ALCOHOL DRINKING IN PREGNANT WOMEN FROM AN ARGENTINIAN CITY

CONSUMO DE ALCOHOL EN MUJERES GESTANTES DE UNA CIUDAD ARGENTINA

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Abstract

Alcohol drinking during pregnancy might lead to detrimental consequences to the mother and fetus, being Fetal Alcohol Syndrome (FAS) the most severe. In many Latin-American countries, there is a paucity of information about prenatal exposure to alcohol. *Aim.* To estimate alcohol drinking in pregnant women and describe it concerning sociodemographic characteristics. *Method.* Data were collected from a random sample of women attending the public health care system (*N*=852) in 2016. Alcohol drinking, including binge drinking (BD), was evaluated before and after pregnancy recognition. Descriptive and bivariate analyses were performed. *Results.* While pregnant, two out of ten women reported drinking. Moreover, 2% engaged in BD and 3% presented indicators of alcohol dependence. BD before pregnancy was related to drinking during pregnancy and frequency, quantity, and BD before pregnancy with BD during pregnancy. *Conclusions.* Alcohol consumption in pregnant women was higher than the estimated for most Latin-American countries, and of the considered characteristics, was almost exclusively related to consumption patterns before pregnancy.

Keywords: Alcohol, binge drinking, pregnant women, congenital abnormalities, Argentina.

Resumen

Consumir alcohol durante la gestación tendría consecuencias perjudiciales para madre y feto, siendo el Síndrome Fetal Alcohólico (SFA) la más grave. En países latinoamericanos la información sobre la exposición prenatal al alcohol es escasa. *Objetivo.* Caracterizar el consumo de alcohol durante la gestación y describirlo en función de variables sociodemográficas en mujeres argentinas. *Método.* Se utilizó una muestra probabilística de mujeres que asistieron al sistema de salud pública (*N*=852) en 2016. Se evaluó el consumo de alcohol y consumo excesivo episódico (CEEA) antes y después de reconocer el embarazo. Se realizaron análisis descriptivos y bivariados. *Resultados.* Dos de cada diez mujeres informaron haber bebido durante el embarazo. El 2% se involucró en CEEA y el 3% presentó indicadores de dependencia. El CEEA antes se relacionó con el consumo de alcohol durante el embarazo, y la frecuencia, cantidad y CEEA antes con el CEEA durante el embarazo. *Conclusiones.* El consumo de alcohol en gestantes fue mayor que el estimado para la mayoría de Latinoamérica, y dentro de las características consideradas, se relacionó casi exclusivamente con el consumo antes del embarazo.

Palabras clave: Alcohol, consumo excesivo episódico de alcohol, mujeres gestantes, anomalías congénitas, Argentina.

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Although the evidence of potential harms from drinking low doses of alcohol during pregnancy is limited (Mamluk et al., 2017), alcohol could have negative effects on pre and postnatal fetal development, and no dose is considered safe. Consuming alcohol at any stage of pregnancy (Ikonomidou et al., 2000; Sood et al., 2001) increases the chances of suffering fetal death (Kesmodel, Wisborg, Olsen, Henriksen, & Secher, 2002), spontaneous abortion (Henriksen et al., 2004), low birth weight, premature delivery, low gestational age (Patra et al., 2011) and a whole spectrum of physical, mental, behavioral and/or learning disabilities of the fetus, known under the term Fetal Alcohol Spectrum Disorders (FASD) (Dörrie, Föcker, Freunscht, & Hebebrand, 2014; Ramsay, 2010). Consequences of prenatal alcohol exposure last for a lifetime and are 100% preventable if no alcohol is consumed during pregnancy (Centers for Disease Control and Prevention (CDC), 2002; Riley, Infante, & Warren, 2011), so timely prevention becomes essential.

Alcohol drinking is customary in Argentina, and some women believe that consuming low doses during pregnancy would be acceptable (López, 2013). Furthermore, in many countries, alcohol consumption during pregnancy is rarely detected in regular prenatal care (Göransson, Magnusson, & Heilig, 2006). In Argentina, only 17% of pregnant women reported having received a specific recommendation about alcohol consumption by the attending health professional (López, 2013).

Besides, many countries have reported a rise in alcohol consumption among women (White et al., 2015) which translates into an increased risk of drinking during pregnancy (Skagerstrom, Chang, & Nilsen, 2011). The way women drink before the conception may play a role in drinking during pregnancy, as well as in unintended pregnancies (Naimi, Lipscomb, Brewer & Gilbert, 2003). Argentina has one of the highest per capita alcohol consumptions in the region among women (World Health Organization, 2014) and 75% have reported alcohol consumption at least once during pregnancy, and 15% having engaged in binge drinking (BD) (López, Arán Filippetti, & Cremonte, 2015). Furthermore, BD during pregnancy is associated with more severe consequences of FASD, like Fetal Alcohol Syndrome (FAS) (Sayal et al., 2009). Addressing the scarceness of data from Latin American countries, and the widely differing prevalence reports for Argentina (López et al., 2015; Popova, Lange, Probst, Gmel, & Rehm, 2017) this study aims to estimate alcohol drinking in pregnant women and describe it concerning sociodemographic characteristics.

METHOD

Participants

A systematic sample of 897 pregnant women attending Public Health Care Centers in the city of Mar del Plata, Argentina was collected between Apryl and September of 2016. Twelve women refused and three left the questionnaire incomplete, leaving a sample of 882 pregnant women, who were personally interviewed. Eligibility criteria included: a) being pregnant, b) giving informed consent after reading the information sheet, c) having a permanent address in the city and d) being able to understand the questions. The sample size was estimated based on Van del Wulp et al., 2014, as part of a larger project to reduce alcohol consumption among pregnant women.

Mar del Plata is a middle size city in the most populated state in Argentina, Buenos Aires. Half of the city population is female (52%), and 40% of the women are on reproductive age (between 15 al 44 years old) (Instituto Nacional de Estadística y Censos, República Argentina (INDEC), 2010). Women were approached when waiting for either a prenatal appointment or a routine fetal ultrasound scan.

Instruments

For this descriptive study, measures of alcohol consumption were assessed 12 months before pregnancy recognition (BPR) and after pregnancy recognition (APR). The structured questionnaire contained:

Alcohol consumption. Habitual alcohol consumption was evaluated through the quantity and frequency of drinking. The quantity was estimated in drinks (1 drink= 11g of alcohol) (Cremonte, Cherpitel, Borges, Peltzer, & Santángelo, 2010). Frequency of consumption was categorized in monthly or less, 2-4 times a month, 2 or 3 times a week, and 4 or more times a week. Lifetime abstainers were those women who had never drank alcohol; past-year abstainers were those who did not drink in the past 12 months but had drunk before; while

pregnancy abstainers were those who refrained from drinking since found out about their pregnancy but had drunk alcohol before.

Risky alcohol consumption and dependence indicators. Risky alcohol consumption was estimated through the Alcohol Use Disorders Identification Test (AUDIT) (Babor, de la Fuente, & Saunders, 1992). The AUDIT is a 10-item questionnaire developed by the World Health Organization to detect at-risk, harmful, or heavy drinking. The AUDIT has shown adequate psychometric properties in Argentine pregnant women (α = .93, Se = 87%, Sp = 86%) (López, Lichtenberger, Conde, & Cremonte, 2017). Risky consumption was considered when the BPR score was equal to or greater than eight, and when the APR score was equal to or greater than one (López et al., 2017). Possible dependence was considered when the BPR scores were equal to or greater than 16 (Babor et al., 1992), and when the APR scores were equal to or greater than four (López et al., 2017).

Binge drinking. BD was estimated with an item inquiring about the frequency of consumption of four or more drinks per occasion at least once in the last 12 months for BPR. APR, it was considered positive when the woman referred consumption of four or more drinks of alcohol per occasion at least once since pregnancy recognition.

Sociodemographic characteristics. Age (in years), number of children, marital status, religion, education level, occupation, and socioeconomic status were recorded. The socioeconomic status was determined by the Graffar scale (Castellano & de Méndez, 1994). The Graffar scale considers four dimensions: the occupation of the person with the highest income in the household, parental education level, the main source of income, and housing conditions.

Procedure

Data were collected from April to September 2016. Pregnant women attending public centers for prenatal check-ups (obstetric consultation or ultrasound) were approached and interviewed while in the waiting area. At the beginning of the interview, the scope of the research and ethical aspects such as anonymity, voluntary participation and use of the collected data were informed to the participant. Written informed consent was obtained in every case. The whole procedure took

approximately 20 minutes and was conducted by trained researchers. Those cases in which alcohol dependence was suspected were advised to seek specialized care and referred to the Mental Health area of the care centers.

The study was evaluated and approved by the Bioethics Committee of the General Hospital "Dr. Oscar Allende" and endorsed by the City's Health Secretary, Argentina.

Data analysis

Descriptive analysis of the prevalence of alcohol consumption (quantity and frequency), BD, risky alcohol consumption and possible dependence BPR/APR, and sociodemographic variables were made. Differences in alcohol consumption BPR/APR were estimated with the Mann Whitney U test. The association between drinking variables BPR (predictors=frequency and quantity of drinking and BD) and drinking APR (outcome) was estimated through single (unadjusted) logistic regressions. We also explored the association between drinking variables BPR (independently for quantity and frequency of drinking and BD) and *BD-APR* (dichotomous variable yes = 1 / no =0). Single logistic regressions were also carried out to assess the association among sociodemographic variables (predictors) and drinking APR (outcome, dichotomous variable yes = 1 / no = 0). The following variables were assessed separately: age, number of children, marital status (married and living with a partner = 1 / divorced, widowed and single = 2), religion (yes = 1 / no = 2), education level (incomplete elementary=1 to complete university=8, see Table 1), occupation (employee=1 to student=6, see Table 1), and socioeconomic status (Class I =1 to Class V=5, see Table 1). We also explored the association between socio-demographic variables (same as above, each one as a single predictor) and *BD-BPR* (dichotomous variable yes = 1 / no = 0). Missing data were lower than 1% in the sociodemographic variables and were deleted from the analyses when present. There were no missing data for alcohol consumption and alcohol-related consequences variables.

All data management, processing, and analysis were performed with the Statistical Package for the Social Sciences (SPSS) for Windows.

RESULTADOS

Table 1 shows the participants' descriptive data. Participants were between 14 and 46 years old, with a mean age of 24.86 (SD = 6.14). At the time of the interview, the mean number of weeks of gestation was 19.26 (SD = 8.74). Most women were expecting their first child (37% (CI 95% [34-40]) or had only one (32% (CI 95% [29-35]). More than half (67%, CI 95% [63-70]) were living with a partner. Most participants dropped out of high school and were homemakers. The majority also lived in unacceptable housing conditions (i.e. lack of access to clean water, overcrowding, or not having indoor water closets) (not shown in tables).

Table 1. Socio-demographic description of pregnant women

	M	SD	%	95% CI
Age	24.86	6.14		
Weeks of gestation	19.26	8.74		
Number of children	1.16	1.25		
Marital Status				
Married or living with a partner			80	77-82
Divorced, widowed or single			20	17-22
Religion				
Yes			46	41-51
No			54	51-58
Education level				
Incomplete elementary school			7.5	6-9
Complete elementary school			14	12-16
Incomplete high school			44	40-47
Complete high school			22	20-25
Incomplete Tertiary			4	2-5
Complete Tertiary			3	2-5
Incomplete university			5	3-6
Complete university			1	0-1
Occupation				
Employee (+35 hours per week)			10	8-12
Sub employed			13	11-15
Unemployed and seeking for a job			3	1-4
Unemployed and no seeking for a job			21	18-24
Homemaker			44	41-48
Student			9	7-11
Socioeconomic status (SES) *				
Class I: very good SES			0.3	0-1
Class II: good SES			8	7-10
Class III: reasonable SES			40	37-43
Class IV: reduced SES			50	46-53
Class V: poor SES			2	1-3

Note: *According to the GRAFFAR scale (Mendez-Castellano & Mendez, 1994); CI=Confidence interval, N=882.

From those with a religious belief (46%), nearly half were Catholic (49%, CI 95% [44-54]) and nearly half Evangelical Christians (48% CI 95% [42-52]) (not shown in tables).

Alcohol drinking BPR and APR

Three-quarters of participants were drinkers BPR (n=661). Among abstainers, 41% were lifetime abstainers. One percent (CI 95% [.1-1]) reported being in treatment for substance use at the time of the interview.

From those who were drinkers BPR, 12% (CI 95% [9-14]) presented risky consumption and 3% (CI 95% [2-5]) possible dependence. Nearly three-quarters of drinkers (74% CI 95% [70-77]) stopped consuming APR (not shown in tables). Among those who continued drinking APR 14% (CI 95% [9-20]) presented indicators of alcohol dependence.

Almost half of the women, who were drinkers BPR, drank alcohol infrequently (once a month or less); this tendency continued APR (Table 2). Among drinkers BPR, more than half of the women tended to drink one or two drinks per occasion (63% (CI 95% [61-68])). Likewise, 88% (CI 95% [83-92])) of women drank that amount per occasion APR. BPR 42% (CI 95% [38-45]) of the women engaged in BD; and 11% (CI 95% [7-16]) APR. The mean number of drinks decreased, by more than a unit, among this group of drinkers (Table 2). This difference was statistically significant (U= 154687, z = -23; p < .001).

Characterization of drinking APR and BD-APR (outcomes) by drinking BPR and sociodemographic variables

Higher frequency and quantity of drinking BPR increased the odds of drinking during the pregnancy (OR = 2.60, 95% CI [2.12-3.19]; OR = 1.68, 95% CI [1.44-1.97]) and explained the 17% and 7% of the variance, respectively. BD-BPR was also related to drinking APR (OR = 3.14, 95% CI [2.23-4.41]) accounting for 8% of the variance (Nagelkerke R^2 = .08).

Likewise, a higher frequency of drinking BPR increased the odds of BD-APR (OR = 2.26, 95% CI [1.49 – 3.43]) and explained 16% of the variance (Nagelkerke R^2 = .16). A higher quantity of drinking BPR increased the odds of BD-APR (OR = 1.99, 95% CI [1.40 – 2.83]) explaining the 34% of the variance (Nagelkerke R^2= .34). BD-BPR was also

strongly associated with BD-APR (OR = 41.59, 95% CI [5.52-313.15]) and explained 21% of the variance (Nagelkerke R^2 = .21). Sociodemographic characteristics were not associated with drinking APR or BD-APR.

Table 2. Usual quantity and frequency of alcohol consumption and BD, before and after pregnancy recognition

Variable	Before pregnancy recognition				After pregnancy recognition			
	M	%	95% CI	n	M	%	95% CI	n
Lifetime abstainers		10	8-12	90				
Past-year abstainers		15	12-17	130				
Total current drinkers		75	72-78	662		20	17-22	176
Quantity (# drinks)	2.03		1.87-2.20	882	.31		.26-.37	882
Quantity (# drinks) W.A.	2.71		2.50-2.90	662	1.59		1.42-1.80	176
Frequency W.A.								
Monthly or less		51	46-55	336		77	70-83	135
2-4 times a month		43	40-47	287		20	14-26	35
2 or 3 times a week		2	1-3	12		1	1-2	1
4 or more times a week		4	3-6	27		3	1-6	5
Risky consumption		9	7-11	79		17	15-19	151
Risky consumption W.A.		12	9-14	79		86	80-91	151
Possible dependence		2	1-3	21		3	2-4	25
Possible dependence W.A.		3	2-5	21		14	9-20	25
BD		32	29-35	279		2	1-3	19
BD W.A.		42	38-46	279		11	6-16	19
Frequency BD W.A.								
Never		58	54-62	384		89	84-94	157
Less than monthly		22	19-25	146		6	3-10	11
Monthly		11	9-13	73		1	0-3	2
Weekly		8	6-9	50		3	1-6	5
Daily or almost daily		1	1-2	9		1	1-2	1

Note: CI=Confidence interval; # in standard units=11gr of pure alcohol; W.A=Without abstainers; BD=Binge Drinking; *N*= 882.

Characterization of BD-BPR (outcome) by sociodemographic variables

Since BD-BPR was strongly related to drinking APR, we assessed sociodemographic characteristics associated with this behavior. Older age and a higher number of children reduced the probability of BD-BPR.

Older age was a weakly related (OR = .96, 95% CI [.93 – .98]) and constituted 2% of the variance (Nagelkerke R^2 = .02), while a higher number of children slightly reduced the odds of presenting BD-BPR (OR = .75, 95% CI [.66 – .85]) and explained 3% of the variance (Nagelkerke R^2 = .03). Marital status and having a religion were also related to BD-BPR. Specifically, being single/divorced/widower

increased the odds of BD-BPR (OR = 1.86, 95% CI [1.33 – 2.61]) and explained 2% of the variance (Nagelkerke R^2 = .02); similarly not having a religion increased the odds of BD-BPR (OR = 1.79, 95% CI [1.33 – 2.40]), explaining 2% of the variance (Nagelkerke R^2 = .02).   The remaining sociodemographic variables were not associated with BD-BPR (Table 3).

Table 3. Single logistic regressions for sociodemographic characteristics and BD-BPR (outcome), pregnant women

Variable	p	OR	CI 95%	R^2
Age	.001	.96	.93 – .98	.02
Number of children	.001	.75	.66 – .85	.03
Marital Status	.001	1.86	1.33 – 2.61	.02
Religion	.001	1.79	1.33 – 2.40	.02
Education level	.777	1.01	.92 – 1.12	.00
Occupation	.299	.96	.89 – 1.03	.00
Socioeconomic status	.405	.92	.74 – 1.12	.00

Note: BD-BPR=Binge drinking before pregnancy recognition (i.e. four drinks per occasion); CI=Confidence interval; Outcome= BD-BPR.

DISCUSSION

This study characterized alcohol drinking among pregnant women attending the public health service of an Argentinean city. The prevalence of women drinkers BPR was higher than the estimated among women of the general population in Argentina (World Health Organization, 2014). This may be due to the age of our participants, mostly young (Observatorio Argentino de Drogas, 2017). Nonetheless, the percentage of life abstainers was slightly higher than the reported for this age group, which could be related to the high number of Evangelical Christians (Protestants) in the sample, who proclaim alcohol abstention.

Two out of ten women reported drinking while pregnant. This percentage not only doubled the estimated for Argentina on a recent study but was also higher than the estimated for most of the rest of Latin American countries (Popova et al., 2017). Nevertheless, is much smaller than the percentage found in previous studies with puerperal women in Argentina (López et al.,

2015). This difference could be partially explained by the time of data collection: while our results were found in the early stages of pregnancy, when women may feel nausea and vomiting and therefore avoid alcohol drinking, the former study accounted for the whole pregnancy.

It is also of interest that we detected women with indicators of risky consumption or dependence, who should ideally receive treatment to reduce their consumption and achieve abstention during the gestational stage. Also, there was a large proportion of women consuming in high quantities. More than a third of the total sample presented BD-BPR, much frequently than once a month, and 11% continued doing so while pregnant. The lifelong consequences of prenatal alcohol exposure such as the Fetal Alcohol Spectrum Disorders (FASD) and its most severe manifestation, the Fetal Alcohol Syndrome (FAS) are strongly associated with BD-BPR and BD-APR (Sayal et al., 2009). Moreover, it has been estimated that one in every 67 women who consumed alcohol during pregnancy would deliver a child with FAS, and several more would deliver a child with other alcohol-related birth defects (Popova et al., 2017). Notwithstanding, in Argentina, there are no studies regarding the prevalence of FASD or FAS, nor about their burden of disease on public health. In high-income countries, the prevalence of alcohol consumption during pregnancy is significantly lower than in Latin American countries, and while FASD is underdiagnosed, their burden of disease has been estimated at 6.5 million dollars per year (Popova, Stade, Lange, Bekmuradov, & Rehm, 2011).

Although based on the literature we expected socio-demographic characteristics to be associated with drinking APR, including BD-APR (Bhuvaneswar, Chang, Epstein, & Stern, 2007), in our study, the only characteristic related to those was pre-gestational consumption, especially BD-BPR. Being single and not having a religion, characteristics associated with youth (Cox, 2015), increased the chances of engaging in BD-BPR, but variance explained by these sociodemographic variables was low. This may be due to the homogeneity of the population regarding these sociodemographic characteristics. Additionally, some other characteristics such as social norms may also explain alcohol drinking in pregnancy. The results, together with the fact that most of the women interviewed had still 21 weeks of fetal

development remaining and that in a previous study in Argentina the great majority of women drank alcohol during their last month of gestation (López et al., 2015), allows us to assume that there may still be a risk of prenatal alcohol exposure, although at the time of the interview this had not yet occurred.

Our results have some limitations, among them, those resulting from the use of self-reported measures, and the use of a cross-sectional design. Although the sample is presumed to be representative of the pregnant women attending the public health care system, it may not be representative of the private sector, and of other contexts. However, this study presents substantial evidence on alcohol consumption among pregnant women from Argentina, where data about prenatal alcohol exposure were scarce. Furthermore, most of the pregnant women in Argentina do not receive a clear abstinence message (López, 2013), what underlines the urgent need to develop specific prevention plans and clinical guidelines that advice woman to abstain from alcohol during pregnancy, considering regional characteristics. Since BD-BPR was strongly related to drinking APR and of BD-APR, more intensive efforts should target young women, not only those pregnant but those in reproductive age. Finally, analyses with instruments other than AUDIT, and the intake of other psychoactive substances in this population should be addressed in the region.

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