



Factors Associated with Alcoholic Drink Consumption: A Cross-Sectional Study in a Capital City in the Brazilian Amazon

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Authors' contributions

This work was carried out in collaboration among all authors. Author RVR was responsible for coordinating all the research, supervising all stages of the project, interpretation and writing the first and subsequent drafts of the paper. Author ACO contributed to interviews, data tabulation, data analysis in R and STATA, interpretation and writing of the paper's first and subsequent drafts. Author FAAM contributed to interviews, data tabulation, interpretation and writing of the paper's first and subsequent drafts. Author ÚMSM contributed to interviews, data tabulation, interpretation and writing of the paper's subsequent drafts. Author ESF contributed to data analysis in STATA, interpretation and writing of the paper's subsequent drafts. All authors read and approved the final manuscript.

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ABSTRACT

Aims: To analyze the prevalence of alcohol consumption and associated factors in people living in Porto Velho - RO. Sample: 712 individuals.

Study Design: Cross-sectional study.

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Methodology: Cross-sectional study conducted between August 2019 and July 2020, with the application of a questionnaire, adapted to verify the consumption of alcoholic beverages in a sample of 712 individuals aged 18 years or older that reside at the city of Porto Velho - RO.

Results: The prevalence of consumption was 48% (95% CI 44.4 - 51.7). The *number of doses consumed per event* was 4 standard doses (95% CI 4.0 - 5.0). The prevalence ratios (PR) observed were: *i.sex*, PR = 0.714 (95% CI 0.614 - 0.831 [$P < .001$]); *ii.age*, PR = 0.758 (95% CI 0.671 - 0.858 [$P < .001$]); *iii.marital status*, PR = 1.287 (95% CI 1.082 - 1.531 [$P < .005$]); *iv.income*, PR = 1.299 (95% CI 1.120 - 1.507 [$P = .001$]); and *v.use of other substances*, PR = 1.385 (95% CI 1.168 - 1.644 [$P < .001$]).

Conclusion: *Sex, age, marital status, income and use of other drugs* showed a significant association with alcohol consumption. *Sex and age* showed a negative association, while *marital status, income and use of other substances* showed a positive association with alcohol consumption.

Keywords: Alcohol drinking; Alcoholism; Cross-sectional studies; Prevalence studies.

1. INTRODUCTION

According to the WHO, in 2016, approximately 2,348 billion people worldwide would be consumers of alcoholic beverages [1]. Per capita consumption in Brazil (7.8 L) would be higher than the global average (6.4 L) [1]. In this context, Heavy Episodic Drinking (HED), consumption of 4 or more doses for women and five or more doses for men on a single occasion, has gained prominence in worldwide research on the consumption of alcoholic beverages [2,3].

In 2010, 12.7% of the Brazilian population fit the profile of HED; in 2016, this percentage rose to 19.4% [1]. In the year 2017, Surveillance of Risk and Protective Factors for Chronic Diseases by Telephone Inquiry (Vigitel - Vigilância de Fatores de Risco e Proteção para Doenças Crônicas por Inquérito Telefônico) demonstrated that the frequency of alcohol abuse in Brazil reached 19.2% of the population aged 18 or over, 27.1% were men and 12.2% women [4]. In Porto Velho, a capital of the Northern region of the Western Amazon with an estimated population of 529,544 inhabitants [5], the prevalence of HED was estimated as 17.2% of the population aged 18 or over [6].

In addition to the socioeconomic impact, alcoholism also affects the individual's general state, promoting changes in sleep quality, increased aggression, and risky behavioral manifestations [7]. The ingestion of a large amount of alcohol in a short period causes sudden changes in the endocrine and neurological systems [8,9]. A study carried out in São Paulo demonstrated an association between alcohol abuse and risky behavior, shortly after

leaving the establishments, showing fainting, driving under the influence of alcohol, using illicit drugs and risky sexual behavior as frequent effects [10]. In 2016 alone, alcohol's harmful use would be related to around 3 million deaths worldwide [1].

1.1 Study Objectives

To analyze the prevalence of alcohol consumption and associated factors in people living in Porto Velho - RO.

2. MATERIALS AND METHODS

A cross-sectional study carried out between August 2019 and July 2020. The study site was Porto Velho - RO, Brazil, with an estimated population of 529,544 inhabitants [5]. Interviews were conducted to complete a questionnaire adapted with questions about consumption and other sociodemographic and behavioral variables. The sample was designed to represent the population aged 18 or over, residents of the city of Porto Velho, and proportional to the size of the population of each age group. The study was approved by the Research Ethics Committee of the Fundação Universidade Federal de Rondônia (UNIR) with the legal opinion n. 3,556,646.

The sample required for this study was calculated using a probability sampling technique so that the number of men and women was equal, resulting in two samples that comprised 384 individuals each ($n = 768$). Nevertheless, the sample obtained at the end of the interviews comprised 712 (339 [47.6%] male; 373 [52.4%] female) individuals residing in the following four areas of the city: Area I, center and bank of the

Madeira River (173 individuals [24.3%]); Area II, the north center of the city (148 individuals [20.79%]); Area III, the southern area of the city (195 individuals [27.39%]); and Area IV, the eastern part of the city (196 individuals [27.53%]).

The goodness-of-fit test showed that the proportions of the age groups in the achieved sample differed from the theoretical proportions ($P < .05$), presenting an underrepresentation of individuals aged 25–34 years. When analyzing the strata composition by sex and age, the difference in proportions remained ($P < .01$). The group of male individuals aged 25 to 34 years was underrepresented, and the male group aged 45 to 54 years was overrepresented. A total of 342 ($n = 342$) individuals declared consuming alcoholic beverages.

The interviews were performed between September 2019 and February 2020 by applying the adapted questionnaire in different areas of Porto Velho, RO, according to the minimum number established for each group and location of the city. The interview's inclusion criteria were as follow: individuals aged 18 years or over and individuals residing in Porto Velho City, RO. The interviewees were chosen for convenience and in compliance with each group's sample.

Sex, age, marital status, education level, occupation, skin color and *income* were recorded and analyzed as sociodemographic variables. *Consumption of alcoholic beverages, consumption per event* and *use of other substances* were recorded and analyzed as behavioral variables. *Sex* is a binomial/dichotomous variable, the possible results are male and female. *Age* is a continuous variable, represented in whole numbers, but it was analyzed categorically, multinomial/ordinal, in 4 age groups: adolescents (<20); young adults (20–40); mature adults (40–60); and elderly (>= 60). *Marital status* is a variable with two categories representing the status of living together (married or in a stable relationship) or not living together (single, widowed, and others). The *education level* is multinomial/ordinal with three categories - elementary school or less, high school, and undergraduate degree. The *occupation* was dichotomized concerning the perception or not of remuneration: paid activity (employed or retired) and unpaid activity (unemployed, homemaker and student). The *skin color* variable is multinomial, but without

ordering character, with three categories: brown, white, and mixed (self-declared indigenous, yellow or black). *Income* was also dichotomized between those receiving less than three minimum wages and those receiving three or more.

The consumption of alcoholic beverages is a binomial/dichotomous variable which results are Yes and No. It is the dependent variable for estimating the prevalence of alcohol consumption. The *consumption per event* is a continuous variable, registered in the number of standard doses of 14g of alcohol. It is the variable dependent on the analysis of variance performed in this study and a determinant for the characterization of HED. The *consumption per event* variable was only analyzed among individuals who declared the consumption of alcoholic beverages ($n = 342$). The *use of other psychoactive substances* is a binomial/ dichotomous variable, with Yes and No results.

The statistical analysis of the data was performed with STATA/IC 16.1 [11]. First, the prevalence of alcohol consumption was assessed, based on the behavioral variable "alcohol consumption." This resulted in a subgroup of the total sample, composed only of individuals who have declared the consume of some alcoholic beverage, identified as a consumption sample ($n = 342$).

For the total sample ($N = 712$), heterogeneity/comparison of proportions about beverages' consumption variables was verified. Pearson's chi-square test (χ^2) was applied. The tested hypotheses were as follow: i. Null hypothesis (H0): The groups do not differ concerning the *consumption of alcoholic beverages*; ii. The alternative hypothesis (HA): The groups differ concerning the *consumption of alcoholic beverages*. The confidence intervals for the proportions were estimated using the Wald method.

The analysis of variance was applied only to the consumption sample ($n = 342$). It was verified whether the number of doses consumed per event was different between groups. However, the consumption variable per event did not present a normal distribution ($P < .05$ in the Shapiro-Wilk normality tests). Therefore, the following non-parametric tests were used: i. Wilcoxon-Mann-Whitney test to compare variables with two groups; ii. Kruskal-Wallis test

to compare variables with three or more groups. The tested hypotheses were as follow: H0: The amount of doses consumed per event is not different between the groups; ii. HA: The amount of doses consumed per event is different between the groups. Confidence intervals for medians were estimated using the exact Binomial method.

Finally, a Poisson regression model with robust variance was developed to estimate the Prevalence Ratios (PR) of *alcohol consumption*. The model was automatically adjusted using the stepwise backward module of STATA, to the point that all variables showed statistical significance ($P < .05$). Non-significant variables were excluded from the model in the following order: skin color ($P = .9233$); occupation ($P = .2453$); and degree of education ($P = .0831$). The P values calculated for the complete and adjusted model correspond to Wald's Z values.

The complete database ("Data_ PIBIC_3.556.646_UNIR_2019.dta.zip"), codes for statistical analysis ("Alcohol consumption.do") and sample calculation and sample adequacy test ("Sample, goodness-of-fit test.R.zip"), interview questionnaire and files with results obtained on R and STATA ("Alcohol consumption - STATA results.pdf"; "Sample,-goodness-of-fit-test.html") are available for consultation at Mendeley Data, DOI: 10.17632/b7z524pyhv.3.

3. RESULTS

The median age of the interviewees was 35 years old (95% CI 34 - 37) - 37 for males (95% CI 35 - 39) and 34 for females (95% CI 32 - 35). The prevalence of *alcohol consumption* was 48% (95% CI 44.4 - 51.7) (Table 1).

Except for *skin color*, all variables analyzed had a heterogeneous distribution about consumption. Male individuals (56.6% [95% CI 51.4 - 61.9]) showed a greater proportion of drinkers, compared to women (40.2% [95% CI 35.2 - 45.2]), ($P < .001$). Regarding the age groups, the proportion of drinkers had a decreasing trend to the interviewees' age ($P < .001$). Adolescents recorded the highest proportion of drinkers (59.5% [95% CI 43.6 - 75.3]), followed by the group of young adults (56.0% [95% CI 51.0 - 60.9]) and mature adults (38.5% [95% CI 32.4 - 44.6]) The group with the lowest proportion were

the elderly (22.2% [95% CI 10.1 - 34.4]), ($P < .001$). There was no statistically significant difference between the categories of light skin and dark skin ($P > .05$). Individuals who did not have a conjugal relationship showed a higher number of consumers (53.7% [95% CI 49.1 - 58.4]), among those that were in some conjugal relationship, it was registered a proportion of 38.7% (95% CI 32.9 - 44.6), ($P < .001$). About *education*, the major proportion was observed in individuals with higher education (55.3% [95% CI 50.3 - 60.4]), followed by the high school group (42.7% [95% CI 36.6 - 48.8]), and the lowest proportion was observed in the elementary school group (31.8% [95% CI 21.9 - 41.7]), ($P < .001$). Concerning occupation, the proportion of consumption was higher among those who did not declare paid employment (55.1% [95% CI 49.5 - 60.7]) ($P < .001$). For income, a greater proportion of drinkers was observed in the group with an income higher than or equal to three wages (60.3% [95% CI 53.6 - 66.9]), ($P = .001$), the group that has an income of less than three wages showed the prevalence of 42.9% (95% CI 38.6 - 47.3). For the variable *use of other substances*, the biggest proportion of drinkers was observed in the group that consumed other drugs (64.6% [95% CI 54.3 - 75.0]), for those who consumed only alcohol, it was registered the proportion of 45.9% (95% CI 41.0 - 49.8), ($P = .001$). All information contained in this paragraph is illustrated in Table 1.

Table 2 shows the prevalence (%) and prevalence ratio (PR) of the complete and adjusted models. The gender variable showed a negative association with the prevalence ratio of consumption, PR of 0.714 (95% CI 0.614 - 0.831 [$P < .001$]). However, it is important to point out that this is a dichotomous variable with no ordinal character, which values are 0 for males and 1 for females. Thus, it is concluded that the PR for consumption is 28.6% lower among females. Taking the female group as a reference, the PR of the male group is 38.4% higher - 1.384 (95% CI 1.190 - 1.610 [$P < .001$]). Age also showed a negative association with the PR of consumption, 0.758 (95% CI 0.671 - 0.858 [$P < .001$]). The elderly were the reference group for estimating the PR of the other groups. Although it presented a PR of 1.722 (95% CI 0.989 - 2.998), the group of mature adults did not differ from the elderly group ($P > .05$). The group of young adults showed a PR 2.293 times higher than the elderly (95% CI 1.337 - 3.934 [$P < .005$]) and in the group of adolescents this PR was 2.428 times higher (95% CI 1.336 - 4.412 [$P < .005$]). All other

variables are dichotomous and showed a positive association with consumption PR. For *marital status*, PR was 1.287 (95% CI 1.082 - 1.531 [$P < .005$]), with individuals who do not have a marital relationship showing a PR 28.7% higher in the adjusted model. The PR of those who are not in a relationship was also 1.310 times higher than of those who are in a relationship (95% CI 1.098 - 1.562 [$P < .005$]). Having an income higher than or equal to 3 minimum wages increases the PR by 33.3% in the adjusted model - PR = 1.303 (95% CI 1.123 - 1.512 [$P < .001$]). Income greater than or equal to 3 minimum wages also has a RP 1.299 times higher than for those with an income below three minimum wages (95% CI 1.120 - 1.507 [$P = .001$]). In the adjusted model, PR increased by 38.5% for individuals who reported using other substances, 1.385 (95% CI 1.168 - 1.644 [$P < .001$]), and was 1.379 times higher than for non-users of other drugs (95% CI 1,163 - 1,635 [$P < .001$]). *Skin color*, *education level*, and *occupation* did not present a statistically significant association ($P > .05$).

The *amount of doses consumed per event* differs statistically only in relation to *sex* ($P < .001$), *age* ($P < .05$) and *occupation* ($P < .05$). The median of standard doses consumed per event in the consumption sample ($n = 342$) was four standard doses per event (95% CI 4 - 5). Among males, the median recorded was five doses (95% CI: 4.5 - 5.5), and among females, four doses (95% CI 3 - 4). In the group of adolescents, the median observed was three doses per event (95% CI 2 - 4.53), young adults registered a median of 4 doses (95% CI 4 - 5), the elderly had a median of 4.75 doses (95% CI 2.65 - 11.35) and mature adults obtained the highest median, five doses per event (95% CI 4 - 6). Employees and retirees had a median of 4.5 doses per event (95% CI 4 - 5), and those whose main occupation is unpaid had a median of four doses per event (95% CI 4 - 5). The other variables did not show statistically significant variance in the strata analyzed ($P > .05$). These results are shown in Table 3.

4. DISCUSSION

The prevalence of alcohol consumption was estimated to be 48%, higher among male respondents (56%) than among women (40.2%). This higher percentage among men is observed

in national and international reports of important institutions [1,3,6].

The PR for sex in the adjusted model was 0.286 times lower (PR = 0.714), showing a negative association for alcohol consumption. Comparing the PRs for the different genders, within the adjusted model, male individuals had a PR 1.384 times higher than that of women. The prevalence of HED was estimated as 26%, and, coincidentally, the median of doses consumed per event showed the exact amounts that characterize HED, four or more doses for women and five or more doses for men [6]. The male audience had the highest proportion of drinkers and the group with the greatest number of doses consumed. Nevertheless, it is essential to highlight those women who drink excessively tend to develop more medical problems [12]. Female individuals would be more prone to the harmful effects of HED due to the lower body water ratio, higher lipid proportion, and lower ADH concentration, physiological factors that significantly interfere with alcohol's pharmacokinetics [13].

Advanced age also has a negative association with PR consumption. Adolescents had a PR rate of 2.428 times higher than of the elderly, and in young adults, this PR was 2.293 times higher. The age group between 18 and 19 years old had the greatest alcohol consumption prevalence, 59.5%. However, it is essential to note that due to the small number of samples ($n = 37$), the confidence interval was relatively wide (95% CI 43.6 - 75.3), showing an intersection with the percentage recorded for the group of young adults ($n = 386$), whose information obtained was 56.0%. Regarding the number of doses consumed per event, the group that had the major median were mature adults (5 doses), followed by the elderly (4.75 doses) and young adults (4 doses). Studies indicate that alcohol consumption in mature and elderly adults can lead to accelerated neurodegeneration, the need for hospitalization due to alcohol's use complications, drug overdoses associated with alcohol [14–17]. Although the attention paid to the elderly is significant, chronic ingestion can also cause health problems. Therefore, under the age of 40, the construction of public health indicators and measures to moderate consumption of alcoholic beverages should reach all age groups.

Table 1. Distribution of the population from Porto Velho - RO concerning the proportion of consumption (N = 712)

Variables	Total sample (N=712)		Alcohol consumption				P ^b
	N (%)	95% CI ^a	Yes (n=370) N (%)	95% CI ^a	No (n=342) N (%)	95% CI	
Sex							<.001
Male	339 (47.6)	43.9 – 51.3	147 (43.4)	38.1 – 48.6	192 (56.6)	51.4 – 61.9	
Female	373 (52.4)	48.7 – 56.1	223 (59.8)	54.8 – 64.8	150 (40.2)	35.2 – 45.2	
Age							<.001
< 20 (adolescents)	37 (5.2)	3.6 – 6.8	15 (40.5)	24.7 – 56.4	22 (59.5)	43.6 – 75.3	
20 – 40 (young adults)	386 (54.2)	50.6 – 57.9	170 (44.0)	39.1 – 49.0	216 (56.0)	51.0 – 60.9	
40 – 60 (mature adults)	244 (34.3)	30.1 – 37.8	150 (61.5)	55.4 – 67.6	94 (38.5)	32.4 – 44.6	
≥ 60 (elderly)	45 (6.3)	4.5 – 8.1	35 (77.8)	65.6 – 89.9	10 (22.2)	10.1 – 34.4	
Skin color							.924
Light skin	234 (32.9)	29.4 – 36.3	121 (51.7)	45.3 – 58.1	113 (48.3)	41.9 – 54.7	
Dark skin	478 (67.1)	63.7 – 70.6	249 (52.1)	47.6 – 56.6	229 (47.9)	43.4 – 52.4	
Marital status							<.001
Not living together	441 (61.9)	58.4 – 65.5	204 (46.3)	41.6 – 50.9	237 (53.7)	49.1 – 58.4	
Living together	271 (38.1)	34.5 – 61.6	166 (61.3)	55.4 – 67.1	105 (38.7)	32.9 – 44.6	
Education							<.001
Elementary school or less	85 (11.9)	9.6 – 14.3	58 (68.2)	58.3 – 78.1	27 (31.8)	21.9 – 41.7	
High school	253 (35.5)	32.0 – 39.0	145 (57.3)	51.2 – 63.4	108 (42.7)	36.6 – 48.8	
Undergraduate degree	374 (52.5)	48.9 – 56.2	167 (44.7)	39.6 – 49.7	207 (55.3)	50.3 – 60.4	
Occupation							<.001
Unemployed, homemaker and student	303 (57.4)	38.9 – 46.2	136 (44.9)	39.3 – 50.5	167 (55.1)	49.5 – 60.7	
Employed or retired	409 (42.6)	53.8 – 61.1	234 (57.2)	52.4 – 62.0	175 (42.8)	38.0 – 47.6	
Income							.001
< 3 minimum wages	503 (70.6)	67.3 – 74.0	287 (57.1)	52.7 – 61.4	216 (42.9)	38.6 – 47.3	
≥ 3 minimum wages	209 (29.4)	26.0 – 32.7	83 (39.7)	33.1 – 46.4	126 (60.3)	53.6 – 66.9	
Use of other substances							.001
Not	630 (88.5)	86.1 – 90.8	341 (54.1)	50.2 – 58.0	289 (45.9)	41.0 – 49.8	
Yes	82 (11.5)	9.2 – 13.9	29 (35.4)	25.0 – 45.7	53 (64.6)	54.3 – 75.0	

^aThe CI were estimated using the Wald method.; ^b Pearson's chi-squared test

Table 2. Prevalence of consumption (%) and analysis of the association between alcohol consumption and independent variables in the population of Porto Velho-RO (N = 712)

Variables	N	%	Complete model		Adjusted model (backward)	
			PR (95% IC)	P	PR (95% IC)	P
Sex	-	-	0.706 (0.607 – 0.821)	<0.001^a	0.714 (0.614 – 0.831)	<.001^a
Male	339	56.6	1.402 (1.205 – 1.630)	<0.001	1.384 (1.190 – 1.610)	<.001
Female	373	40.2	1.00	-	1,00	-
Age	-	-	0.802 (0.702 – 0.916)	0.001^a	0.758 (0.671 – 0.858)	<.001^a
< 20 (adolescents)	37	59.5	2.072 (1.105 – 3.884)	0.024	2.428 (1.336 – 4.412)	.004
20 – 40 (young adults)	386	56.0	2.032 (1.151 – 3.584)	0.014	2.293 (1.337 – 3.934)	.003
40 – 60 (mature adults)	244	38.5	1.603 (0.907 – 2.834)	0.105	1.722 (0.989 – 2.998)	.055
≥ 60 (elderly)	45	22.2	1.00	-	1,00	-
Skin color	-	-	0.992 (0.848 – 1.161)	0.923^a	-	-
Light skin	234	32.9	1.009 (0.863 – 1.179)	0.914	-	-
Dark skin	478	67.1	1.00	-	-	-
Marital status	-	-	1.252 (1.045 – 1.500)	0.015^a	1.287 (1.082 – 1.531)	.004^a
Not living together	441	53.7	1.270 (1.057 – 1.525)	0.011	1.310 (1.098– 1.562)	.003
Living together	271	38.7	1.00	-	1,00	-
Education	-	-	1.116 (0.975 – 1.277)	0.110^a	-	-
Undergraduate degree	374	55.3	1.185 (0.844 – 1.664)	0.326	-	-
High school	253	42.7	1.075 (0.761 – 1.519)	0.680	-	-
Elementary school or less	85	31.8	1.00	-	-	-
Occupation	-	-	0.908 (0.772 – 1.069)	0.246^a	-	-
Unemployed, homemaker and student	303	55.1	1.111 (0.946 – 1.305)	0.200	-	-
Employed or retired	409	42.8	1.00	-	-	-
Income	-	-	1.253 (1.072 – 1.466)	0.005^a	1.303 (1.123 – 1.512)	<.001^a
≥ 3 minimum wages	209	60.3	1.259 (1.076 – 1.472)	0.004	1.299 (1.120 – 1.507)	0.001
< 3 minimum wages	503	42.9	1.00	-	1,00	-
Use of other substances	-	-	1.367 (1.152 – 1.622)	<0.001^a	1.385 (1.168 – 1.644)	<.001^a
Yes	82	64.6	1.362 (1.158 – 1.616)	<0.001	1.379 (1.163 – 1.635)	<.001
Not	630	54.1	1.00	-	1,00	-

OR: Prevalences ratio; ^aCalculated value for each variable in the model

Table 3. Number of doses consumed per event (n = 342)

Variables	N (%)	Consumption (Standard dose of 14g)		P
		Mean (\pm Sd)	Median (95% CI)	
Sex				
Male	192 (56.1)	5.61 (\pm 3.30)	5.00 (4.50 – 5.50)	.0002
Female	150 (43.9)	4.34 (\pm 2.69)	4.00 (3.00 – 4.00)	
Age				
< 20 (adolescents)	22 (6.4)	3.36 (\pm 2.11)	3.00 (2.00 – 4.53)	.0129
20 – 40 (young adults)	216 (63.2)	4.91 (\pm 2.85)	4.00 (4.00 – 5.00)	
40 – 60 (mature adults)	94 (27.5)	5.50 (\pm 3.09)	5.00 (4.00 – 6.00)	
\geq 60 (elderly)	10 (2.9)	7.75 (\pm 6.71)	4.75 (2.65 – 11.35)	
Skin color				
Light skin	113 (33.0)	4.59 (\pm 2.81)	4.00 (3.50 – 4.72)	.0698
Dark skin	229 (67.0)	5.28 (\pm 3.23)	4.50 (4.00 – 5.00)	
Marital status				
Living together	105 (30.7)	5.04 (\pm 3.01)	4.00 (4.00 – 5.00)	.9652
Not living together	237 (69.3)	5.06 (\pm 3.16)	4.00 (4.00 – 5.00)	
Education				
Elementary school or less	27 (7.9)	6.46 (\pm 4.67)	5.00 (4.00 – 6.27)	.0611
High school	108 (31.6)	5.34 (\pm 3.10)	4.00 (4.00 – 5.00)	
Undergraduate degree	207 (60.5)	4.72 (\pm 2.80)	4.00 (4.00 – 5.00)	
Occupation				
Unemployed, homemaker and student	167 (48.8)	4.62 (\pm 2.73)	4.00 (4.00 – 5.00)	.0360
Employed or retired	175 (51.2)	5.46 (\pm 3.39)	4.50 (4.00 – 5.00)	
Income				
< 3 minimum wages	216 (63.2)	5.06 (\pm 3.25)	4.00 (4.00 – 5.00)	.8475
\geq 3 minimum wages	126 (36.8)	5.03 (\pm 2.85)	4.50 (4.00 – 5.00)	
Use of other substances				
Not	289 (84.5)	4.95 (\pm 3.08)	4.00 (4.00 – 5.00)	.1965
Yes	53 (15.5)	5.59 (\pm 3.21)	5.00 (4.00 – 6.57)	

Marital status showed a positive relationship with alcohol consumption, with a PR of 1.287. Individuals who do not have a marital relationship, with home-sharing, presented PR 1.310 times higher than the group “lives together.” Among those who declared themselves out of a marital relationship, the prevalence observed for alcohol consumption was 15 percentage points greater than that registered in the group in some relationship. The association between living alone and alcohol consumption is the subject of research in other studies. There are notes on the importance of the family support network as a health determinant, once relatives and partners who share the same residential space would offer more significant support, acting against behaviors that may result in damage to health [18–20]. An important aggravating factor that should be considered by health authorities is the fact that living alone has been identified as a risk factor for mortality and alcohol consumption could contribute to this outcome [21–24].

Higher education individuals had the greatest proportion of consumers (55.3%) for the variable education level. Alcohol is identified as one of the main causes of risk behaviors among students in general and the prevalence is relatively high among university students [25–29]. In college students, the exposure to stressors resulting from an overload of activities would increase the propensity to consume alcoholic beverages. High levels of anxiety sensitivity would be associated with an increased probability of alcohol abuse [30,31].

In the proportion analysis, the group with unpaid occupation had a higher percentage of drinkers (55.1%). Nevertheless, when we analyzed the number of doses consumed per event, this pattern was reversed. Although the number of consumers was more significant in the unpaid occupation group, the number of doses consumed per event showed a median of 4.5 for the paid and 4.0 for the unpaid group. Thus, our sample demonstrated that the lack of a paid occupation does not prevent consumption but impacts the number of doses consumed negatively.

The proportion of individuals who consume alcoholic beverages was 17.4 percentage points higher for the group with higher income. In the association analysis, the group with the major income presented a RP 1.303 times higher in the adjusted model and 1.299 times higher than the

group with lower income. Studies show that income is a determining factor for consuming alcoholic beverages and individuals with higher income tend to consume more than those with lower income levels [32–34].

The PR for users of other substances also showed a positive association with alcohol consumption and was 1.379 times higher than that observed among those who consume only alcohol. The proportion of alcohol consumption for users of other drugs was 21.7 percentage points higher than that observed among those who consume only alcohol. Despite representing a smaller portion of the total investigated population (11.5%), it is essential to highlight that in the care of patients with disorders due to alcohol use, smoking, substitution by other drugs or multiple addictions are indicated as predictors of failure for the alcoholic abstinence [35].

It is important to note that our study was limited to investigating the sociodemographic and behavioral variables presented above. Although factors such as religion, paternity/motherhood or other behavioral and psychosocial aspects are also pointed out as factors correlated with drinking, they were not part of this research scope.

5. CONCLUSION

In this research, the prevalence of alcohol consumption was observed in 48% of the interviewees, with greater proportions of consumption among males, who also showed higher consumption of doses per event. *Age* showed a negative association with consumption. Adolescents and young adults had the highest prevalence of alcohol users. However, they were the two groups with the lowest median of doses consumed per event. Not being in a marital relationship proved to be a factor positively associated with the prevalence of consumption. Higher education individuals had a major proportion of consumers than other levels of education. Unpaid occupations had a higher proportion of consumers and a positive association with the prevalence of consumption. However, the number of doses consumed per event was greater in the group with the paid occupation. *Income* showed a positive association with the prevalence of consumption, and individuals who declared an income higher than or equal to three minimum wages had the highest prevalence of drinkers. Finally, the prevalence of alcohol consumption was also

superior among users of other drugs, with a positive association with alcohol consumption.

CONSENT

The objective of the study was presented to all participants, and all participants who agreed to participate in this research signed the informed consent form, in accordance with resolution 466/12, which deals with research with human beings in Brazil. All the participants signed two copies of the Term of Free and Informed Consent (FIC), in which one copy remained with the researchers and the other with the participant. The FIC had information about the objectives of the trial, risks and benefits for the participant and the preservation of privacy and confidentiality of participant data.

ETHICAL APPROVAL

The study was approved by the Research Ethics Committee of the Fundação Universidade Federal de Rondônia (UNIR) with the legal opinion n. 3,556,646.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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