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Alcohol drinking patterns by gender, ethnicity, and social class in Bahia, Brazil

Determinantes sociais e padrões de consumo de álcool na Bahia, Brasil

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Keywords
Alcohol consumption. Alcoholism. High-risk drinking. Social determinants. Gender. Ethnicity.

Abstract

Objective
To study patterns of alcohol consumption and prevalence of high-risk drinking.
Methods
A household survey was carried out in a sample of 2,302 adults in Salvador, Brazil. Cases of *High-Risk Drinking* (HRD) were defined as those subjects who referred daily or weekly binge drinking plus episodes of drunkenness and those who reported any use of alcoholic beverages but with frequent drunkenness (at least once a week).
Results
Fifty-six per cent of the sample acknowledged drinking alcoholic beverages. Overall consumption was significantly related with gender (male), marital status (single), migration (non-migrant), better educated (college level), and social class (upper). No significant differences were found regarding ethnicity, except for *cachaça* (Brazilian sugarcane liquor) and other distilled beverages. Overall 12-month prevalence of high-risk drinking was 7%, six times more prevalent among males than females (almost 13% compared to 2.4%). A positive association of HRD prevalence with education and social class was found. No overall relationship was found between ethnicity and HRD. Male gender and higher socioeconomic status were associated with increased odds of HRD. Two-way stratified analyses yielded consistent gender effects throughout all strata of independent variables.
Conclusions
The findings suggest that social and cultural elements determine local patterns of alcohol-drinking behavior. Additional research on long-term and differential effects of gender, ethnicity, and social class on alcohol use and misuse is needed in order to explain their role as sources of social health inequities.

Descritores
Consumo de álcool. Alcoolismo. Comportamento de risco. Determinantes sociais. Gênero. Etnicidade.

Resumo

Objetivos
Investigar padrões de consumo de álcool e prevalência de consumo de alto risco.
Métodos
Inquérito domiciliar realizado no município de Salvador, Bahia, com amostra de 2.302 adultos. Casos de consumo de alto risco foram definidos como sujeitos que referiram uso diário ou semanal mais episódios de embriaguez, além daqueles que informaram qualquer uso de bebidas alcoólicas com embriaguez freqüente (pelo menos uma vez por semana).

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Resultados
Cinqüenta e seis por cento da amostra referiram consumo atual de bebidas alcoólicas. Consumo global estava significantemente associado a gênero (homens), estado civil (solteiros), migração (não-migrantes), educação (nível superior) e classe social (alta). Nenhuma diferença significante foi encontrada com relação a etnicidade, com exceção de cachaça e outras bebidas destiladas. A prevalência anual de consumo de alto risco foi 7%, seis vezes mais prevalente entre homens que entre mulheres (quase 13% comparado a 2,4%). Foi encontrada uma associação positiva de prevalência de consumo de alto risco com educação e classe social. Nenhuma relação global foi encontrada entre etnicidade e consumo de alto risco. Gênero masculino e níveis socioeconômicos mais altos foram associados ao aumento de consumo de alto risco. Análises estratificadas revelaram um efeito consistente de gênero, através de todos os estratos de variáveis independentes.

Conclusões
Os resultados sugerem que elementos sociais e culturais determinam padrões locais de consumo de bebidas alcoólicas. Pesquisas adicionais sobre efeitos de longo prazo de etnicidade, classe social e gênero sobre consumo de álcool são necessárias, visando a explicar o seu papel como fontes de desigualdades sociais em saúde.

INTRODUCTION

Research on social determinants of alcohol drinking patterns has emphasized several factors, among them social class, gender and ethnicity. Social class and socioeconomic status (SES) have constituted key issues for psychiatric epidemiology since its inception as a scientific subdiscipline.[25] Recent evidence points out that social processes vary *vis à vis* different categories of psychiatric disorders and that substance abuse disorders may be a noteworthy exception to the classical social gradient hypothesis.[5,14,25] Gender disparities linked to alcohol use disorders have been widely explored in the literature with the general consistent finding that alcohol abuse occurs more frequently among males.[6,7,13] Ethnic inequalities in health have been explored particularly focusing on black and white contrasts.[5,8,23,24] Nevertheless, such studies have been conducted mainly in the US scenario where, on the one hand, racial divide does not take into account degrees of miscegenation and, on the other hand, there is much overlapping between education, income, social status, and ethnicity.[17]

In Brazil, there is a longstanding research tradition on the epidemiology of mental health, including alcoholism and related conditions.[22] Key findings from Brazilian population studies that covered alcohol-drinking problems[1-3,18,19,21] can be summarized as follows. Males have higher rates of alcohol consumption and alcoholism than females, with ratios varying from 3:1 to 11:1. Despite variations in research design and case identification procedures, most studies that included social variables confirmed alcoholism as negatively associated with socioeconomic status, education, occupation, and income. There is also empirical evidence suggesting that in Brazil alcoholism starts at an earlier age among males and individuals of lower as compared to higher SES,[19] and that the known pattern of a middle-age prevalence decline occurs earlier.[1] However, none of such studies investigated the effect of ethnic inequality on alcohol consumption or misuse nor its interaction with gender and social class.

The second largest concentration of descendants of the Black Diaspora,[17] with varying degrees of racial admixture[16] across gradients of social inequality, Brazil should be a privileged research setting for studies about the impact of race-ethnicity on health. In spite of such a historical and cultural background, there have been in Brazil no specific investigations on racial-ethnic inequalities as related to mental health, particularly the social determination of alcohol drinking patterns. To cover such a gap, it is reported findings from an exploratory investigation of selected factors (ethnicity, gender, and social class) associated with the prevalence of alcohol consumption and high-risk drinking in Salvador, Bahia, Brazil.

METHODS

Sampling strategy

It was used a 3-stage random sample by conglomerates. In the first stage, for the definition of "survey area" (SA), contiguous census tracts sharing the same sociodemographic characteristics were merged in order to ensure a total of 100 to 200 families in each.

This produced a total of 108 SAs, which were classified into three classes according to family SES level: predominantly high, mixed, and predominantly low. These areas included 16,592 households and approximately 83,000 inhabitants, and 37 SAs were randomly selected, proportional to the number of areas in each SES class. In the second stage, a random systematic sampling of households was accomplished for each SA using a sampling interval of 10 homes. A total of 1,540 homes were visited. All families selected had their members invited to take part in a general register of homes and participants, along with basic sociodemographic data (age, sex, position in the household). In the third sampling stage, for each family that agreed to participate in the study, two adults (>20 yrs. of age), one male and one female (excluding pregnant women), were randomly selected for participating in the study. The final sample comprised 2,302 adults from 1,258 families, living in 63 census tracts. It had more females (1,250) than males (1,052), reflecting the greater proportion of women than men at all age-groups of adults in Salvador.

Data collection procedures

One registered nurse, two nutritionists, and 10 trained lay interviewers (recruited from the sampled neighborhoods) composed the field research team. They received a 72-hour training program, basically through techniques of role playing, and passed several reliability tests throughout the fieldwork. They were also trained in a field pilot-study, practicing questionnaire application to families not included in the sample. The lay interviewers located the households and completed a family information sheet for collection of sociodemographic data on all residents identified and for scheduling visits for interviews and individual exams. Each interviewer was in charge of approximately 100 families. They were instructed to pay visits on meal times, weekends, and in the evenings, up to three times, before considering that unit missing. Field supervisors (L.M., M.J.A.) monitored closely data collection, and re-visited participating families at random to ensure quality control.

The basic instrument of data collection was a modular questionnaire containing sociodemographic individual data: age, gender, ethnicity, family socioeconomic status, schooling, migration (age at time of migration, itinerary), and occupational background. Data on nutritional, biomedical, and psychometric assessments were collected individually using instruments field-tested in the pilot study. An inventory of household appliances and consumer goods (refrigerator, TV set, telephone, video-cassette recorder, microwave oven, car ownership) was completed and checked by direct observation. It was used for assessing family consumption levels for a classification of socioeconomic status (ranging from A – highest to E – lowest, according to the standard of ABPEME – Brazilian Association of Market Research). Family socioeconomic status and head of household's occupation and schooling were taken as components for a 4-level social class scale (upper, middle, working-class, poor).

In order to assess race-ethnicity, respondents were invited to classify themselves on a 5-level racial classification[16] developed for population genetic studies carried out in Bahia: white, light-mulatto, medium-mulatto, dark-mulatto, black. However, 634 participants (almost 30%) refused to do so and used other denominations. Interviewers encouraged such effort of self-classification and were instructed to fill out the "other" open-ended category. By the end of the fieldwork, it had been collected 18 different ethnic/racial designations, being the most frequent: *pardo*, *claro*, *moreno*, *sarará*, *cabo-verde*, *marrom*, *escuro, preto*. *Moreno* (equivalent to light-brown skinned person) was the term most frequently referred, and it was used it to classify also light-mulattoes. *Escuros* and *pretos* were included among blacks while *claras* (mostly women) were considered as whites. The remainder self-assigned designations were considered as *pardos*, designation recognized by the Brazilian racial desegregation movement. It should be noted that in Brazilian Portuguese, unlike in English, there is neither semantic distinction nor moral degrading for the terms *negro* and *preto* (both can be translated as black). A quite small number of respondents (60 subjects) indicated Oriental, Amerindian, Jewish or foreign-born ethnic origin. Since they do not represent a separate ethnic group in the Bahia context, all were excluded from analyses pertaining to race-ethnicity.

Outcome measures

Individual mental health status was assessed by the application of the 12-item Psychosomatic-Anxiety-Depression (PSAD) subscale of the QMPA (Questionário de Morbidade Psiquiátrica de Adultos, Adult Psychiatric Morbidity Questionnaire). Based on Goldberg's General Health Questionnaire (GHQ), the QMPA consists of 44 items in Brazilian Portuguese. The QMPA was developed by Santana[21] (1982) for case identification in psychiatric morbidity surveys and tested for validity and reliability in different research settings. Validation tests yielded adequate sensitivity (89 to 93%), and specificity (72 to 98%), and low misclassification rates (6 to 12%) for the instrument. The reliability study (55) of the supporting diagnoses revealed a kappa of +0.88. It has

since been largely employed for epidemiologic studies of mental disorders in Brazil. The PSAD subscale was first proposed by Andreoli et al[4] (1994) after analyzing the psychometric properties of the QMPA using principal component analysis. The analysis extracted 10 components of the main instrument, and three of these – anxiety, depression, and alcoholism – came out consistently in all research sites. These dimensions clustered around the same symptoms, with the following questions found to be the most reliable and stable for alcoholism: frequently consumes alcoholic beverages; drinks daily; gets drunk at least once a week; drinks excessively.[4]

Alcohol consumption patterns were surveyed through direct questions in the local idioms regarding: a) frequency of consumption (never drink alcoholic beverages; drink once a month; drink once a week or on weekends; daily binge drinking); b) type of alcoholic beverage – beer, *cachaça* (Brazilian sugarcane liquor), whisky, cognac, wine; c) amount ingested (number of bottles or cans, doses or cups, double doses). High-intake was defined as more than two units (bottle/can/dose/cup) per day everyday. Binge drinking was defined as the consumption of eight or more drinks of wine, beer, or liquor at one sitting. Alcohol abuse was covered by a direct question regarding frequency of episodes of drunkenness (never, rarely, sometimes, frequently). All items referred to the current situation and the past 12-month period. Abstemious was defined as those who declared never drinking alcohol, double-checked with the type of beverage used and the QMPA alcohol-related questions. Cases of *high-risk drinking* (HRD) were defined as those subjects who referred binge drinking (at least once a week) plus episodes of drunkenness; and those who reported high-intake or any use of alcoholic beverages but with frequent drunkenness (at least once a week). These drinking patterns, graduated frequency of alcohol intake and case definition criteria are in convergence with current research on alcohol consumption and high-risk drinking.[7,20]

Data analysis

Cross-sectional analyzes were performed to obtain prevalence rates and estimate the effects for each category of the independent variables. Considering the

Table 1 – Sociodemographic profile of the sample. Salvador, Brazil, 2001.

Variables	Men		Women		Total	
	N	(%)	N	(%)	N	(%)
Age group						
>25	163	(15.5)	144	(11.5)	307	(13.3)
25–34	256	(24.3)	304	(24.3)	560	(24.3)
35–44	282	(26.8)	324	(25.9)	606	(26.3)
45–54	173	(16.4)	222	(17.8)	395	(17.2)
55 +	178	(16.9)	256	(20.5)	434	(18.8)
Marital Status						
Single	291	(27.9)	273	(21.9)	564	(24.6)
Married	715	(68.5)	768	(61.7)	1,483	(64.8)
Widowed	16	(1.5)	116	(9.3)	132	(5.8)
Separated/divorced	21	(2.0)	88	(7.1)	109	(4.8)
Migration						
Non-migrant	538	(51.3)	606	(48.5)	1,144	(49.8)
Migrant	511	(48.7)	643	(51.5)	1,154	(50.2)
Education						
College	49	(4.7)	62	(5.0)	111	(4.8)
High school	317	(30.4)	392	(31.5)	709	(31.0)
Elementary school	642	(61.5)	693	(55.8)	1,335	(58.4)
Illiterate/Read	36	(3.5)	96	(7.7)	132	(5.8)
Educational divide						
[College-High school]	366	(35.0)	454	(36.5)	820	(35.8)
[Elementary-Illiterate]	678	(65.0)	789	(63.5)	1,467	(64.2)
Social class						
Upper	24	(2.4)	28	(2.3)	52	(2.4)
Middle	122	(12.1)	162	(13.5)	284	(12.8)
Working class	303	(30.0)	350	(29.1)	653	(29.5)
Poor	561	(55.5)	661	(55.0)	1,222	(55.3)
Social divide						
[Upper-Middle]	146	(14.5)	190	(15.8)	336	(15.2)
[Working class -Poor]	864	(85.5)	1,011	(84.2)	1,875	(84.8)
Ethnic group						
White	150	(14.4)	190	(15.3)	340	(14.9)
Moreno	487	(46.7)	560	(45.2)	1,047	(45.9)
Pardo	175	(16.8)	189	(15.2)	364	(15.9)
Black	211	(20.2)	261	(21.1)	472	(20.7)
Other	20	(1.9)	40	(3.2)	60	(2.6)
Ethnic divide						
[White]	150	(14.4)	190	(15.3)	340	(14.9)
[Black/Pardo/Moreno]	893	(85.6)	1,050	(84.7)	1,943	(85.1)
Total	1,052	(100.0)	1,250	(100.0)	2,302	(100.0)

sampling design, separate analyses were performed for each gender category. The identification of patterned inequalities allowed for the establishment of specific cut-points for each one of the social and racial/ethnic variables. Odds ratios were calculated for categories of covariables and, whenever indicated, with adjustments for controlling confounding through logistic regression. Adjusted odds ratios were estimated by modeling only terms that reached statistical significance of α=0.05 in each specific group. The analysis of interaction was accomplished through the use of cross-product models. For data processing and statistical analysis, it was used the software Minitab, version 1.3. Adjusted measures were calculated for each category of effect-modifiers using Statcalc EpiInfo for the estimation of summary association measures. Mantel-Haenszel weighted chi-squares and Taylor-series confidence intervals (and, whenever indicated due to small size strata, Fisher's exact tests and Greenland-Robinson confidence limits) were used for testing statistical significance.

RESULTS

The main social and demographic characteristics of the sample are shown in Table 1. There was an 11.4% excess of women than men. A large majority (65%) of the sample was currently married. One-fourth was single while widowed and separated or divorced together accounted for around 10% of the sample. More women were widowed or divorced than men (16% compared to 3.5%). Half of the sample was migrants, being this ratio equal for both gender groups. The majority (58%) of the sample was at the elementary level of education. Illiteracy rate was 6%. Only 5% have had college education. Women were more educated than men, despite the fact that they have 8% illiteracy rate as compared to 3.5% for men. Less than 3% of the sample was classified as upper class and 13% as middle class. Almost 30% were lower or working class, while the majority (55%) was classified as poor. Since this was a family-based variable, there were no differences for gender. Regarding the racial/ethnic composition of the sample, the majority (46%) identified themselves as *morenos*, followed by blacks (21%), and *pardo*s (16%). Self-reported whites were only 15% of the sample. Less than 3% of those interviewed declared a different ethnic origin.

Table 2 presents data on alcohol consumption by type of beverage. Fifty-six per cent of the sample acknowledged drinking alcoholic beverages in the

Table 2 – Consumption of alcohol by type of beverage, according to selected independent variables. Salvador, Brazil, 2001.

Variables/Categories	Beer (%)	Wine (%)	*Cachaça* (%)	Whisky (%)	Other distilled (%)	Overall (%)
Gender						
Women	***42.2	***25.5	***5.2	***4.3	***3.2	***42.2
Men	69.1	40.0	25.0	17.4	18.0	71.0
Marital status						
Single	***61.1	***38.2	*16.8	***11.6	***12.8	***62.1
Married	55.4	32.8	14.1	10.2	10.1	57.1
Widowed/divorced	33.4	20.0	8.7	4.8	4.8	36.2
Migration						
Non-migrant	***59.0	***37.8	14.0	***12.5	11.0	***61.4
Migrant	49.9	27.6	14.5	8.0	10.0	51.3
Education						
College	***63.2	***47.4	***5.2	***22.4	*6.9	***65.8
High School	60.6	37.3	11.0	13.8	11.1	62.3
Elementary school	52.8	30.4	11.4	8.2	11.2	54.3
Illiterate/Read	32.7	15.8	10.4	2.2	3.5	36.2
Education divide						
[College-High school]	***60.5	***36.9	***10.5	***14.2	10.5	***63.4
[Elementary-Illiterate]	50.0	26.4	15.8	7.9	10.5	52.3
Social class						
Upper	**61.8	36.3	***3.6	***32.3	11.0	***72.1
Middle	51.6	32.8	9.0	15.8	7.5	59.2
Working class	57.5	31.9	10.4	12.5	11.7	59.9
Poor	50.4	28.9	16.9	6.2	10.8	51.8
Social divide						
[Upper-Middle]	57.9	34.9	***8.2	***17.9	8.0	*61.4
[Working class-Poor]	52.2	31.1	14.4	8.7	10.8	55.0
Ethnic group						
White	49.4	31.4	***7.6	10.5	***4.5	52.6
Moreno	53.7	31.5	13.3	10.0	10.8	55.4
Pardo	57.5	36.2	16.6	11.2	13.1	60.2
Black	55.2	32.1	16.3	9.7	10.3	58.0
Ethnic divide						
[White]	*49.5	31.5	***7.6	10.5	*** 4.5	52.0
Black/*Pardo*/*Moreno*]	55.7	32.4	14.6	10.3	11.3	57.3
Total	54.1	32.2	12.8	10.3	10.2	56.2

Significance levels (Chi-square test): *(0.05>p>0.01); **(0.01>p>0.005); ***(0.005>p).
Cachaça – Brazilian sugarcane liquor.

past 12 months. Overall consumption was significantly related with gender (males), marital status (singles), migration (non-migrants), better-educated (college level), and social class (upper). No difference was found among the ethnic groups. Beer consumption was reported by 54% of the sample, followed by wine (32%). Distilled alcoholic beverages were less frequently consumed: *cachaça* consumption was reported by 12.8% as compared to whisky and other distilled beverages (mainly local brands of cognac) consumed by 10% of the sample. Beer, wine, and whisky were more consumed by single, non-migrant, better-educated, upper-class males, while drinking *cachaça* and other distilled beverages were more frequently reported by poorly-educated, lower-class males. No significant differences were found regarding ethnicity, except for *cachaça* and other distilled beverages, which black/*pardo* males consume more frequently.

The overall 12-month prevalence of HRD was 7.2%. According to Table 3, HRD was almost six times more prevalent among males than females (almost 13% compared to 2.4%) and controlling for confounders did not reduce the ratio (AOR=5.81; CI=3.83-8.86). For the analysis of marital status, the widowed and divorced subgroups were combined. This post-married subgroup showed the smallest prevalence (3%) as compared to married and single (respectively 8% and 7%). Controlling for potential confounders yielded statistically significant odds ratios only for the contrast married vs. widowed/divorced (AOR=2.20; CI=1.10-4.41). Migration had no effect on HRD prevalence.

Also in Table 3, a positive association of HRD prevalence with educational level was statistically significant for college and elementary education levels. College and elementary education yielded prevalence of 9% and 8%, respectively, approximately 4 times higher than for illiterate subgroups. However, after adjusting through logistic modeling, none of these ratios were significant. The upper class group showed the largest HRD prevalence (15%), significantly higher than in other groups (prevalences around 7%) even after controlling for confounders (AOR=2.98; 1.27-7.04). Con-

Table 3 – Prevalence (%) of high-risk drinking according to selected independent variables. Salvador, Brazil, 2001.

Variables/Categories	Prevalence	Crude OR	(95% CI)	AOR+	(95% CI)
Age group					
<25	5.5	1.00	—	1.00	—
25–34	5.6	1.03	(0.65; 1.98)	1.17	(0.60; 2.21)
35–44	8.4	1.63	(0.89; 2.99)	1.79	(0.83; 3.37)
45–54	8.8	1.71	(0.90; 3.72)	1.72	(0.84; 3.42)
>55	6.0	1.13	(0.51; 2.64)	1.26	(0.50; 2.89)
Gender					
Women	2.3	1.00	—	1.00	—
Men	12.4	5.77	(3.88; 8.99)***	5.81	(3.80; 9.86)***
Marital status					
Single	6.4	1.92	(0.89; 4.42)	1.00	—
Married	7.3	2.20	(1. 06; 4.62)*	1.23	(0.86; 1.98)
Widowed/divorced	3.7	1.00	—	1.17	(0.50; 2.77)
Migration					
Non-migrant	6.7	1.00	—	1.00	—
Migrant	6.9	1.03	(0.66; 1.55)	1.07	(0.55; 1.61)
Education					
College	8.6	4.22	(1.11; 16.74)*	3.30	(0.85; 13.31)
High school	6.4	3.11	(0.93; 10.83)	2.51	(0.72; 8.93)
Elementary school	7.5	3.62	(1.08; 11.95)*	2.65	(0.77; 9.14)
Illiterate/Read	2.2	1.00	—	1.00	—
Education divide					
[College-High school]	6.8	1.00	—	1.00	—
[Elementary-Illiterate]	6.9	1.03	(0.70; 1.86)	1.03	(0.70; 1.40)
Social class					
Upper	14.8	2.85	(1.36; 6.98)**	2.98	(1.26; 7.77)**
Middle	8.2	1.45	(0.83; 2.59)	1.56	(0.90; 2.93)
Working class	5.8	1.00	—	1.00	—
Poor	6.8	1.22	(0.73; 1.91)	1.24	(0.80; 1.98)
Social divide					
[Upper-Middle]	9.1	1.44	(0.89; 2.67)	1.54	(1.01; 2.88)*
[Working class-Poor]	6.5	1.00	—	1.00	—
Ethnic group					
White	7.1	1.19	(0.72; 1.99)	1.13	(0.67; 1.77)
Moreno	6.0	1.00	—	1.40	(0.79; 2.80)
Pardo	8.7	1.49	(0.91; 2.80)	1.00	—
Black	7.8	1.31	(0.85; 2.48)	1.25	(0.81; 1.98)
Ethnic divide					
[White]	6.9	1.03	(0.63; 1.81)	1.00	(0.60; 1.78)
Black/*Pardo*/*Moreno*]	6.8	1.00	—	1.00	—
Total	6.9	—	—	—	—

+Adjusted for age, gender, marital status, social divide.
Significance levels: *(0.05>p>0.01); **(0.01>p>0.005); ***(0.005>p).

Table 4 – Prevalence (%) of high-risk drinking according to socioeconomic variables, by gender. Salvador, Brazil, 2001.

	Men				Women				Men:Women Prevalence Ratio	
Variables/Categories	N	Prev	OR[&]	(95% CI.)	N	Prev	OR[+]	(95% CI)	PR	MH-x^2
Marital status										
Single	291	9.7	1.00	—	270	3.5	1.29	(0.33; 5.60)	2.66	8.49***
Married	713	13.4	1.37	(0.87; 2.23)	766	2.1	0.93	(0.28; 3.45)	5.92	70.65***
Widowed/divorced	16	15.5	1.75	(0.63; 5.01)	115	1.4	1.00	—	7.32	5.44*
Migration										
Non-migrant	538	11.0	1.00	—	602	2.9	1.30	(0.60; 2.80)	3.74	31.71***
Migrant	509	13.6	1.18	(0.84; 1.70)	641	1.8	1.00	—	6.86	63.12***
Education										
College	49	15.6	2.45	(0.58; 10.19)	62	3.1	2.18	(0.49; 10.93)	4.74	5.73*
High school	316	12.5	2.09	(0.52; 7.49)	391	1.7	1.00	—	8.25	34.54***
Elementary school	641	12.4	1.89	(0.58; 6.45)	689	3.0	2.30	(0.97; 5.63)	3.94	45.16***
Illiterate/Read	36	8.0	1.00	—	95	—	—	—	—	—
Social class										
Upper	24	28.0	3.11	(1.13; 8.19)*	28	3.4	2.04	(0.24; 18.13)	7.56	6.50*
Middle	122	15.0	1.47	(0.71; 2.79)	162	3.0	1.68	(0.42; 5.79)	4.68	14.03***
Working class	302	10.5	1.00	—	349	1.6	1.00	—	6.06	24.37***
Poor	560	12.0	1.17	(0.70; 1.81)	656	2.6	1.60	(0.61; 4.13)	4.38	42.83***
Social divide										
[Upper-Middle]	146	17.1	1.54	(0.98; 2.49)	190	3.1	1.33	(0.52; 3.34)	5.22	20.56***
[Working class-Poor]	862	11.4	1.00	—	1,005	2.3	1.00	—	4.74	66.91***
Ethnic group										
White	150	12.2	1.09	(0.61; 1.93)	188	3.1	1.83	(0.41; 7.64)	3.79	10.94**
Moreno	487	11.0	1.00	—	559	1.7	1.02	(0.28; 3.78)	6.10	41.51***
Pardo	174	16.5	1.52	(0.96; 2.43)	188	1.5	1.00	—	10.35	26.70***
Black	210	12.4	1.12	(0.63; 1.88)	259	4.1	2.48	(0.67; 9.07)	2.87	11.55**
Ethnic divide										
[White]	150	12.2	1.00	—	188	3.1	1.32	(0.57; 3.37)	3.76	10.94**
[Black/*Pardo*/*Moreno*]	871	12.5	1.07	(0.63; 1.83)	1,006	2.3	1.00	—	5.28	81.35***

*Adjusted for age, marital status, social divide.
Significance levels: *(0.05>p>0.01); **(0.01>p>0.005); ***(0.005>p).

trasting upper/middle and working class and poor, a social divide was positively associated with alcoholism after controlling for confounders (AOR=1.54; CI=1.01-2.36) at borderline levels of significance. Finally, no significant association between ethnicity and overall HRD prevalence was found in the sample.

Table 4 allows for the analysis of the differential patterns of association between HRD and the study independent variables, stratified by gender. Among men, there was a gradient in prevalence from single (10%) to married (14%) and to widowed/divorced (16%), which was confirmed by logistic adjustments (married AOR=1.37; widowed AOR=1.75), although not reaching levels of statistical significance. For women, a gradient was set precisely in the opposite direction (from 4% single to 2% married and 1.5% widowed/divorced) but the adjustment for confounders revealed that these differences were not statistically significant. There was no effect of migration status on HRD prevalences in either gender. A clear positive correlation between education and HRD prevalence was found only for males, from college (16%) to high school and elementary school (13%) and to no schooling and illiteracy (8%). This was confirmed by logistic modeling (AOR=2.45; high school AOR=2.09; elementary school AOR=1.89; taking illiterate as the reference group given its smallest prevalence), although not reaching levels of statistical significance. No trend was found in the analysis regarding HRD in women.

Concerning social class, the HRD prevalence among males was almost 3 times greater in the upper class as compared to the lower class, at levels of statistical significance (CI=1.19-8.13). Again for females, no significant differences were found for HRD rates across the different social class levels. A similar pattern, although not statistically significant, was found in the analysis of the social divide (upper/middle/working-poor). Among men, the *pardo* subgroup showed the highest HRD prevalence (17%) as compared to other subgroups (around 12%), but these differences were not statistically significant. For women, there was no consistent pattern or gradient. The analysis contrasting the combined black/*pardo* subgroups to whites yielded no levels of significance. Table 4 also shows the prevalence of high-risk drinking according to gender, stratified by sociodemographic variables. Male: female standardized prevalence ratios varied from around 3.0 for the single and black strata (due to a slight increase in female prevalence) to 8.1 in the upper class and almost 11.0 for the *pardo* subgroup. These ratios were consistently significant for all subgroups of the socioeconomic variables considered.

DISCUSSION

Before interpreting the results, there should be reviewed some methodological aspects, particularly related to the validity and reliability of both determinant and outcome variables. As for the first, gender

and social variables have a tradition of theoretical and methodological debate in the subfield of alcohol research much longer than ethnicity.[7,13,25] Only recently, validity and reliability of data on race or ethnicity, as well as related conceptual and methodological problems, started to be questioned in health research.[9] A study conducted in southern Brazil[10] found agreement beyond chance between self-assigned racial/ethnic categories and observed skin color as excellent for white (kappa=0.75) and black women (kappa=0.89), but only good for participants with mixed color (kappa=0.61), resulting in a global kappa of 0.75 (95% CI 0.71-0.79). In addition, Fuchs et al (2002) stated that, the self-definition of race-ethnicity in Brazil includes "unsounded and hardly interpretable words, which makes difficult the comparison between national and international studies".[10] For this reason, and considering the regional differences between southern and northeastern Brazil, the authors' option was to draw this variable through self-assignment followed by collapsing spontaneous designations into racial/ethnic categories.

Regarding the second aspect, issues of outcome measurement are linked to diagnostic classification system and instrument, process and criteria for case identification. On the one hand, a line of structured and standardized systems and tools, such as the DSM (Diagnostic Statistical Manual) and the ICD (International Classification of Diseases) series, has replaced the heterogeneity of categories and typologies that characterized diagnostic research in psychiatry in the past. Despite recent efforts of convergence between DSM-IV and ICD-10, some inconsistencies still hold, particularly for the classification of substance abuse and dependence as syndromes or full-status diagnostic categories.[11] The approach taken in this research was to classify patterns of alcohol consumption according to putative health consequences, collapsing categories of alcohol misuse into a single measure (e.g. HRD), in order to reduce the complexity levels of the outcome variable, as justified by operational reasons. A potential measurement bias that deserves mention is the possibility of a gender differential misclassification bias in the information about alcohol consumption. Such a bias might arise from the social expectations regarding the female role in Western societies, where men would overestimate intake while women tend to underestimate it. Nevertheless, there is no reason to expect this sort of misclassification bias regarding symptom or complaint reports differential by gender.

However, this study was not aimed to produce high-precision population estimates of alcoholism but rather to have a more comprehensive epidemiological and sociocultural account of the research problem. Indeed, self-reported data concerning graduated frequency of alcohol consumption. The alcohol-related QMPA items seemed to have composed a quite useful field-instrument. Andreoli et al[4] (1994) already observed that the contents of the QMPA components reflected overall symptoms that were partially equivalent to DSM-III-R criteria for the recognition of alcohol abuse and dependence. Of the four items of the alcoholism scale, two – weekly drunkenness and excessive drinking – may be related to pathological drinking, which is essential for the HRD definition.[20] Nevertheless, the values of the areas under the ROC curve (using DIS, diagnostic interviews schedule, as gold-standard) for alcohol abuse and dependence extracted by the principal components analysis were respectively 0.76 and 0.79, which provide a reasonable performance of the instrument if used for population research purposes.[4] Weak agreement at the level of diagnosis is a common feature of standard population research on the prevalence of specific psychiatric disorders. Therefore, any bias toward underreporting, even corresponding to stronger agreement at the level of ordinal measures of HRD symptoms, implies that associations with risk factors are conservative, which is not at all a bad strategy for exploratory research such as this study.

In this survey, it was estimated the annual prevalence of alcohol consumption at 59% and HRD at 6.9%. Such estimates are higher than the equivalent data from the first wave of morbidity studies conducted in Brazil in the 80s.[22] However, they are in line with the estimates produced by more recent research, such as the Multicentric Study of Psychiatric Morbidity,[2] 8%; Londrina study,[18] 7%; and São Paulo ECA study,[3] 4.5%. Also, the study findings yielded overall prevalences comparable to the US population studies. The National Comorbidity Survey (NCS)[15] found a lifetime prevalence of alcohol abuse of 28%, with more than 7% of alcohol dependence in the past 12 months. The National Longitudinal Alcohol Epidemiologic Survey (NLAES)[12] reported a prevalence of alcohol use in the prior 12 months of 44% and lifetime prevalence of high-risk drinking estimated at 13%.

Gender was found to be the most important single risk factor for both alcohol consumption and HRD prevalence. Men drink only twice as much as women but their risk of becoming alcoholic is six times greater than that for women. These ratios are smaller than those estimated by the first wave of Brazilian epidemiological studies,[22] but they are comparable to those found in recent surveys conducted in the country.[1-3,18] The study's male: female ratio is much higher than those estimated in US surveys, above all

the recent ones. Indeed, the NCS and the NLAES surveys estimated male: female ratios of around 2:1. Sociopsychological explanations for the higher incidence of HRD among men focuses on greater exposure opportunities for men as compared to women, basically due to higher alcohol intake related to family, social, and occupational stress, different by gender.[7] Nevertheless, the finding that the male: female ratio for HRD prevalence was almost 3 times greater than the equivalent ratio for alcohol consumption poses evidence for the absence of a differential gender misclassification bias.

In the study data, migration and marital status, taken alone, had a null effect. There was a clear gradient regarding education: higher education implies more consumption and increased HRD. These findings are in parallel with the social class gradient, with upper and middle classes with higher prevalence of HRD, along with more consumption of alcoholic beverages. These results conflict with all Brazilian studies, which consistently found a negative social gradient for alcohol consumption, abuse, and dependence. In this regard, the study findings are convergent with several studies carried out in the US,[5,8,24] where the prevalence of substance use disorders was not significantly higher in the lowest SES and education subsamples. The study did find no racial/ethnic divide between white and black/*pardo* regarding alcohol consumption and problem drinking. Rather, higher HRD prevalences are concentrated in *pardo* subgroups. The few US studies that have investigated this topic reported similar results. Dawson et al[8] (1995) found that the proportion of current drinkers was lower than average among black and Hispanic adults but the prevalence of heavy drinking or intoxication on a weekly or more frequent basis showed no variation by race or ethnicity. Turner & Gil[23] (2002) also reported rates of substance abuse (including alcohol) significantly lower for African-Americans than for non-Hispanic white subjects.

Marital status yielded a peculiar pattern linked to gender, although not reaching statistical significance: while for men there was an increase from single (lowest prevalence) to married and post-married (highest), for women it was found the opposite. Also, as far as HRD is concerned, education and social status seem to interact with gender only for males. However, these findings must be interpreted with caution before attributing them to active coping or the stress of upward mobility of *pardo*s. Indeed, such an interaction was substantially due to a dramatic reduction of HRD prevalence for moreno-*pardo*, upper/middle class women rather than to an increase in the prevalence of consumption and problem drinking among men in the same stratum. These results are comparable to recent research on the topic conducted in North America.[6,23,24] Williams et al[24] (1992) reported higher rates of substance abuse disorders for lower SES black females than their white counterparts with the strongest relationship to SES occurring for alcohol abuse. Curran et al[6] (1999) found that measures of SES (education, occupation, personal and household income) were more important predictors of alcohol dependence symptoms only among men, while for low income women the influence of family history on adult alcoholism was significantly stronger. Turner & Gil[23] (2002) observed substantially lower rates among African-American women as compared to men for substance abuse and dependence in south Florida.

In conclusion, overall alcohol consumption was significantly associated with gender (male), marital status (single), migration (non-migrant), better educated (college level), and social class (upper-middle). No significant differences were found regarding ethnicity, except for *cachaça* and other distilled beverages. For HRD, gender differences were greater than the ones observed in developed countries. Also, the socioeconomic gradient found in Bahia was opposite to the pattern observed in North America. On the other hand, it was found no overall relationship between Afro-Brazilian race-ethnicity and drinking problems. These results suggest that social and cultural elements determine local patterns of alcohol-drinking behavior. Therefore, additional research is needed to better understand the long-term and differential effects of ethnicity, social class, and gender, including both consideration of whether these predictors are equivalent cross-culturally and, as a necessary background, of what is the role of social health inequities on alcohol use and misuse.

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