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Gender and Alcohol Use Disorders Diagnostic Criteria in Emergency Department Patients of Argentina

Karina Conde[a], Mariana Cremonte[a], Mariana Beatriz López[b], and Cheryl J. Cherpitel[c]

[a]Department of Psychology National University of Mar del Plata, Mar del Plata, Argentina; [b]Interdisciplinary Center for Research in Mathematical and Experimental Psychology, Buenos Aires, Argentina; [c]Alcohol Research Group, Public Health Institute, Emeryville, California, USA

ABSTRACT

Background: Alcohol consumption and its related consequences are not equal for women and men, although related studies do not frequently include gender analysis. *Objective*: Our aim was to characterize differences in endorsement of ICD-10 and DSM 5 alcohol use disorder (AUD) criteria by gender in an Argentinean emergency department population. *Methods*: A probability sample of patients ($N = 923$) from the largest emergency department in the city of Mar del Plata, Argentina (44% were females, aged 16 to 86, $M (SD) = 37.31(15.20)$ was collected. Using a structured questionnaire, diagnostic criteria for alcohol use disorders, alcohol consumption, and socio-demographic variables were obtained. Bivariate and multivariate analyses were used to assess differences in the endorsement of each diagnostic criterion by gender. *Results*: Women were less likely to endorse each of the criteria for each of the diagnostic schemes. Even after controlling alcohol consumption, socio-demographic variables, severity of alcohol use disorders and adjusting for multiple comparisons females had a lower probability than males of endorsing withdrawal and impaired control. *Conclusions*: gender differences in the endorsement of diagnostic criteria for both the DSM 5 and ICD-10 were found. Some differences in endorsement but not all, might be partially explained by alcohol consumption patterns and socio-demographic factors, and same remained after controlling severity of the AUD. Results also suggest a differential functioning of DSM 5 and ICD-10 AUD criteria for women and men.

As with many other risky behaviors, rates of alcohol consumption, at-risk use, and alcohol use disorder vary by gender (Wilsnack, Vogeltanz, Wilsnack, & Harris, 2000). Women and men not only differ in the way they drink, but also in the resulting physiological, psychological, and social consequences. This article aims to characterize gender differences in the endorsement of criteria for alcohol use disorders (AUD) in Argentinean Emergency Department (ED) patients.

The literature shows that men usually exceed women in high-volume drinking, while women are more likely to be abstainers or former drinkers (Bernards, Graham, Kuendig, Hettige, & Obot, 2009). Consequently, men have higher levels of burden of disease attributable to alcohol (Taylor et al., 2007), despite women having greater vulnerability to some conditions, such as liver diseases (Crabb, 1993) and cognitive impairments (Mann, Batra, Günthner, & Schroth, 1992). Interpersonal alcohol-related problems also appear to be more frequent in men (Silveira et al., 2012). Genetic, physiologic and psychosocial differences between genders are also associated

with differences in violence, impulsivity and expectancies related to alcohol use (Nolen-Hoeksema & Hilt, 2006).

Furthermore, after developing AUDs, women and men vary in symptom severity (Weisner & Schmidt, 1992), comorbidity expression (Dawson, Goldstein, Moss, Li, & Grant, 2010; Pedrelli et al., 2011), help seeking (Belló, Rosas-Puentes, & Icaza, 2008), treatment preference, (Weisner & Schmidt, 1992), and treatment outcomes (Satre, Mertens, & Weisner, 2004). In addition, the performance of instruments to detect alcohol-related problems (Cherpitel, 1999) and therapeutic decisions (e.g. the use of medication) may also be gender-dependent (Amodei, Williams, Seale, & Alvarado, 1996).

Risk for AUDs appears to be increasing in women (Holdcraft & Iacono, 2002; Pullido, Vallejo, Sánchez, & Vázquez, 2012). Moreover, the gender gap in alcohol use, and AUDs seems to be decreasing over time due to an increase in women´s consumption (Keyes, Grant, & Hasin, 2008; Silveira et al., 2014). Despite this, studies on alcohol use and related problems seldom include analysis by gender (Taylor et al., 2007).

Some studies have found gender discrepancies in the endorsement of several diagnostic criteria for AUDs. In clinical samples, women have reported more attempts to give up alcohol consumption and difficulties in accomplishing daily activities, while men are more likely to endorse withdrawal, lack of control and legal problems (Berenzon, Robles, Reed, & Medina-Mora, 2011). Gender differences have also been found in the severity of the Diagnostic and Statistical Manual of Mental Disorders 5th revision (DSM–5) (American Psychiatric Association, 2013) for AUD (Metze, 2012) and specific criteria endorsement in at-risk population (Kopak, Metze & Hoffmann, 2014). However, some studies with youth have reported no discrepancies in diagnostic criteria rates by gender (Wagner, Lloyd, & Gil, 2002).

In sum, alcohol use, AUDs, and their gender differences are a matter of international concern (Wilsnack & Wilsnack, 2002). Regardless of this, most research on the topic has been conducted in high income countries, with a paucity of information from Latin American countries other than Mexico or Brazil (Cremonte, Biscarra, Conde, & Cherpitel, 2016). Argentina is an upper middle income country in the southern cone of South America. As true of other countries in the region, alcohol consumption is a leading risk factor for death and disability (Monteiro, 2007). Moreover, alcohol consumption´s ranking as a risk factor has been increasing for females (IHME, 2013). Alcohol consumption is widely accepted and engaged in by the majority of the population, including women, among whom a high rate of drinking is reported for those of reproductive age and those pregnant. For instance, while in United States the prevalence of drinking in the last 30 days by pregnant women was around 8% (Marchetta et al., 2012), in Argentina this percentage was nearly 50% (López, Arán Filippetti, Cremonte, 2015). Given that gender roles, including those related to drinking practices, might influence endorsement and/or willingness to acknowledge specific criteria, the need of studies from a variety of cultural contexts cannot be overemphasized.

Although there has been previous work in this population and sample (Bond et al., 2012; Borges et al., 2010; Borges et al., 2011; Cherpitel et al., 2010; Cremonte, Cherpitel, Borges, Peltzer, & Santángelo, 2010), gender was not been considered except as a control variable. Furthermore, to the best of our knowledge, exploration of the DSM 5 and the International Classification of Diseases, 10th revision (ICD-10) (World Health Organization, 1992) AUDs individual criteria (i.e. in each criterion rather than diagnostic categories) focused on gender has not been carried out in a Spanish speaking South American country. Therefore, our aim is to characterize gender differences in the endorsement of ICD-10 AUDs (harmful use and dependence) and DSM 5 AUD individual criteria in patients admitted to the ED of a large general public hospital in Mar del Plata, Argentina. This research will contribute to a better understanding of AUDs in females, and to the development of a gender-appropriate nosology, allowing for a more accurate classification and treatment of women with AUDs.

Method

Participants

A probability sample of 923 patients, general admissions to a local ED center (44% female) reflecting an equal representation of each shift for each day of the week, was obtained. Completion rate was 92%. Participants were recruited from January to September of 2001, and after obtaining informed consent and assurances of anonymity, were given an interviewer-administered questionnaire which took approximately 20 minutes to be completed. Participation was voluntary and no compensation was offered. When patients were too severely ill or injured to answer or give consent, they were interviewed after their condition had stabilized.

Measures

Patients were interviewed using a structured questionnaire (Cherpitel, 1989) which included, among other items, the following measures.

Alcohol use disorders diagnostic criteria

Diagnostic criteria according to the ICD-10 research version (Kopak et al., 2014) and the DSM 5 diagnostic schemes were obtained, using the Alcohol Section of the Composite International Diagnostic Interview (CIDI) (Robins et al., 1988), which has demonstrated validity across different cultural contexts (Tacchini, Coppola, Musazzi, Altamura, & Invernizzi, 1994). Each individual criterion was coded as a dichotomous variable, accounting for the presence/absence in the past twelve months (positive/negative). Similar criteria between ICD-10 and DSM 5 were not treated as mutually exclusive. For the severity of alcohol use disorder we used the clinical cut-off point of each diagnostic system, this is 3 out 6 criteria met for ICD-10′s dependence (dichotomous variable, positive/negative) and 2–3, 4–5, 6–11 criteria met for DSM 5′s mild, moderate, and severe alcohol use disorder respectively.

Alcohol consumption

The quantity of alcohol consumption was estimated based on the number of standard units (alcohol beverage

containing 11 g of absolute alcohol) consumed on a typical consumption occasion. Frequency of alcohol consumption was assessed with preset responses regarding the typical number of drinking days: every day, almost every day, 3 or 4 times a week, 1 or 2 times a week, 2 or 3 times a month, almost once a month, 6 to 11 times a year, 1 to 5 times a year, and never in the last year.

Socio-demographic variables

Age (in years), gender, marital status (single, married or in married like relationship, divorced and widow/er), and employment status (employed working more than 35 hours per week, underemployed working less than 35 hours per week, unemployed seeking employment, unemployed not seeking for employment, housekeeper, student and other) were obtained.

Data analysis

Socio-demographic characteristics, quantity and frequency of drinking, AUDs, and individual diagnostic criteria were analyzed descriptively. To explore gender differences in diagnostic criteria bivariate and multivariate analyses were used. Separate logistic regressions were examined with gender as the predictor and each diagnostic criterion as the outcome variable. Logistic regressions were then rerun, controlling quantity and frequency of alcohol consumption, age, marital status, employment status, and severity of alcohol use disorder for ICD-10 and DSM 5. For all the analyses, the reference category of gender was male (1); therefore, results express the probability of females (2) over males endorsing each criterion in both bivariate and multivariate analyses. In order to test for possible collinearity of quantitative variables included in the regressions, correlation and condition indexes with linear regressions analysis were performed.

The Statistical Package for Social Sciences (SPSS) version 12.0 for Windows was used. Estimation of Benjamini–Hochberg multiple testing procedure was performed with SGoF package of R 3.2.3 (Carvajal-Rodríguez, de Uña-Alvarez & Rolán-Alvarez, 2009).

Results

The characteristics of the sample are presented in Table 1. Women and men tended to be around the same age while women were more frequently married, and less often employed full time. Regarding alcohol consumption

Table 1. Sample characteristics of emergency department patients by gender, Mar del Plata, $N = 923$.

	Female (n = 410)			Male (n = 513)		
Variable	%	M (DS)	CI 95%	%	M (DS)	CI 95%
Socio-demographics						
Age	—	37.66 (15.25)	36.24–39.40	—	37.28 (15.24)	35.87–38.69
Marital status						
Single	24	—	20–29	41	—	36–45
Married	56	—	51–61	44	—	39–49
Divorced	12	—	9–15	12	—	9–15
Widow/er	8	—	5–11	3	—	2–5
Employment status						
Employee (+35 hours)	25	—	20–29	47	—	42–52
Underemployed	10	—	7–13	15	—	12–19
Unemployed looking	16	—	12–20	18	—	14–21
Unemployed not looking	9	—	6–12	7	—	4–9
Housekeeper	5	—	3–8	2	—	1–4
Student	26	—	22–31	0	—	0–2
Other	9	—	6–13	11	—	8–14
Alcohol consumption						
Last-year abstainers	21	—	16–26	11	—	8–14
Quantity	—	2.15 (2.87)	1.77–2.53	—	4.89 (5.65)	4.32–5.46
Frequency						
Every day	6	—	3–8	21	—	17–25
Almost every day	3	—	1–5	6	—	4–9
3–4 per week	4	—	2–6	6	—	4–9
1–2 per week	15	—	11–20	31	—	27–36
2–3 a month	10	—	6–13	9	—	6–11
Almost once a month	11	—	8–15	6	—	3–8
6–11 a year	7	—	4–10	4	—	2–5
1–5 a year	23	—	18–28	7	—	4–9
Alcohol use disorders						
ICD-10 dependence	2	—	1–4	11	—	8–14
DSM-5 mild AUD	2	—	1–4	13	—	10–16
DSM-5 moderate AUD	—	—		4	—	2–6
DSM-5 severe AUD	1	—	0–3	7	—	4–9

Notes. CI = Confidence Interval. ICD = International Classification of Diseases. DSM = Diagnostic and Statistical Manual of Mental Disorders. AUD = Alcohol Use Disorder

Table 2. Prevalence of alcohol use disorders diagnostic criteria in emergency department patients, Mar del Plata, $N = 923$.

Criteria	Female % (CI 95%)	Male % (CI 95%)	Total % (CI 95%)	n
Withdrawal	1 (0–3)	13 (9–16)	8 (6–10)	60
Craving	2 (1–4)	8 (5–10)	5 (4–7)	43
Impaired control (ICD)	4 (1–6)	26 (21–30)	17 (14–20)	111
Impaired control (DSM)	3 (1–5)	21 (17–25)	14 (11–17)	90
Tolerance	2 (0–4)	10 (7–13)	7 (5–9)	52
Neglect of activities (ICD)	2 (0–4)	14 (11–18)	10 (8–12)	73
Neglect of activities (DSM)	0 (0–2)	7 (5–10)	5 (3–6)	34
Time spent in alcohol-related activity	2 (0–4)	14 (11–17)	9 (7–11)	71
Drinking of larger amounts or over a longer period than intended	1 (0–3)	10 (7–13)	7 (5–9)	52
Recurrent use despite problems	2 (1–4)	16 (13–20)	11 (9–13)	80
Use in physically hazardous situations	1 (0–3)	10 (7–13)	7 (5–8)	50
Use despite social or interpersonal problems	1 (0–2)	10 (7–13)	6 (5–8)	48
Use despite failure in major role obligations	2 (1–5)	14 (11–18)	10 (8–13)	61

Notes. CI = Confidence Interval. ICD = International Classification of Diseases. DSM = Diagnostic and Statistical Manual of Mental Disorders.

women were more frequently abstainers, and those who were drinkers tended to drink smaller quantities and less frequently than men; similarly they were less likely to reach a diagnosis of AUD with any of the schemes, ICD-10, and DSM 5.

The overall prevalence of each AUDs diagnostic criterion for the total sample and by gender is shown in Table 2. Women had significantly lower prevalences on each one of the criteria. The most frequently endorsed criterion was *impaired control* for both diagnostic systems (ICD and DSM) for women and men; while the least endorsed for both genders was DSM's *neglect of activities*. These two criteria, *impaired control* and *neglect of activities*, had a higher frequency of endorsement for the ICD than the DSM.

Single and adjusted logistic regressions are presented in Table 3. Gender accounted for 6 to 17% of endorsement of each diagnostic criterion according to R^2. Women were

consistently less likely than men to report any AUD criterion. The largest differences in reporting were for the following criteria: *withdrawal, impaired control* (ICD and DSM), *neglect of activities* (DSM), and *use despite social or interpersonal problems*.

After adjusting for quantity and frequency of consumption, and socio-demographic characteristics women still had a lower probability of reporting some AUDs criteria, including a 90% less chance of endorsing *withdrawal*, 75% for *impaired control* (both ICD's and DSM's), 80% for *drinking of larger amounts or over a longer period than intended*, 65% for *recurrent use despite problems* and 80% for *use despite social or interpersonal problems*. Nonetheless, after adjusting for multiple comparisons, the differences on *drinking of larger amounts or over a longer period than intended* criterion were not significant. Similar results were obtained when adjusting for DSM 5 alcohol use disorder severity, with women having 80% less

Table 3. Logistic regression analyses estimating the probability of women (over that of men) of endorsing alcohol use disorders diagnostic criteria in Argentinean emergency department patients, $N = 923$.

	Nonadjusted	Adjusted for Q–F and SD	Adjusted for ICD-10 severity	Adjusted for DSM 5 severity
Criterion	OR (CI 95%)	OR (CI 95%)	OR (CI 95%)	OR (CI 95%)
Withdrawal	.096 (.034–.268)***	.132 (.030–.580)**	.241 (.066–.873)**	.197 (.065–.603)**
Craving	.198 (.077–.511)**	.379 (.106–1.364)	1.309 (.325–5.270)	.898 (.257–3.135)
Impaired control (ICD)	.109 (.054–.220)***	.245 (.101–.595)**	.360 (.122–1.149)***	.271 (.105–701)*
Impaired control (DSM)	.106 (.048–.233)***	.266 (.104–.682)**	.309 (.081–1.179)***	.276 (.091–.837)*
Tolerance	.190 (.080–.453)***	.364 (.117–1.133)	.717 (.220–2.332)	.620 (.225–1.710)
Neglect of activities (ICD)	.121 (.052–.285)***	.381 (.138–1.052)	.510 (.128–2.040)**	.571 (.154–2.123)
Neglect of activities (DSM)	.043 (.006–.313)**	.000	.043 (.002–.808)	.060 (.005–.774)
Time spent in alcohol-related activity	.127 (.054–.297)***	.400 (.144–1.109)	.559 (.145–2.156)*	.601 (.163–2.224)
Drinking of larger amounts or over a longer period than intended	.119 (.042–.335)***	.215 (.048–.970)	.333 (.097–1.144)*	.338 (.099–1.154)
Recurrent use despite problems	.124 (.056–.274)***	.350 (.139–.883)*	.533 (.146–1.942)***	.419 (.138–1.276)
Use in physically hazardous situations	.125 (.044–.351)***	.426 (.119–1.531)	.318 (.100–1.009)*	.325 (.100–1.050)
Use despite social or interpersonal problems	.058 (.014–.240)***	.194 (.043–.871)*	.127 (.025–.638)**	.131 (.028–.613)*
Use despite failure in major role obligations	.140 (.055–.356)***	.401 (.141–1.139)	.368 (.133–1.022)**	.403 (.136–1.194)

Notes. CI = Confidence Interval. ICD = International Classification of Diseases. DSM = Diagnostic and Statistical Manual of Mental Disorders. Q–F = Quantity and frequency of alcohol consumption. SD = Socio-Demographic characteristics (age, marital, and employment status). The p-values were adjusted by Benjamini–Hochberg multiple testing procedure.
* $p < .05$, ** $p < .01$, *** $p < .001$.

chance of endorsing *withdrawal* and 73% of *impaired control*. But when adjusting for ICD-10 dependence, 10 out of the 13 criteria revised showed differences by gender (see Table 3).

Discussion

In this study, gender differences in the endorsement of ICD-10 and DSM 5 AUDs criteria were characterized in Argentinean ED patients. Results indicate that women had a lower prevalence and were significantly less likely to endorse each of the individual diagnostic criterion of each diagnostic system, and after controlling for alcohol use and other confounding variables, women tend to be less likely to report some AUD criteria.

This finding is in agreement with the literature from different socio-cultural contexts: women show lower consumption and decreased likelihood of related problems and AUD (Hasin, Stinson, Ogburn, & Grant, 2007; Graham et al., 2011). Even though consumption and related problems appear to be on the increase among women (Keyes et al., 2008; Silveira et al., 2014), globally, these changes may not be similar across different cultures, as suggested by results here.

It has been suggested that differences in alcohol consumption and related problems are due, in part, to differences in gender-related stereotypes and social roles (Bloomfield, Gmel, Neve, & Mustonen, 2001; López, 2012). Drinking alcohol, especially in large quantities, is part of a traditional male gender role (Ricciardelli, Connor, Williams, & Young, 2001; White & Huselid, 1997). Although cultural tolerance towards alcohol consumption is high in Argentina, traditional gender role differences largely remain, and women may perceive greater social sanctions for drinking.

Nevertheless, we found that alcohol consumption patterns and gender aspects are not enough to explain differences in observed endorsement of diagnostic criteria between women and men. Controlling the effect of alcohol consumption (quantity and frequency), marital status, employment status, age, and alcohol use disorder severity women were still less likely than men to report *withdrawal, impaired control and recurrent use despite social or interpersonal problems*, even after adjustment for multiple comparisons. Furthermore, an international study (Graham et al., 2011) on general population samples has found Argentinean women to present the lowest frequency of reporting personal and social consequences from alcohol use; a finding in concordance with those here of a lower likelihood of endorsement of several of these criteria. However, findings here are in disagreement with those from Graham and colleagues (2011) which found the most frequently reported negative

consequences related to drinking to be fairly similar for men and women, while the opposite was found here for diagnostic criteria for AUD.

From a risk factor perspective, women may be less likely to meet some particular criteria for AUDs because they are less likely to exhibit risk factors associated with these criteria, and/or more likely to exhibit behaviors protecting against the development of these diagnostic criteria (Nolen-Hoeksema, 2004; Nolen-Hoeksema & Hilt, 2006). For example, some personality traits related to heavy alcohol consumption and AUDs and reflected in those criteria which are less likely to be endorsed by women, are also less common in women than men (Zuckerman & Kuhlman, 2000), e.g., women score lower on measures of impulsivity and behavior under control than men (Petry, Kirby & Kranzler, 2002; Stoltenberg, Batien, & Birgenheir, 2008; Waldeck & Miller, 1997). High prevalence in *impaired control* and *use despite social or interpersonal problems* can be partially explained by such factors as impulsivity. On the other hand, it has been suggested that genetic influences contributing to variation in behavioral under control also account for a big part of the genetic variation in AUDs risk (Slutske et al., 2002). Among other genetically-related characteristics that might protect women from meeting AUDs criteria, high alcohol sensitivity and subjective sense of intoxication have been underlined (Heath et al., 1999; Lex, Lukas, Greenwald, & Mendelson, 1988).

Despite genetic and psychological traits, other psychosocial factors may be relevant in criteria endorsement (Heath, Jardine, & Martin, 1989; S. C. Wilsnack & Wilsnack, 1990). Among them, women's nurturance tendency could make them more sensitive to social consequences of alcohol consumption (Nolen-Hoeksema, 2004; Nolen-Hoeksema & Hilt, 2006), and thus, less likely to report *recurrent use despite social or interpersonal problems*. Another factor that has been found to contribute to differential endorsement of AUD criteria is the level of severity of the disorder (Lee, Rose, Engel-Rebitzer, Selya, & Dieker, 2011), and findings here of a lower prevalence and diminished probability of endorsement of *withdrawal* among women compared to men might be related to their milder degree of severity. The same has been found to be true for Mexican women in a clinical sample (Berenzon et al., 2011).

Regarding findings here of a higher frequency of reporting of *impaired control* and *neglect of activities* in ICD-10 than in DSM 5, it should be noted that these criteria may not be comparable: *ICD's impaired control* also includes *drinking of larger amounts or over a longer period than intended* from the DSM, as well as *neglect of activities* includes *time spent in alcohol–related activity*, so perhaps their more inclusive formulation has prompted

a higher endorsement. Differences in endorsement for women and men were also found when controlling for severity as nosologically defined by each diagnostic system. This finding raises the question about the generalizability of the systems for both genders, and which has a better performance in such matter. The presented results suggest that the DSM 5 scheme reduced the gap in alcohol use disorder for women and men. This could be attributed to (a) the inclusion of people who endorse less criteria (2 versus 3 on the ICD-10), (b) the inclusion of more specific criteria (criteria that is merged in ICD-10 is separated in DSM 5), and (c) the inclusion of criteria such as *use in physically hazardous situations, use despite social or interpersonal problems* and *use despite failure in major role obligations*. However, *withdrawal, impaired control*, and *use despite social or interpersonal problems* criteria were still lower in females.

Some limitations must be taken into account in the interpretation of these findings. First, even though results are representative of patients from one ED of the city of Mar del Plata, they cannot be generalized to other populations. To the best of our knowledge there is no data on individual criteria and DSM 5 estimates in the general population of Argentina, but ED patients seem to differ, with a slightly greater number of males and prevalence of AUD (lower for females than males) (Míguez, 1999). In addition, the craving criterion has a slightly different wording in the DSM 5 compared to that in the CIDI questionnaire, from which the items in the present study were adapted. Nevertheless, previous work found this difference to yield a modest influence in the diagnosis of AUDs (Agrawal, Heath, & Lynskey, 2011). Another issue addressed in previous studies is the item bias: differences found might resulted from differential item functioning according to gender (Castaldelli-Maia et al., 2015). Despite these limitations, our study presents new evidence to take into account in the definition of alcohol use disorders criteria.

These findings indicate, and previously suggested (Nolen-Hoeksema, 2004; Nolen-Hoeksema & Hilt, 2006; Wahl & Eitle, 2010), that it is necessary to consider gender differences in the development of theoretical models and intervention strategies for AUDs. More research is needed to understand the relative impact of different genetic, biological, psychological, and social factors and how they result in gender differences in AUDs and its measurement. These theoretical developments may contribute to future revisions of international diagnostic systems, such as ICD-11.

Declaration of interest

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the article.

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