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Short Communication

Violence and non-violence-related injuries and alcohol in women from developed and developing countries: A multi-site emergency room study☆

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HIGHLIGHTS

- Association between alcohol consumption and the occurrence of injuries in women
- Women attending the emergency room from developing and developed countries
- Violence-related injury was more prevalent in developing countries (18% × 9%).
- Women from developed countries had higher levels of education (43% × 37%).
- The data can inform prevention of violence-related injury, health promotion and treatment.

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ABSTRACT

This study sought to analyze the association between alcohol consumption and the occurrence of injuries in women attending the emergency room (ER) from developing and developed countries. The sample consisted of ER data from women in 15 countries that were collected as part of two multi-site studies using similar methodologies: the *Emergency Room Collaborative Alcohol Analysis Project* (*ERCAAP*), and *World Health Organization Collaborative Study on Alcohol and Injuries* (*WHO Study*). Women ranged in age from 18 to 98 years. Those from developed countries had higher levels of education (43% completed high-school) than women from developing countries (37%). Over half of the women from developing countries reported they had not consumed alcohol in the last 12 months (abstentious), while 2% reported drinking every day. In addition, current drinking women from developing countries reported more binge drinking episodes (33% reported 5 to 11 drinks and 15% reported 12 or more drinks on an occasion) compared to those from developed countries (28% and 11%, respectively). Violence-related injury was more prevalent in developing countries (18%) compared to developed countries (9%). An association between injury and the frequency of alcohol consumption in the last 12 months was observed in both developing and developed countries. Although women from developing countries who suffered violence-related injuries were more likely to demonstrate alcohol abstinence or have lower rates of daily alcohol consumption, these women drank in a more dangerous way, and violence-related injuries were more likely to occur in these women than in those living in developed countries.

1. Introduction

It is well documented that alcohol consumption increases the occurrence of injuries (Borges et al., 2008; Cherpitel & Ye, 2010) that result in emergency room (ER) visits. The consequences of these injuries can be extremely incapacitating since alcohol consumption is a leading risk factor for mortality and morbidity related to both intentional and unintentional injuries (Macleod & Hungerford, 2011; Miller & Spicer, 2012; Who, 2009).

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Alcohol is known to affect psychomotor skills leading to injuries due to incidents such as car accidents and falls (Cherpitel & Ye, 2010; Mascarenhas et al., 2009). Furthermore, individuals who are exposed to alcohol may put themselves in dangerous situations and may become more aggressive and less able to perceive the risks involved in alcohol abuse, which can lead to drowning and burns, and intentional injuries (Cherpitel & Ye, 2010; Mascarenhas et al., 2009). Both intentional and unintentional injuries related to alcohol consumption are more prevalent among men (Mascarenhas et al., 2009; Quigg, Hughes, & Bellis, 2012) than women, and increases in injury risk have been found at an average of about 2 drinks per day for both males and females (Cherpitel & Ye, 2009).

Alcohol abuse and/or dependence are associated with several negative repercussions for women's physical, mental and social health, such as suicide (suicide rates are elevated among women who have more than 3 drinks daily), changes in menstrual cycle, fetus damage in pregnant women, endocrine alterations, and reduced identification of problems related to alcohol consumption in primary care (Bond et al., 2010).

Many studies have analyzed differences in the association of alcohol and violence-related injuries between genders, but none have compared associations among women, between developing and developed countries. Therefore, this study sought to analyze the association between alcohol consumption, violent-related injury and blood alcohol concentration in women who received ER treatment in both developing and developed countries.

2. Methods

2.1. Sample

This sample analyzed women who participated in either of two multi-site studies, covering, together, 15 countries and both using a similar methodology (Cherpitel, 1989), the *Emergency Room Collaborative Alcohol Analysis Project* (ERCAAP) (Cherpitel et al., 2003) and the *World Health Organization* (*WHO*) *Collaborative Study on Alcohol and Injury* (Who, 2005).

The ERCAAP, conducted between 1984 and 2003, included seven countries (Argentina, Australia, Canada, Mexico, Poland, Spain and the United States), while the WHO study, conducted between 2001 and 2002, included eleven countries (Argentina, Belarus, Brazil, Canada, Mexico, China, Czech Republic, India, South Africa, Sweden and New Zealand). Argentina, Canada and Mexico were included in both studies; therefore, the data provided for these countries were combined.

Data collection was similar in all countries; patient's probability samples were drawn from ER admission forms at all sites, with equal representation of each shift for each day of the week. Following informed consent, trained interviewers breathalyzed patients and interviewed them. Some patients did not participate in the study because of refusal, incapacitation, being discharged before completing the interview, being in police custody or language barriers. Completion rate for the ERCAAP study was 72%, and 91% for the WHO study. Patients with severe injury were interviewed as soon as their condition stabilized. Analyses were restricted to patients who reported to the ER within 6 h of the injury event.

2.2. Measures

A structured questionnaire of about 25 min in length was used to obtain data on sociodemographic characteristics, alcohol consumption and violence-related injury indicated by one of the following: physical aggression, fighting, rape, assault or suicide attempt.

The Alco-Sensor III breathalyzer was used to estimate blood alcohol concentration (BAC). Only BACs taken within 6 h of patient arrival in the ER were retained for analysis, BACs were collapsed into a binary variable consisting of positive (≥0.01) or negative.

Patients were asked whether or not they had consumed any alcohol in the 6 h prior to the injury event. To evaluate alcohol use patterns, questions were asked regarding the frequency of usual consumption and higher consumption times (5 to 11 drinks and 12 or more drinks on a single occasion) over the last 12 months.

Usual drinking frequency was categorized as: 1) abstinent — patients who did not drink in the last year; 2) rarely — between 1 and 11 times a year; 3) occasionally — 1 and 3 times a month; 4) frequently — 1 and 4 times a week and 5) very frequently — every day or nearly every day. The socio-demographic variables included age, education and employment status.

The Human Development Report of the United Nations Development Programme (UNDP) served as the basis for the categorization of developed and developing countries (UNDP, 2010). Developed countries are considered those with high human development and include Australia, Canada, Spain, the United States, New Zealand, the Czech Republic and Sweden. In contrast, developing countries are those with average human development and included South Africa, Argentina, Belarus, Brazil, China, India, Mexico and Poland.

2.3. Statistical analysis

The analysis included data from the 3.937 women interviewed in both studies, 1.883 in developing countries and 2.054 in developed countries. Chi-square tests were performed for associations between categorical variables; in cases of insufficient samples, Fisher's exact test was applied. For all statistical tests, a 5% level of significance was used (Hair, Anderson, Tatham, & Black, 1998).

3. Results

The women average age was 40 years, ranging from 18 to 98 years.

In developing countries, women were more likely to have primary (45%) or high school (37%) education, whereas women from developed countries were more likely to have completed high school (43%) or have at least some college (37%).

Almost half of the women from both developing and developed countries were retired or unemployed (47%). However, the proportion of those working or studying differed significantly, with 35% of those in developing countries being students and only 19% employed, while in developed countries, 34% were employed and 19% were students.

Over half of the women from developing countries reported not having consumed alcohol in the last 12 months (abstinent), and only 2% reported drinking every day. In developed countries, the distribution of alcohol consumption during the previous 12 months was more homogeneous, with 20% reporting abstinence and another 20% reporting drinking occasionally, while 23% drank frequently, and 9% reported drinking very frequently.

Although the majority of those in developing countries and a fifth of those in the developed countries did not drink during the last year, among women who did report drinking, 33% in developing countries

Table 1
Distribution of women according to violence-related injuries, BAC and self-report.

	Country				Total	
	Developing		Developed			
	N	%	N	%	N	%
Women with violent-related injury $\chi^2 = 73.41$ ($p < 0.0001$)	1.804	18	1.926	9	3.730	13
Women with BAC positive $\chi^2 = 4.60$ ($p = 0.0320$)	1.791	22	1.835	19	3.626	20
Women with self-report positive $\chi^2 = 62.47$ ($p < 0.0001$)	1.880	10	2.049	11	3.929	10

207 cases without information of violent-related injury.
311 cases without information of BAC.
8 cases without information of self-report.