Risk of Alcohol-Related Injury: Does Societal Drinking Context Make a Difference?

CHERYL J. CHERPITEL, DR.PH.,^{a,*} RACHAEL A. KORCHA, M.A.,^a JANE WITBRODT, PH.D.,^a & YU YE, M.A.^a

^a*Alcohol Research Group, Emeryville, California*

ABSTRACT. Objective: The aim of this study is to examine whether country-level frequency of drinking in a public context and in a private context is associated with rates of alcohol-related injury in emergency department studies from those same countries. **Method:** Emergency department data on 5,104 injured patients in 10 countries from the International Collaborative Alcohol and Injury Study (ICAIS) and aggregate-level drinking context data from the Gender, Alcohol and Culture: An International Study (GENACIS) are analyzed. The association of societal drinking context (public and private) with variation in the rate of self-reported drinking before injury is examined using multilevel modeling. **Results:** Controlling for demographic characteristics, individual-level volume and drinking pattern, study-level volume, and country-level drinking pattern and alcohol control policy, societal public drinking context was significantly predictive of an alcohol-related injury (odds ratio

[OR] = 1.08, CI [1.02, 1.13]), whereas societal private drinking context was not. Public drinking context was predictive of violence-related injury (OR = 1.09, CI [1.01, 1.17]), whereas private drinking context was predictive of injuries from falls (OR = 1.01, CI [1.01, 1.02]). Neither societal drinking context was significantly predictive of traffic-related injuries whereas both public (OR = 1.06, CI [1.01, 1.12]) and private (OR = 1.01, CI [1.01, 1.03]) contexts were predictive of injuries from other causes. **Conclusions:** These data suggest that societal drinking context does make a difference in the likelihood of an alcohol-related injury, which is important for a better understanding of the role of drinking context in a country in the occurrence of an alcohol-related injury and may inform future recommendations for reducing this harmful consequence. (*J. Stud. Alcohol Drugs*, 79, 876–880, 2018)

INJURIES CONSTITUTE a major component of the global burden of disease attributable to alcohol, with 24% of alcohol-attributable mortality coming from injuries and 33% of alcohol-attributable disability-adjusted life years (Institute for Health Metrics and Evaluation, 2013). A substantial literature exists on alcohol's association with injury, primarily based on studies in hospital emergency departments. Although these studies have found drinking before the event increases risk for injury (with the more drinks consumed, the greater the risk; Cherpitel et al., 2015), the magnitude of associations has varied across studies and countries. Drinking environment and the role it may play in risk of injury has not been considered in these studies, however, and may account for some of the observed heterogeneity in previous findings (Andreceutti et al., 2014).

Drinking context can influence how often and how much an individual drinks—for example, those drinking in bars or other public venues were found to drink more than when drinking in private venues (Clark, 1985; Searles et al., 1995), and bars are environments in which patrons learn to drink heavily (Curran et al., 1996). A study of drinking context using U.S. National Alcohol Survey data found that those who reported drinking in bars, compared with those who

primarily drink at home, were more likely to report drinking-related fighting and accidents when usual drinking patterns were controlled (Nyaronga et al., 2009), while a study from Australia found that public drinking in the context of holidays and social events resulted in significantly elevated rates of acute intoxication requiring ambulance attendance (Lloyd et al., 2013).

The few studies of emergency department patients that have examined context have analyzed context of injury rather than context of drinking (Watt et al., 2004). An eight-country study in Latin America found that injuries in public settings were positively associated with drinking before the event, with authors assuming that injury context was the same as drinking context (Andreceutti et al., 2014). Although this assumption may be true for some causes of injury, it is likely not true for all. Alcohol control policy might also be expected to affect the relationship between alcohol consumption, drinking context, and injury, with the greater the restrictiveness of policies in a society, the lower the risk of injury (Korcha et al., 2018b). A 22-country study found increased likelihood of drinking before violence-related injuries occurring in private settings, but not in public venues; however, no difference in alcohol-related violent injuries was found in public versus private venues among those countries with less restrictive alcohol control policies (Korcha et al., 2018a).

Although prior research suggests that drinking context may be an important risk factor for injury and may account for heterogeneity in alcohol's association with injuries found across countries and cultures (Cherpitel et al., 2018), drinking context remains an understudied area. To fill this gap in the literature, this article examines whether frequency

Received: March 7, 2018. Revision: August 7, 2018.

This research was supported by a grant from the U.S. National Institute on Alcohol Abuse and Alcoholism (RO1 3 AA013750). For addition funding information, please see the Acknowledgment section.

*Correspondence may be sent to Cheryl J. Cherpitel at the Alcohol Research Group, 6001 Shellmound St., Suite 450, Emeryville, CA 94608, or via email at: ccherpitel@arg.org.

of drinking in a public context and in a private context at the country level is associated with cross-study variation in rates of alcohol-related injury among emergency department patients after controlling for individual-level volume and pattern of drinking, study-level volume, and country-level drinking pattern and alcohol control policy. These data are important for a better understanding of the role of societal drinking context in occurrence of an alcohol-related injury when both individual and societal drinking variables are considered, and may inform recommendations for reducing this harmful consequence.

Method

Samples

Individual-level data are from 7,144 injured patients treated between 1996 and 2016 at 14 emergency departments in 10 countries (Argentina, Australia, Brazil, Canada, Costa Rica, India, New Zealand, Nicaragua, Sweden, United States) included in the International Collaborative Alcohol and Injury Study (ICAIS; Cherpitel et al., 2018). The 10 countries were chosen as aggregated data at the country level on societal drinking context because each had drinking context data available from the Gender, Alcohol and Culture: An International Study (GENACIS) project (Bond et al., 2010).

In all studies probability samples of patients 18 years and older, who arrived within 6 hours of the injury event, were selected based on consecutive arrival to each emergency department. Samples provided equal representation of all times of day and days of the week during the study period. Following informed consent, interviewers administered a 25-minute structured questionnaire that included items about the cause of injury (categorized as falls, traffic-related, violence-related, other), drinking before injury, quantity and frequency of usual drinking and higher consumption times during the last year, and demographic characteristics. Completion rates averaged 79% across the 14 studies.

Individual-level variables

Alcohol-related injury as the dependent variable was measured by the patient's reporting consumption of any alcohol within 6 hours before the injury event (Cherpitel et al., 2012).

Volume of consumption during the last year was derived from questions regarding usual quantity and frequency of drinking for all alcohol beverage types combined. Quantity of consumption was obtained from questions asking the number of drinks usually consumed, separately for each beverage type and drink size. For those reporting more than one beverage, the maximum beverage-specific quantity was used. Overall volume of alcohol consumption for all studies

was estimated in standard drinks, each containing 16 ml of pure ethanol.

Individual-level drinking pattern was constructed from the frequency of usual consumption questions and two heavy drinking questions. Frequency of usual drinking was categorized as frequent ($\geq$ weekly) or infrequent ($<$ weekly). The two heavy drinking questions asked the frequency of consuming 12 or more drinks on an occasion and 5–11 drinks on an occasion during the last year, which were then summed for a 5+ measure. The drinking pattern measure was then categorized into five mutually exclusive categories: (a) infrequent light/nonheavy (drinks less than weekly/never 5+), (b) frequent light/nonheavy (drinks at least weekly/never 5+), (c) infrequent light/infrequent heavy (drinks less than weekly/5+ less than weekly), (d) frequent light/infrequent heavy (drinks at least weekly/5+ less than weekly), and (e) frequent heavy (5+ at least weekly).

Aggregate-level volume, drinking pattern, alcohol control policy, and societal drinking context

Study-level average 12-month volume of consumption was obtained from the mean volume among drinkers across all patients in each emergency department study.

Country-level drinking pattern was obtained from the detrimental drinking pattern (DDP) measure, as an indicator of the "detrimental impact" on health and other harms at a given level of consumption. This measure was derived by the World Health Organization (WHO) from country-level survey and key informant data across 51 countries, based on indicators of alcohol's integration in society (e.g., drinking in public places, drinking to intoxication, drinking with meals; Rehm et al., 2001, 2003). DDP scores range from 1 (*the least detrimental pattern of drinking*) to 4 (*the most detrimental*) and reflect the same period during which the emergency department data were collected.

Alcohol control policy, based on the International Alcohol Policy and Injury Index (IAPII), contains four regulatory domains (physical availability, vehicular, advertising/promotion, and drinking environment) and was specifically developed to predict injury (Korcha et al., 2018b). The IAPII generates a score ranging from 1 (*least restrictive*) to 100 (*most restrictive*), which is item weighted according to effectiveness, stringency, and enforcement of policies, and was found to predict variation in rates of alcohol-related injury among emergency department patients in 28 countries (Cherpitel et al., 2018). The IAPII score for each study also reflects the same period during which the emergency department data were collected.

Societal context of drinking

The societal context of drinking variable was based on questions regarding the frequency of drinking in public

TABLE 1. Multilevel models predicting drinking in the 6 hours before the injury by public and private drinking context among current drinkers ($n = 5,104$)

Variable	Public context		Private context	
	OR	[95% CI]	OR	[95% CI]
Level 1 effects				
Demographics				
Male (referent female)	1.10	[0.96, 1.25]	1.10	[0.98, 1.22]
Age < 30 (referent age ≥ 30)	1.06	[0.84, 1.33]	1.06	[0.87, 1.28]
Employed (referent unemployed)	0.66***	[0.58, 0.76]	0.66***	[0.59, 0.74]
Alcohol volume, past year	1.42***	[1.28, 1.57]	1.42***	[1.31, 1.54]
Drinking pattern				
Infrequent light	0.93	[0.67, 1.28]	0.93	[0.71, 1.22]
Frequent light (referent group)	—	—	—	—
Infrequent light	1.97***	[1.37, 2.83]	1.99***	[1.46, 2.70]
Frequent light	1.77***	[1.33, 2.35]	1.77***	[1.39, 2.26]
Frequent heavy	2.53***	[1.78, 3.58]	2.54***	[1.89, 3.41]
Level 2 effects				
Detrimental Drinking Pattern	1.66	[0.94, 2.91]	1.41	[0.61, 3.28]
Study-level average volume	0.95	[0.73, 1.23]	0.91	[0.64, 1.29]
Context of drinking	1.08*	[1.01, 1.14]	1.01	[0.99, 1.03]
Alcohol policy index (IAPII)	0.96*	[0.93, 0.995]	0.96*	[0.92, 0.998]
Residual variances (coef.)	0.26**	[0.09, 0.42]	0.38	[-0.93, 0.79]

Notes: A maximum likelihood estimator with robust standard errors using a numerical integration algorithm was used in these models. OR = odds ratio; CI = confidence interval; IAPII = International Alcohol Policy and Injury Index; coef. = coefficient.

* $p < .05$; ** $p < .01$; *** $p < .001$.

contexts and in private contexts, taken from the multi-country GENACIS survey (Wilsnack & Wilsnack, 2002). The surveys asked the respondents how often they drank in various contexts, ranging from “every day or nearly every day” to “never in the last 12 months,” which were then coded into public drinking context (bar/pub/disco and restaurant) and private drinking context (party/celebration and own home) (Bond et al., 2010). The mean number of days in the last year respondents reported drinking in each of the two contexts was summed separately for each context for each country. Summed frequencies were entered into each model, separately for public context and private context as a continuous variable for each, with a range from 1 day to 365 days. The mean difference between the year in which the emergency department data were obtained and the year in which the contextual survey data were obtained was 3 years for two thirds of the studies.

Analysis

Only current drinkers who reported consuming any alcoholic beverage in the last 12 months were included in the analysis ($n = 5,104$). Multi-level analysis was used to examine predictors of an alcohol-related injury (drinking within 6 hours before the event), separately for societal public drinking context and private drinking context, controlling for individual- and aggregate-level variables. A two-level regression analysis for a binary dependent variable with a random intercept model was specified, modeling for the non-independence of observations due to clustered data, where individuals within clusters are correlated. Injury patients,

clustered within each study, are level-one data, and the 14 emergency department studies are level-two data. Among the level-two variables, study-level average volume was aggregated by study, whereas DDP, the IAPII, and societal drinking context were all derived at the country level. Models were estimated in Mplus, Version 8 (Muthén & Muthén, 2017), where a model is specified for the within (level-one) and between (level-two) predictors of alcohol-related injury. Odds ratios (ORs) and confidence intervals (CIs) are reported for the models, controlling for gender, age, and employment. Similar models were examined for each of four causes of injury: falls, traffic, violence, other.

Results

Table 1 shows the predictive value of societal public drinking context and private drinking context in the cross-study variation in the proportion of those reporting drinking before the injury among drinkers. When we controlled for demographic characteristics, volume, and drinking pattern at the individual level, as well as study-level volume and drinking pattern and policy at the country level, public drinking context was significantly predictive of self-reported drinking (OR = 1.08, CI [1.02, 1.13], $p < .05$), whereas private drinking context was not predictive. For each study, one additional day of drinking in the public context increased the odds of alcohol-related injury on average by .08.

The societal context of injury was also examined, separately, by cause of injury (not shown). Public context of drinking was significant for violence-related injury (OR = 1.09, CI [1.01, 1.17], $p < .05$) and injury from other causes

(OR = 1.06, CI [1.01, 1.12], $p < .05$), whereas private drinking context was predictive for falls (OR = 1.01, CI [1.01, 1.02], $p < .01$) and also for injuries from other causes (OR = 1.01, CI [1.01, 1.03], $p < .05$). Neither context was predictive of traffic-related injuries.

Discussion

To our knowledge no study has examined the association of injury risk with the environment in which alcohol is typically consumed at the aggregate level. Frequency of societal drinking in a public context was found to be predictive of cross-study variation in rates of an alcohol-related injury, whereas private context was not, supporting our hypothesis.

The relationship of societal drinking context and injury varied by cause of injury, however, with public drinking context predictive of violence-related injury while private drinking context was predictive of injury from falls, an event that is likely to occur in a person's own home. Both drinking contexts were predictive of injury from other causes (not including falls, traffic, or violence), whereas neither societal context was predictive of injuries related to traffic crashes. This lack of association may be attributable to the possibility that alcohol control policy may have more of an effect on injury mortality than morbidity from traffic injuries. Numbers were small for those reporting drinking before traffic injuries, possibly related to more severe cases being missed, although every attempt was made to follow into the hospital those too severely injured to be approached in the emergency department. An alternate possibility is that individual-level drinking before a traffic injury does not correlate well with aggregate-level drinking, and the context of the individual's drinking before injury may have been a better predictor.

Prior research has found drinking context influences how often and how much an individual drinks (Clark, 1985; Searles et al., 1995), but both individual-level volume and heavy drinking pattern are controlled in these analyses, suggesting mechanisms other than intoxication may be at play by which societal public drinking context predicts alcohol-related injury. One possible explanation is based on routine activity theory (Maxfield, 1987), suggesting that societal public drinking context may provide opportunity for occurrence of an alcohol-related injury (i.e., more opportunities for group socializing in environments that might spawn violence, regardless of an individual's own level of drinking).

Limitations

Although the aggregate-level data presented here do not inform where drinking actually occurred before injury at the individual level, societal-level context patterns of drinking may reflect important normative behaviors and beliefs surrounding drinking culture that can lead to individual choice of drinking context and subsequent risk of injury.

Contextual data captured frequency of drinking in public and private settings and not quantity consumed in these locations; however, previous research has found that frequency of drinking in bars, and not just intoxication, leads to an increase in risk of victimization for women (Parks & Zetes-Zanatta, 1999), and other research has found that frequency of drinking may be more predictive of alcohol-related problems than binge drinking (Miller et al., 2005), whereas emergency department data have found that both quantity and frequency of drinking are significant predictors of alcohol-related injury (Cherpitel et al., 2012).

Coding of societal context of drinking responses did not take all venues into account but included only the four most commonly reported places, with public versus private context based on whether drinking occurred on-premise (public drinking) or off-premise (private drinking).

DDP was included in the models because it has been found to be a significant predictor of cross-study variation in alcohol-related injury (Cherpitel et al., 2018). Because this measure includes drinking in public places as one component, the effect of societal drinking context on alcohol-related injury may be a conservative estimate; however, models were re-run excluding DDP with little difference found. It should also be noted that these analyses did not take other country-level exposures into account, which could have influenced study findings, for example, seat belt and helmet laws and enforcement.

Analysis by cause of injury was also limited by the number of those reporting drinking before the event, especially for traffic and violence-related events. It is possible that those more severely injured (and who may have been more likely to have been drinking before the event for both causes) were not included in the sample.

Nevertheless, these data suggest that drinking context does make a difference in the likelihood of an alcohol-related injury, which is important for a better understanding of the role of societal drinking context in the occurrence of an alcohol-related injury and may inform future recommendations for reducing alcohol-related injuries.

Acknowledgments

The article is based, in part, on data collected by the following collaborators participating in the *Emergency Room Collaborative Alcohol Analysis Project* (ERCAAP): J. Bejarano (Costa Rica), Preben Bendtsen (Sweden), S. Buller (New Zealand), C. J. Cherpitel (United States and Canada), M. Cremonte (Argentina), B. Kool (New Zealand), Per Nilsen (Sweden), and T. Stockwell (Australia and Canada).

This article is also based, in part, on the data and experience obtained during the participation of collaborators in the *World Health Organization Collaborative Study on Alcohol and Injuries*, sponsored by WHO and implemented by the WHO Collaborative Study Group on Alcohol and Injuries that includes the following: V. Benegal (India), S. Casswell (New Zealand), C. Cherpitel (United States), M. Cremonte (Argentina), N. Figlie (Brazil), N. Giesbrecht (Canada), R. Larajeira (Brazil), S. Macdonald (Canada), S. Larsson (Sweden), M. Peden (WHO, Switzerland), V. Poznyak (WHO,

Switzerland), R. Room (Sweden), M. Stafstrom (Sweden). A list of other staff contributing to the project can be found in the Main Report of the Collaborative Study on Alcohol and Injuries, WHO, Geneva.

The article is also based, in part, on data obtained in the *Pan American Health Organization (PAHO) Collaborative Study on Alcohol and Injuries*: C. J. Cherpitel (United States), M. Monteiro (PAHO, United States), D. Weil (Nicaragua).

The authors alone are responsible for views expressed in this article, which do not necessarily represent those of the other investigators participating in the ERCAAP, WHO, or PAHO collaborative studies on alcohol and injuries, nor the views or policy of the WHO, or the Pan American Health Organization.

Context of drinking data used in this article are from the project, *Gender, Alcohol, and Culture: An International Study (GENACIS)*. GENACIS is a collaborative international project affiliated with the Kettil Bruun Society for Social and Epidemiological Research on Alcohol and coordinated by GENACIS partners from the University of North Dakota (United States); Aarhus University (Denmark); the Alcohol Research Group/Public Health Institute (United States); the Centre for Addiction and Mental Health (Canada); the Centre for Alcohol Policy Research, La Trobe University (Australia); and the Addiction Switzerland Research Institute (Switzerland). Support for aspects of the project comes from the WHO, the Quality of Life and Management of Living Resources Programme of the European Commission (Concerted Action QL4-CT-2001-0196), the U.S. National Institute on Alcohol Abuse and Alcoholism/National Institutes of Health (Grants R21 AA012941 and R01 AA015775), the German Federal Ministry of Health, the Pan American Health Organization, and Swiss national funds. Support for individual country surveys was provided by government agencies and other national sources. The study leaders and funding sources for data used in this report are: Argentina, M. Munne, WHO; Australia, P. Dietz, National Health and Medical Research Council; Brazil, F. Kerr-Correa, Foundation for the Support of Sao Paulo State Research; Canada, K. Graham, Canadian Institutes of Health Research; Costa Rica, J. Bejarano, WHO; India, V. Benegal, WHO; New Zealand, J. Connor, Otago University Research Grant; Nicaragua, J. Caldera, PAHO; Sweden, K. Bergmark, Ministry for Social Affairs and Health, Sweden; United States, T. Greenfield, National Institute on Alcohol Abuse and Alcoholism. (found at www.med.und.edu/genacis/survey.cfm).

We also acknowledge the field editor and the reviewers for their insightful comments, which resulted in substantial improvement of the article.

References

- Andreceutti, G., Carvalho, H. B., Ye, Y., Bond, J., Monteiro, M., Borges, G., & Cherpitel, C. J. (2014). Does beverage type and drinking context matter in an alcohol-related injury? Evidence from emergency department patients in Latin America. *Drug and Alcohol Dependence*, 137, 90–97. doi:10.1016/j.drugalcdep.2014.01.010
- Bond, J. C., Roberts, S. C. M., Greenfield, T. K., Korcha, R., Ye, Y., & Nayak, M. B. (2010). Gender differences in public and private drinking contexts: A multi-level GENACIS analysis. *International Journal of Environmental Research and Public Health*, 7, 2136–2160. doi:10.3390/ijerph7052136
- Cherpitel, C. J., Witbrodt, J., Korcha, R. A., Ye, Y., Kool, B., & Monteiro, M. (2018). Multi-level analysis of alcohol-related injury, societal drinking pattern and alcohol control policy: Emergency department data from 28 countries. *Addiction*, 113, 2031–2040. doi:10.1111/add.14276
- Cherpitel, C. J., Ye, Y., Bond, J., Borges, G., Chou, P., Nilsen, P., . . . Xiang, X. (2012). Multi-level analysis of alcohol-related injury and drinking pattern: Emergency department data from 19 countries. *Addiction*, 107, 1263–1272. doi:10.1111/j.1360-0443.2012.03793.x
- Cherpitel, C. J., Ye, Y., Bond, J., Borges, G., & Monteiro, M. (2015). Relative risk of injury from acute alcohol consumption: Modeling the dose-response relationship in emergency department data from 18 countries. *Addiction*, 110, 279–288. doi:10.1111/add.12755
- Clark, W. B. (1985). Alcohol use in various settings. In E. Single & T. Storm (Eds.), *Public drinking and public policy* (pp. 49–70). Toronto, Ontario: Addiction Research Foundation of Ontario.
- Curran, P. J., Harford, T. C., & Muthén, B. O. (1996). The relation between heavy alcohol use and bar patronage: A latent growth model. *Journal of Studies on Alcohol*, 57, 410–418. doi:10.15288/jsa.1996.57.410
- Institute for Health Metrics and Evaluation. (2013). *Global Burden of Diseases, Injuries, and Risk Factors Study 2010 (GBD 2010)* [Accessed: 2013-05-07. Archived by WebCite® at <http://www.webcitation.org/6GRmKzeL5>]. Seattle, WA: University of Washington.
- Korcha, R. A., Cherpitel, C. J., Bond, J. C., Ye, Y., Monteiro, M., Chou, P., . . . Hao, W. (2018a). Drinking context and cause of injury: Emergency department studies from 22 countries. *Journal of Substance Use*, 23, 240–246. doi:10.1080/14659891.2017.1378747
- Korcha, R. A., Witbrodt, J., Cherpitel, C. J., Ye, Y., Andreceutti, G., Kang, J., & Monteiro, M. (2018b). Development of the International Alcohol Policy and Injury Index. *Pan American Journal of Public Health*, 42, e6.
- Lloyd, B., Matthews, S., Livingston, M., Jayasekara, H., & Smith, K. (2013). Alcohol intoxication in the context of major public holidays, sporting and social events: A time-series analysis in Melbourne, Australia, 2000–2009. *Addiction*, 108, 701–709. doi:10.1111/add.12041
- Maxfield, M. G. (1987). Lifestyle and routine activity theories of crime: Empirical studies of victimization, delinquency, and offender decision-making. *Journal of Quantitative Criminology*, 3, 275–282. doi:10.1007/BF01066831
- Miller, P., Plant, M., & Plant, M. (2005). Spreading out or concentrating weekly consumption: Alcohol problems and other consequences within a UK population sample. *Alcohol and Alcoholism*, 40, 461–468. doi:10.1093/alcalc/agh169
- Muthén, L. K., & Muthén, B. O. (2017). *Mplus user's guide, version 8*. Los Angeles, CA: Authors.
- Nyaronga, D., Greenfield, T. K., & McDaniel, P. A. (2009). Drinking context and drinking problems among black, white, and Hispanic men and women in the 1984, 1995, and 2005 U.S. National Alcohol Surveys. *Journal of Studies on Alcohol and Drugs*, 70, 16–26. doi:10.15288/jsad.2009.70.16
- Parks, K. A., & Zetes-Zanatta, L. M. (1999). Women's bar-related victimization: Refining and testing a conceptual model. *Aggressive Behavior*, 25, 349–364. doi:10.1002/(SICI)1098-2337(1999)25:5<349::AID-AB3>3.0.CO;2-O
- Rehm, J., Monteiro, M., Room, R., Gmel, G., Jernigan, D., Frick, U., & Graham, K. (2001). Steps towards constructing a global comparative risk analysis for alcohol consumption: Determining indicators and empirical weights for patterns of drinking, deciding about theoretical minimum, and dealing with different consequences. *European Addiction Research*, 7, 138–147. doi:10.1159/000050731
- Rehm, J., Rehn, N., Room, R., Monteiro, M., Gmel, G., Jernigan, D., & Frick, U. (2003). The global distribution of average volume of alcohol consumption and patterns of drinking. *European Addiction Research*, 9, 147–156. doi:10.1159/000072221
- Searles, J. S., Perrine, M. W., Mundt, J. C., & Helzer, J. E. (1995). Self-report of drinking using touch-tone telephone: Extending the limits of reliable daily contact. *Journal of Studies on Alcohol*, 56, 375–382. doi:10.15288/jsa.1995.56.375
- Watt, K., Purdie, D. M., Roche, A. M., & McClure, R. J. (2004). Risk of injury from acute alcohol consumption and the influence of confounders. *Addiction*, 99, 1262–1273. doi:10.1111/j.1360-0443.2004.00823.x
- Wilsnack, S. C., & Wilsnack, R. W. (2002). International gender and alcohol research: Recent findings and future directions. *Alcohol Research & Health*, 26, 245–250.