D7. How many cigarettes do you smoke/SMT equivalents per day? <10 ○ 11-20 ○ 21-30 ○ >30 ○

D8. Do you find it difficult to refrain from smoking in places where it is forbidden. e.g., in places of worship, the library, the cinema, etc? Yes ○ No ○

D9.Do you smoke more during the first hours after waking than during rest of the day Yes ○ No ○

D10. Do you smoke even if you are so ill that you are in bed most of the day? Yes ○ No ○

E. ALCOHOLIC BEVERAGES

E1. How often do you have a drink containing alcohol in the past year? Never ○

Monthly or less ○ 2 to 4 times a month ○ 2 to 3 times a week ○ 4 or more times a week ○

E2. If E1 is NEVER;Did you ever in your life have a drink of any beverage containing alcohol? Yes ○ No ○

E3. What is the reason you do not drink (or drink currently)? (CHECK ALL THAT APPLY)

No occasion came up where I wanted to drink ○
My religion forbids it ○
Brought up not to drink ○
Pregnant/trying to get pregnant ○
It does not interest me ○
I am afraid I would have problems with alcohol/become alcoholic ○
My responsibilities require me to be sober ○
It would have a bad effect on my activities ○
My health is bad/on medication ○
I have no reason ○
Too expensive ○
Others ○

IF THE PERSON HAS NOT HAD A DRINK IN THE LAST YEAR (E1=0); SKIP TO H1

E4. What is your drink-of-first-preference (have most frequently) country liquor-spirits (legal) ○ wine ○
IMFL-whisky, rum, vodka, gin ○ locally made beer/wine ○ beer-strong ○ beer- normal ○ illicit liqour spirits ○

E5. How often do you have first-preference drink in the past year? Never ○
Monthly or less ○ 2 to 4 times a month ○ 2 to 3 times a week ○ 4 or more times a week ○

E6. How many drinks of first-preference drink do you have on a typical day when you are drinking?**
1 or 2 ○ 3 or 4 ○ 5 or 6 ○ 7, 8 or 9 ○ 10 or more ○

E7.How much does one drink of first-preference drink cost? Rs
Help to calculate...

E8. What is your beverage-of-second-preference IMFL-whisky, rum, vodka, gin ○ locally made beer/wine ○
country liquor-spirits (legal) ○ illicit liqour spirits ○ wine ○ beer- normal ○ beer-strong ○

E9. How often do you have second-preference drink in the past year? Never ○
Monthly or less ○ 2 to 4 times a month ○ 2 to 3 times a week ○ 4 or more times a week ○

E10. How many drinks of second-preference drink do you have on a typical day when you are drinking?**
1 or 2 ○ 3 or 4 ○ 5 or 6 ○ 7, 8 or 9 ○ 10 or more ○

E11.How much does one drink of second-preference drink cost? Rs

E12.How often do you have locally made distilled drinks in the past year? Never ○
Monthly or less ○ 2 to 4 times a month ○ 2 to 3 times a week ○ 4 or more times a week ○

E13.How often do you have traditionally brewed drinks (toddy/chhang/rakshi/cholai etc) in the past year?
Never ○ Monthly or less ○ 2 to 4 times a month ○ 2 to 3 times a week ○ 4 or more times a week ○

E14. Name the traditional drink you have... *WRITE THE NAME OF THE DRINK*

E15. What is the traditional drink size *WRITE THE QUANTITY*

E16. How much does this quantity cost Rs. *WRITE THE COST- NUMERALS ALONE*

*** One drink = 30 ml. spirits i.e. whisky/brandy/vodka/rum (1 quarter/ nip = 6 drinks; ½ bottle =12 drinks; full bottle = 24) = ½ bottle plain beer = 1/3 bottle strong beer*

E17. How many drinks of such traditional drinks do you have on a typical day when you are drinking?

1 or 2 ○ 3 or 4 ○ 5 or 6 ○ 7, 8 or 9 ○ 10 or more ○

E18. How many drinks containing alcohol do you have on a typical day when you are drinking?

1 or 2 ○ 3 or 4 ○ 5 or 6 ○ 7, 8 or 9 ○ 10 or more ○

E19. How often do you have five or more drinks on one occasion?

Never ○ Less than Monthly ○ Monthly ○ Weekly ○ Daily or almost daily ○

E20. Among your family members, who else uses alcohol? (Mark Multiple)

Father ○ Son ○ Brother ○ Uncle(s) ○ Grandfather ○

Mother ○ Daughter ○ Sister ○ Aunt (s) ○ Grandmother ○

E21.At what age did you start regular use of alcohol- i.e. at least once a month?

>45years ○ 35-45years ○ 26-34years ○ 21-25years ○ 16-20years ○ <16years ○

E22. In the last one month, how much would you have spent on buying alcoholic drinks? Rs. | | | | | | | | | |

F. DRINKING CONTEXTS

0=Never, 1=<Monthly: 2=Monthly; 3=Weekly; 4=Daily/Almost daily WRITE THE APPROPRIATE NUMBER IN THE BOX

F1. Thinking back over the last one year, about how often did you drink in the following circumstances? Think of all the times that apply in each situation. e.g, having a drink with a meal in your own home should be included under both

Along with your meal- not snacks ☐ At a party or celebration ☐ In the street ☐ In your own home ☐

At a friend's home ☐ At your workplace ☐ In a toddy shop ☐ In a restaurant/club ☐

Weekend (Friday-Saturday-Sunday) evenings ☐ Weekday evenings ☐ In a local (illicit) liquor shop ☐

Weekdays daytime ☐ Weekend daytime ☐ Prior to having sex ☐ In a bar/pub/disco ☐

F2.How often in the last one year have you had a drink when you were with the following persons? Think of all the times that apply for each person

Spouse- whether/ not others present ☐ Male family member ☐ Female family member ☐ Friends ☐

People you work with ☐ No one happened to be with you ☐

HARMS TO OTHERS(ASK ALL RESPONDENTS)

H1.Now we are interested in the people you have been in contact with over the last one year and their drinking. We do not need to know names, just their relationships to you. Thinking about the last one year, can you think of anyone[else] among the people in your life - who you would consider to be a fairly heavy drinker, or someone who drinks a lot sometimes? Yes ○ No ○

IF NO,SKIP TO H5.

H2.What is their relationship to you? (Mark multiple)

Spouse/ Ex-spouse ○ Child ○ Father/ brother/ male relative ○ Sister/Female relative ○

Male friend/ work colleague ○ Female friend/ work colleague ○ Neighbor ○

KEY FOR H3 & H4 - - 0=NEVER;1=OCCASIONALY; 2=FREQUENTLY; 3=VERY FREQUENTLY

H3.So, how many times in the last one year, because of the drinking of any of these people

Did you have a serious argument? ☐

Were you emotionally hurt or neglected? ☐

Were you put at risk in a car/motorcycle while they were driving ☐

Were you injured in an accident because of any of these people's drinking ☐

They failed to do something they were being counted on to do? ☐

They took money or valuables that were yours ☐

Someone in the household did not do their share of work around the house? ☐

You don't see friends /family as much because you are embarrassed about someone in the household's drinking ☐

There was less money for household expenses because of someone in the household using the money for drinking? ☐

Were you threatened with violence / weapon? ☐

You had to leave home to stay somewhereelse ☐

Were you physically hurt ☐

They broke or damage something that mattered to you because of their drinking? ☐

Did you stop seeing any of these people ☐

Their drinking spoilt a social occasion you were at ☐

You have gone without food because of someone in the household's drinking ☐

Were you forced or pressured into sex or something sexual? ☐

H4.Next, some questions about things that you may have had to do for a family member or friend because of their drinking. How many times in the last one year did you have to...

spend time caring for a family member / friend ☐

take on extra responsibilities? ☐

had to clean up after a family member or friend ☐

take a family member / friend somewhere or rescue them ☐

H5. How many times in the last one year, because of someone's drinking, (including your own), Was any child... 0=Never; 1=Less than monthly; 2=Monthly; 3=Weekly; 4=Daily

left in a risky/ unsafe situation due to poor supervision? ☐ yelled at, or verbally abused? ☐

physically hurt because of someone's drinking? ☐ witness serious violence in the home? ☐

In difficulty as there was not enough money for the things needed by them ☐

H6. Now we are interested in any negative effects of your COWORKERS' DRINKING. Because of your COWORKERS' DRINKING, in the last one year..... (mark multiple)

have you had to work extra hours? ○ has your ability to do your job been negatively affected? ○

were you involved in an accident or a near-accident at work? ○

has your productivity at work been reduced ○

have you had to cover for them because of their drinking ○

KEY FOR H7 & H8 - (0=NEVER; 1=OCCASIONALY; 2= FREQUENTLY

H7.We would now like to ask you about STRANGERS /PEOPLE YOU DON'T KNOW WELL. In the last one year, how many times, because of some strangers' drunken behavior, have you

Been disturbed or kept awake at night? ☐ Been verbally abused or threatened? ☐

Been physically abused or hurt? ☐ Been involved in a serious argument ? ☐

Experienced trouble or noise because of drinkers at a bar/drinking place? ☐

Felt unsafe while using public transport or in any public place ☐

Been involved in a traffic accident because of someone else's drinking? ☐

Gone out of your way to avoid drunk people or places where drinkers hang out? ☐

Been annoyed by people vomiting, urinating or littering after drinking? ☐

Received unwanted sexual attention? ☐ Been forced or pressured into sexual activity? ☐

Had your house, car or property damaged? ☐

Appendix 2: Curriculum Vitae

Marissa Bree Esser, *MPH, CHES*
Curriculum Vitae

Office:
Johns Hopkins Bloomberg School of Public Health
624 N. Broadway, 2nd floor
Baltimore, MD 21205
E-mail: messer1@jhu.edu; marissaesser@gmail.com

Place of birth: Madison, Wisconsin, USA

Education

Doctor of Philosophy – Health, Behavior and Society (ABD) 09/2012 – Present
Certificate in Injury and Violence Prevention
Johns Hopkins Bloomberg School of Public Health (JHSPH), Baltimore, MD

Master of Public Health – Behavioral Science Health Education 05/2010
Concentration in Mental Health
Emory University, Rollins School of Public Health (RSPH), Atlanta, GA

Bachelor of Arts – Psychology (with Honors) 05/2008
University of Wisconsin-Madison, Madison, WI

Certification

Certified Health Education Specialist (CHES) 05/2010 – Present

Teaching Assistant Training, JHSPH Center for Teaching and Learning 01/2013

Additional Training

Vesalius College, Council on International Educational Exchange, Brussels, Belgium 12/2007
Student Academic Semester Abroad

ASLI—A Spanish Language Institute, Cuernavaca, Mexico 01/2007
Student Winter Session Abroad

Professional Research Experience

Centers for Disease Control and Prevention (CDC), Atlanta, GA 11/2014 – Present
Alcohol Program, Division of Population Health
National Center for Chronic Disease Prevention and Health Promotion
Consultant, National Network of Public Health Institutes, Cooperative Agreement
5U38OT000203-02

- Critically review scientific literature on chronic and acute causes of alcohol-related deaths to update the scientific foundations of the CDC Alcohol-Related Disease Impact (ARDI) online application, which generates reports on alcohol-related health deaths and years of life lost for 54 conditions
- Manage the ARDI project updates and oversee the scientific contributions from an alcohol epidemiologist at the New York City Department of Health and Mental Hygiene
- Evaluate scientific evidence to determine whether sufficient data are available to support the recommendation of expanding the ARDI application to include infectious diseases such as HIV, tuberculosis, hepatitis B, and hepatitis C, as conditions associated with alcohol-related deaths
- Efficiently respond to technical inquiries from public ARDI users, including from those at state and local health agencies, regarding the online application's scientific methodology and applied use of statistical analyses

National Institute of Mental Health and Neuro Science (NIMHANS),
Bangalore, India 07/2014 – Present
Department of Epidemiology, Centre for Public Health
Visiting Researcher for PhD Dissertation Research

- Conceptualize three quantitative studies to assess the burden of alcohol-related harm to others using a sample of more than 8,000 adults from five states across India, collected by NIMHANS investigators in 2012 (PI: Dr. Vivek Benegal)
- Analyze Indian alcohol-related harm to others dataset using STATA 12.1
- Lead three manuscripts on alcohol-related harm to others among adults and children, while collaborating with team of NIMHANS scientists
- Conduct extensive literature review on alcohol-related harm to others globally

Johns Hopkins Bloomberg School of Public Health, Bangalore, India 07/2014 – Present
International Injury Research Unit
Graduate Research Assistant of Dr. Shivam Gupta (PI: Dr. Adnan Hyder)

- Primary investigator quantitatively analyzing the role of alcohol in injuries involving road traffic crashes among emergency department patients in Hyderabad, India
- Critically analyze data from two WHO Global Status Reports (on Alcohol and Health, and Road Safety) for lead role in developing a manuscript examining the relationship between population level alcohol consumption and road traffic fatality rates in ten low- and middle-income countries
- Compile and summarize alcohol-related measures from countries that have identified drink-driving as a risk factor for road traffic crashes (Brazil, Cambodia, China, India, and Vietnam), as part of the monitoring and evaluations efforts of the Global Road Safety Program (previously referred to as Road Safety in 10 Countries) funded by Bloomberg Philanthropies

Johns Hopkins Bloomberg School of Public Health, Baltimore, MD 09/2012 – 05/2014
Center for Alcohol Marketing and Youth
Graduate Research Fellow of Dr. David Jernigan
Technical Assistant to Centers for Disease Control and Prevention (CDC) Alcohol Program

- Primary investigator to analyze and evaluate the quantitative impact of Maryland's increased alcohol sales tax on sales of spirits, beer, and wine in the state's counties using STATA 12.1
- Principal investigator on study to develop a scale to assess changes in national alcohol marketing policies in 64 countries from 2002 to 2008 using data from the World Health Organization's (WHO) Global Surveys on Alcohol and Health
- Led development of the policy interventions chapter in the 2014 WHO Global Status Report on Alcohol and Health (Chapter 4) and analyzed the WHO 2012 Global Survey on Alcohol and Health to present the results in the chapter
- Led literature review for Guide to Best Practices Compendium for the Maryland Statewide Collaborative to Reduce College Drinking and Related Problems
- Maintain and address user inquires for CDC Alcohol-Related Disease Impact (ARDI) online application, which provides estimates of alcohol-related health impacts for 54 causes of death

World Health Organization (WHO), Brazzaville, Congo, Africa 06/2013 – 08/2013
Health Risk Factors Program, Health Promotion Cluster
Alcohol Policy Research Intern

- Led analysis of alcohol policy data from 46 African countries, collected as part of the 2012 WHO Global Survey on Alcohol and Health, in collaborated with the WHO lead technical officer of substance use
- Adapted evidence-based alcohol policy evaluation methodology (Alcohol Policy Index) to calculate country-specific policy restrictiveness scores
- Assessed changes in alcohol policies in the African region before and after the introduction of the WHO Regional Strategy to Reduce Harmful Use of Alcohol by comparing key indicators on the 2008 and 2012 WHO Global Surveys on Alcohol and Health
- Wrote status report for WHO leadership on national alcohol policies in the African region

Centers for Disease Control and Prevention (CDC), Atlanta, GA 07/2010 – 08/2012
Alcohol Program, Division of Population Health
National Center for Chronic Disease Prevention and Health Promotion
Oak Ridge Institute for Science and Education (ORISE) Alcohol Epidemiology Fellow

- Led quantitative study assessing the prevalence of alcohol dependence and other drinking patterns among U.S. adults using the 2009 – 2011 National Survey on Drug Use and Health in collaboration with scientists at the Substance Abuse and Mental Health Services Administration (SAMHSA)
- Evaluated over 8,000 citations and titles, and extracted data from over 50 peer-reviewed publications about electronic screening and brief interventions (e-SBI) for excessive alcohol use as co-leader of the Guide to Community Preventive Services systematic review
- Meta-analysis of data from the 31 studies included in e-SBI systematic review
- Analyzed 2008 Behavioral Risk Factor Surveillance System binge drinking data of 7,000 respondents using statistical software SAS-callable SUDAAN 9.2 to assess usefulness of data for estimating binge drinking intensity, which enhances the capacity for state-specific public health surveillance

Emory University, Rollins School of Public Health, Atlanta, GA 02/2010 – 05/2010
Graduate Research Assistant of Dr. Frank Wong

- Prepared quantitative interview dataset to analyze needs and health issues, with an emphasis on substance use and factors related to HIV/AIDS transmission, for over 300 Asian gay/bisexual males
- Coded and analyzed approximately 600 multi-level variables to examine relationships between substance use, social support, and HIV knowledge using SPSS/PASW 17.0 statistical software

Emory University, Rollins School of Public Health, Atlanta, GA 01/2009 – 03/2010
National Institute of Psychiatry, Mexico City, Mexico 12/2009 – 01/2010
Master's Thesis Investigator with Dr. Michael Windle (Atlanta); Dr. Guilherme Borges (Mexico)

- Conducted secondary analysis on associations between quantity of alcohol consumption and the mode and severity of injuries among emergency department patients in Mexico with data from the WHO Collaborative Study on Alcohol and Injuries, using SPSS statistical software
- Defended thesis at oral presentation to faculty, staff, and colleagues

Ministries of Health, Pan American Health Organization, Panama City, Panama
Graduate Research Intern 06/2009 – 07/2009

- Revised WHO's Collaborative Study on Alcohol and Injuries semi-structured interview questionnaire to be culturally appropriate for research study in Panama
- Participated in hospital site visits to inform doctors and nurses about the investigation protocol to ensure consistent data collection methods from 500 emergency department patients

Undergraduate Senior Thesis, University of Wisconsin-Madison, Madison, WI
Principal Student Investigator, Department of Psychology 01/2007 – 05/2008

- Designed study to investigate the influence of perceived alcohol impairment on reactions to sexism
- Developed eight computerized modules with different experimental conditions for data collection
- Prepared quantitative dataset from data collected and analyzed using SPSS statistical software

Fundus Photograph Reading Center, University of Wisconsin-Madison 05/2007 – 08/2007
Administrative Assistant, Department of Ophthalmology & Visual Sciences, School of Medicine & Public Health

- Conducted literature reviews to assist doctors with clinical trials research about ophthalmologic diseases
- Edited doctors' manuscripts to prepare for publication to disseminate new research findings

Honors and Awards

Johns Hopkins Bloomberg School of Public Health

- Health, Behavior and Society Doctoral Distinguished Research Award 2014 – 2015
  Funding to conduct dissertation research in Bangalore, India

- Health, Behavior and Society Doctoral Special Project Award 2014
  Funding for dissertation research in India
- Center for Global Health, Global Health Established Field Placement Award 2013
  Awarded support for research with WHO on alcohol policies in Africa
- Health, Behavior and Society Doctoral Special Project Award 2013
  Awarded support for research with WHO on alcohol policies in Africa
- Health, Behavior and Society Departmental Doctoral Tuition Scholarship 2012 – Present

Emory University

- Phi Chapter of Delta Omega Honorary Society 2009 – 2010
  Nominated for merit and leadership at Rollins School of Public Health
- "We Are Emory - Community of Builders" Award 2009 – 2010
  Office of Community and Diversity—for commitment to service and engaged scholarship
- Emory Center for Injury Control Summer Scholarship Award 2009
  Funding for research internship in Panama City, Panama
- O.C. Hubert Charitable Fund 2009
  Awarded support for master's thesis research

University of Wisconsin-Madison

- Ralph B. Abrams Scholarship Award 2008
  Academic excellence, community service, leadership, diversity, strength of character, and creative accomplishment
- Uehling Award 2008
  Recognition of excellent undergraduate research in psychology
- Psi Chi Undergraduate Research Grant 2007 – 2008
- Dean's Honors List (all semesters) 2006 – 2008
- Trewartha Undergraduate Honors Scholarship Award 2007
  Awarded for undergraduate senior thesis proposal
- Psi Chi Psychology National Honor Society 2007
- William F. Vilas Scholarship Award 2006
  Freshman who demonstrated strong academic performance based on class rank and GPA
- Phi Eta Sigma Honor Society 2006

Research Funding

Alcohol's Harm from Others' Drinking in India
Funding Agency: Department of Health, Behavior and Society, Johns Hopkins Bloomberg School of Public Health
Marissa Esser (Role: Principal Investigator)
Period of Support: September 2014 – June 2015
Funding Level: $2,000
Description: Dissertation research on alcohol-related harms from others' drinking in India.

Exploring Key Factors of Alcohol Policies and Harm to Others in Two States of India
Funding Agency: Department of Health, Behavior and Society, Johns Hopkins Bloomberg School of Public Health
Marissa Esser (Role: Principal Investigator)

Period of Support: October 2013 – June 2014
Funding Level: $2,000
Description: Dissertation research on alcohol policies and harm to others in two Indian states.

Alcohol Policy Analysis in Africa
Funding Agency: Johns Hopkins Center for Global Health, Johns Hopkins Bloomberg School of Public Health
Marissa Esser (Role: Alcohol Policy Research Intern)
Period of Support: June 2013 – August 2013
Funding Level: $3,500
Description: Research at the WHO's African Regional Office in Brazzaville, Congo to evaluate national alcohol policies of 46 World Health Organization Member States.

Evaluation of National Alcohol Policies among 46 World Health Organization African Member States
Funding Agency: Department of Health, Behavior and Society, Johns Hopkins Bloomberg School of Public Health
Marissa Esser (Role: Alcohol Policy Research Intern)
Period of Support: October 2013 – June 2013
Funding Level: $2,000
Description: Research at the WHO's African Regional Office in Brazzaville, Congo to evaluate national alcohol policies of 46 World Health Organization Member States.

Associations between Alcohol Consumption and Type and Cause of Injury among Emergency Department Patients
Funding Agency: O.C. Hubert Charitable Fund, Emory University
Marissa Esser (Role: Principal Student Investigator)
Period of Support: July – December 2009
Funding Level: $1,500
Description: Master's thesis research alcohol-related injuries among emergency department patients in Panama and Mexico.

Alcohol-related Injuries among Emergency Department Patients in Three Metropolitan Hospitals in Panama
Funding Agency: Center for Injury Control, Emory University
Marissa Esser (Role: Intern)
Period of Support: June – July 2009
Funding Level: $1,000
Description: Research with the Pan American Health Organization and the Panamanian Ministry of Health on alcohol-related injuries among emergency department patients in Panama.

Publications

Peer-Reviewed Journal Articles

1. **Esser, M. B.,** Hedden, S., Kanny, D., Brewer, R. D., Gfroerer, J. C., & Naimi, T. S. (2014). Prevalence of alcohol dependence by drinking patterns among U.S. adults, 2009-2011. *Preventing Chronic Disease,* 11, 140329.

2. **Esser, M. B.,** & Siegel, M. (2014). Alcohol facts labels on Four Loko: Will the Federal Trade Commission's order be effective in reducing hazardous drinking among underage youth? *The American Journal of Drug and Alcohol Abuse,* 40(6), 424-27.

3. **Esser, M. B.** & Jernigan, D. H. (2014). Assessing restrictiveness of national alcohol marketing policies. *Alcohol and Alcoholism,* 49(5), 557-62.

4. Ferreira-Borges, C., Dias, S., Parry, C. D., Babor, T. F., & **Esser, M. B.** (In press). Alcohol and public health in Africa: Can we prevent alcohol-related harm from increasing? *Addiction.*

5. **Esser, M. B.,** Kanny, D., Brewer, R. D., & Naimi, T. S. (2012). Usefulness of the largest number of drinks consumed for estimating binge drinking intensity. *American Journal of Preventive Medicine,* 42(6), 625-29.

6. **Esser, M. B.,** Waters, H., Smart, M., & Jernigan, D. H. (Under review). Impact of Maryland's 2011 alcohol sales tax increase on alcoholic beverage sales.

7. **Esser, M. B.** & Jernigan, D. H. (Under review). Diageo in India: A case study of market development and public health.

8. **Esser M. B.,** Gururaj G., Girish N., Jernigan D. H., Murthy P., Jayarajan D., et al. (Under review). Harms to adults from others' heavy drinking in five Indian states.

9. **Esser, M. B.,** Wadhwaniya, S., Gupta, S., Tetali, S., Gururaj, G., Stevens, K. A., & Hyder, A. A. (Under review). Characteristics associated with alcohol consumption among emergency department patients presenting with road traffic injuries in Hyderabad, India.

10. Ferreira-Borges, C., **Esser, M. B.,** Parry, C. D., Dias, S. & Babor, T. F. (Under review). Alcohol control policies in 46 African countries: Opportunities to improve.

11. Carrasco, M.A., **Esser, M. B.,** Sparks, A., & Kaufman, M. R. (Under review). HIV-alcohol risk reduction interventions in sub-Saharan Africa: A systematic review of the literature and recommendations for a way forward.

12. **Esser, M. B.,** Girish, N., Gururaj, G., Murthy, P., Jayarajan, D., Lakshmanan, S., et al. (Under review). Physical abuse, psychological abuse, and neglect: Evidence of alcohol's harm to children in five states of India.

13. **Esser, M. B.,** Gururaj, G., Girish, N., Jayarajan, D., Lakshmanan, S., Murthy, P., et al. (Under review). Harm resulting from strangers' alcohol consumption in five states of India.

In preparation:

1. **Esser, M. B.**, Jernigan, D. H. & Gupta, S. (in preparation). Preventing alcohol-related harms to others: Ethical considerations for implementing alcohol control policy interventions in India.

2. **Esser, M. B.,** Gupta, S., & Hyder, A. A. (in preparation). Collision between alcohol consumption and road safety in 10 developing countries.

3. Tansil K. A., **Esser M. B.,** Sandhu P., Reynolds J. A., Elder R. W., Williamson R. S., et al. (in preparation). Electronic screening and brief intervention (e-SBI) to reduce excessive alcohol consumption and related harms: A Community Guide systematic review.

Chapters, Reports, and Master's Thesis

1. World Health Organization (2014). Chapter 4: Alcohol policy and interventions. In *Global Status Report on Alcohol and Health 2014* (pp. 60-86). Geneva, Switzerland: World Health Organization.

2. Maryland Collaborative to Reduce College Drinking and Related Problems. (2013). *Reducing alcohol use and related problems among college students: A guide to best practices*. Center on Alcohol Marketing and Youth, Johns Hopkins University Bloomberg School of Public Health, Baltimore, MD and the Center on Young Adult Health and Development, University of Maryland School of Public Health, College Park, MD. Available from: http://marylandcollaborative.org/resources/best-practices/

3. **Esser, M. B.** (2010). *Associations of alcohol consumption with mode and severity of injury among emergency department patients in Mexico* (Master's thesis). Emory University, Atlanta, GA.

Selected Media Coverage of Lead-Author Publications

1. Izadi, E. (2014). Vast majority of Americans who drink excessively are not alcoholics, new CDC study shows. Washington DC. http://www.washingtonpost.com/news/to-your-health/wp/2014/11/20/vast-majority-of-americans-who-drink-excessively-are-not-alcoholics-new-cdc-study-shows/.

2. Parker-Pope, T. (2014). Most heavy drinkers are not alcoholics. http://well.blogs.nytimes.com/2014/11/20/most-heavy-drinkers-are-not-alcoholics-study-finds/?smprod=nytcore-ipad&smid=nytcore-ipad-share&_r=2.

3. CBS News. (2014). Most binge drinkers are not actually alcoholics. http://www.cbsnews.com/news/most-binge-drinkers-are-not-actually-alcoholics/.

4. Donvan, J. (2014). Drunk, but not alcoholic: A new look at excessive drinking. http://onpoint.wbur.org/2014/12/09/alcohol-consumption-drinking-alcoholism.

5. Aubrey, A. (2014). Moderate drinker or alcoholic? Many Americans fall in between. http://www.wbur.org/npr/365500037/moderate-drinker-or-alcoholic-many-americans-fall-in-between.

Scientific Conference Oral Presentations

1. **Esser, M.B.** & Brewer, R.D. (April, 2013). *Guide to Community Preventive Services: Recent systematic reviews for reducing excessive alcohol consumption and related*

harms. CDC panel presentation at the 2013 Alcohol Policy 16 Conference. Arlington, VA.

2. **Esser, M.B.,** Tansil, K.A., Reynolds, J., & Sandhu, P., & Elder, R.W. (June, 2012). *Effectiveness of electronic screening and brief intervention for reducing excessive alcohol consumption and related harms.* Oral presentation to the Community Preventive Services Task Force. Atlanta, GA.

3. **Esser, M.B.,** Tansil, K.A., Sandhu, P., & Elder, R.W. (June, 2012). *Effectiveness of electronic-based screening and brief intervention for reducing excessive alcohol consumption and related harms: A systematic review.* Oral presentation at the 2012 Council of State and Territorial Epidemiologists Annual Conference. Omaha, NE.

4. **Esser, M.B.**, Kanny, D., Brewer, R.D., & Naimi, T.S. (June, 2011). *Comparing the largest number of drinks consumed with binge drinking intensity among U.S. adult binge drinkers in 14 states in 2008.* Oral presentation at the 2011 Council of State and Territorial Epidemiologists Annual Conference. Pittsburgh, PA.

5. **Esser, M.B.**, Kanny, D., Brewer, R.D., & Naimi, T.S. (March, 2011). *Usefulness of the largest number of drinks consumed for estimating the intensity of binge drinking among U.S. adult binge drinkers, BRFSS, 2008*. Oral presentation at the 28th Annual Behavioral Risk Factor Surveillance System (BRFSS) Conference. Atlanta, GA.

Conference Poster Presentations

1. Mitchell, M., Bugbee, B.A., **Esser, M.B.,** Kurikeshu, R., Sparks, A., Jernigan, D. & Arria, A. (November, 2013). Statewide collaborative to reduce college drinking and related problems. Poster presentation at the 141st American Public Health Association (APHA) Conference. Boston, MA.

Invited Presentations and Colloquia

1. **Esser, M.B.** (March, 2014). *Apparent Consumption Impact of Maryland's 2011 Alcohol Sales Tax Increase.* Presentation at Center for Alcohol Marketing and Youth Research Day. Baltimore, MD.

2. **Esser, M.B.** & Jernigan, D.H. (March, 2014). *Assessing Restrictiveness of Global National Alcohol Marketing Policies*. Presentation at Center for Alcohol Marketing and Youth Research Day. Baltimore, MD.

3. **Esser, M.B.** (March, 2014). *Exploring Key Factors of Alcohol Policies and Harm to Others in Two States of India.* Presentation at Center for Alcohol Marketing and Youth Research Day. Baltimore, MD.

4. **Esser, M.B.** (August, 2013). *Reducing Harmful Alcohol Consumption in the African Region: Challenges and Opportunities.* Presentation to WHO staff at African Regional Office. Brazzaville, Congo.

5. **Esser, M.B.** (August, 2012). *Effectiveness of Electronic Screening and Brief Intervention for Reducing Excessive Alcohol Consumption and Related Harms.* Oral presentation and international webinar to the Pan American Health Organization. Washington, DC.

6. **Esser, M.B.** (July, 2012). *Electronic Screening and Brief Interventions (e-SBI): Effective to Reduce Excessive Alcohol Consumption and Related Harms.* Invited speaker, CDC National Center for Injury Prevention and Control Alcohol and Injury Workgroup. Atlanta, GA.

7. **Esser, M.B.** (June, 2012). *Opportunities to Use Biostatistics in Research and Applied Public Health.* Invited speaker to Emory University's RSPH Institute for Training in Biostatistics. Atlanta, GA.

8. **Esser, M.B.** (October, 2011). *Adolescents, Adults & Alcohol.* Invited speaker, Severn School. Severna Park, MD.

9. **Esser, M.B.** (October, 2011). *Epidemiology and Prevention of Excessive Alcohol Use in the United States*. University of South Carolina Health Policy Doctoral Students CDC Visit. Invited speaker, Atlanta, GA.

10. **Esser, M.B.** (2011). Emory University Safety Alliance. Invited participant for bicycle safety, Atlanta, GA.

11. **Esser, M.B.,** Walton, S., Rudin, E., Elmore, L., & Jones, J. (July, 2010). *Sentinel for Health Awards of Hollywood, Health, and Society, Media Portrayal of Substance Use*. Invited CDC Panelist, Atlanta, GA.

Teaching Experience

Johns Hopkins Bloomberg School of Public Health,
Baltimore, MD 03/2013–05/2013; 03/2014–05/2014*
Teaching Assistant (Supervisory) of Drs. Andrea Gielen and Samantha Illangasekare,*
Program Planning for Health Behavior Change

- Provided written advice to students to improve their application health behavior change theories and guidance on how theory is used to inform needs assessments and public health programs
- Oversaw three other teaching assistants and managed administrative course tasks in the internet-based course with over 115 students*
- Collaborated with team teaching assistants and two faculty instructors at monthly meetings to evaluate reliability of our grading on student assignments
- Assisted faculty instructors in developing grading rubrics for course assignments
- Prepared materials for didactic webcasts and maintained course website

Johns Hopkins Bloomberg School of Public Health, Baltimore, MD 01/2013 – 03/2014
Teaching Assistant of Dr. David Jernigan, Alcohol, Society and Health

- Comprehensively provided feedback on midterm and final term paper
- Critiqued drafts of research and policy papers to assist students' in the development of their final paper
- Prepared summaries of students' reaction papers pertaining to assigned readings and weekly lectures to identify themes and assess their comprehension
- Revised course syllabus, reading list, and descriptions of student assessments

Johns Hopkins Bloomberg School of Public Health,
Baltimore, MD 03/2013–05/2013; 10/2013– 12/2013

Teaching Assistant of Dr. Joanna Cohen, Policy Interventions for Health Behavior Change

- Guided eight students in a discussion group on health policy change theories based on course readings
- Provided feedback to students on three written papers to advance their understanding of the application of political theories to public health problems
- Met with students individually to provide extra assistance in their ability to comprehend course material
- Developed and managed course website with readings, presentations, assignments and gradebook

Emory University, Atlanta, GA 08/2008 – 05/2010

Head Teaching Assistant (2009 – 2010)/Teaching Assistant (2008 – 2009), Personal Health Education 101

- Developed curriculum for over 600 undergraduate students in health lectures each semester
- Managed ten teaching assistants, and provided them with resources to enhance students' learning
- Led two to three weekly discussion sessions with 30 domestic and international students to complement health lectures on alcohol and substance use, HIV, suicide prevention, and sexual and mental health

Lectures

Esser, M.B. (April 2014). *Individual Level Interventions to Reduce Excessive Alcohol Use*. Lecture to Johns Hopkins University undergraduate students in Clinical and Pubic Health Behavior Change course. Baltimore, MD.

Esser, M.B. (February 2014). *Strategies to Prevent Alcohol-related Deaths and Injuries*. Lecture to Johns Hopkins University undergraduate and graduate students in Alcohol, Society and Health course. Baltimore, MD.

Esser, M.B. (April & November 2013). *Punctuated Equilibrium Theory*. Lecture to JHSPH graduate students in Policy Interventions for Health Behavior Change course. Baltimore, MD.

Program Experience

Emory University, Rollins School of Public Health, Atlanta, GA 08/2008 – 05/2010

Graduate Assistant, Office of Student Services

International Reception Team Coordinator (08/2008 – 09/2008; 07/2009 – 09/2009)

- Planned and evaluated public health orientation group activities for 450 incoming masters students
- Developed orientation materials for approximately 100 international masters students and fellows
- Sought sponsorship from approximately 20 local businesses and organizations to support a service day in which staff, faculty and students volunteered at nearly 30 sites around metro-Atlanta

Relevant Volunteer Experience

Johns Hopkins Bloomberg School of Public Health, Baltimore, MD 05/2013 – 05/2014
Co-Chair of the Health, Behavior and Society Student Organization

- Led communication of issues pertaining to academics and professional development between over 100 public health students (60 masters; 50 doctoral) and department chair, program directors, faculty and staff
- Developed and instituted a monthly seminar series for doctoral students to present and discuss their research in progress, enhancing the intellectual community and doctorate student network across cohorts
- Coordinated and led quarterly forums, providing a mechanism to engage in dialogues about student concerns with the department chair and program directors
- Managed organization's budget, adhering to protocols outlined by the School's governing organization

Emory University, Rollins School of Public Health, Atlanta, GA 12/2008 – 01/2010
President of the Student Government Association

- Demonstrated leadership and commitment by representing public health students at bi-monthly meetings with the deans and faculty department chairs and led weekly meetings with ten student board members
- Established and managed a Steering Committee to plan and implement approximately 20 university and community events to increase awareness about public health issues during National Public Health Week
- Supervised the Treasurer in allocating funds to student organizations to guarantee that events remained within budget, and worked with the Vice President to manage finances generated by school store

Meriter Hospital, Madison, WI 06/2007 – 08/2007
New Start Volunteer

- Assisted in facilitating women's counseling group for recovering alcoholics and addicts
- Observed assessments of individuals dealing with substance abuse

Professional Activities

Society and Committee Membership

Co-Chair, Health, Behavior and Society Student Organization, JHSPH	05/2013 – 05/2014
Student Representative, Curriculum Committee, JHSPH	09/2013 – 05/2014
Member, Alcohol and Public Health Interest Group, CDC	11/2010 – 08/2012
Member, Association of Research Fellows, CDC	02/2011 – 08/2012
Member, Transportation Working Group, CDC	10/2010 – 08/2012
Member, Rollins Environmental Health and Action Committee, Emory Univ.	12/2008 – 05/2010
Member, Campus Life Committee of University Senate, Emory University	10/2008 – 05/2010
President, RSPH Student Government Association, Emory University	12/2008 – 01/2010

Peer Review Activities

Manuscript reviewer for:

- *Alcohol and Alcoholism* (2014); *PLOS One* (2014, 2015)

Foreign Languages: Spanish (moderate proficiency in speaking, reading, and writing)