Heavy drinking in men and women in Honduras: a secondary analysis of the Endesa 2019

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Abstract

Objective. To estimate the prevalence and factors related to heavy drinking in men and women from Honduras. **Materials and methods.** Data from the 2019 National Demographic and Health Survey were used, and multiple regression models were applied to determine associated factors. **Results.** 2.8% of men and 0.7% of women incurred in heavy drinking. In men, factors such as age, urban living, having children but not living with them, being people who smoke, and physical assault experiences were associated with a higher likelihood of heavy drinking. For women, higher education levels, urban living, previous marriage or cohabitation, wealth quintile, being people who smoke, and physical assault experiences were linked to a higher prevalence of heavy drinking. **Conclusions.** The findings provide insight into the issue of excessive alcohol consumption in Honduras and how various experiential, demographic, and health factors may influence its occurrence.

Keywords: binge drinking; gender role; health surveys; Honduras

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Resumen

Objetivo. Estimar prevalencia y factores relacionados con el consumo excesivo de alcohol en hombres y mujeres de Honduras. **Material y métodos.** Se utilizaron datos de la Encuesta Nacional de Demografía y Salud 2019 y se aplicaron modelos de regresión múltiple para determinar factores asociados. **Resultados.** 2.8% de los hombres y 0.7% de las mujeres bebían en exceso. En los hombres, factores como la edad, la residencia urbana, tener hijos pero no vivir con ellos, el tabaquismo y las experiencias de agresión física se asociaron con una mayor probabilidad de consumo excesivo de alcohol. En el caso de las mujeres, los niveles educativos altos, la residencia urbana, el matrimonio o la cohabitación previos, un quintil de riqueza alto, el tabaquismo y las experiencias de agresión física se relacionaron con una mayor prevalencia de consumo excesivo de alcohol. **Conclusiones.** Los hallazgos proporcionan una visión del problema del consumo excesivo de alcohol en Honduras y cómo diversos factores experienciales, demográficos y de salud pueden influir en su ocurrencia.

Palabras clave: consumo excesivo de bebidas alcohólicas; rol de género; encuestas epidemiológicas; Honduras

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Harmful alcohol use is a significant problem for public health. According to the World Health Organization, more than half of males and nearly one-third of females aged 15 years and above consume alcohol, and its harmful use causes 5.3% of global deaths. In the Americas, it is attributed to 5.5% of deaths, with a prevalence of over 50%.[1] Despite its prevalence in social, cultural, and religious practices, alcohol is a leading risk factor for health, causing substantial economic burdens, morbidity, and mortality.[2-4] Consequently, tracking the patterns and prevalence of excessive alcohol consumption becomes pivotal in anticipating requirements for intervention and prevention,[5] as it fosters an understanding of the trajectory of intensified usage and facilitates the identification of high-risk populations.[6]

One pattern of harmful alcohol consumption is heavy drinking (HD), which is characterized by frequent and excessive intake and has been used in epidemiological studies;[7] moreover, according to the WHO, it represents a multifaceted factor in various diseases, which resulted in 3 million global fatalities.[8] There is a scarcity of research specifically focused on HD in Latin America; nevertheless, studies can be found in countries such as Brazil, where 6.1% of the population exhibited patterns of excessive alcohol consumption in 2013, and 7.3% of citizens in 2019.[7] It has been demonstrated that there are gender differences in alcohol consumption,[3] with women being more susceptible to the harms caused by alcohol consumption, while men have a higher probability of engaging in risky consumption (either heavy drinking or risky single occasion drinking).[9,10] Additionally, it has been observed that women reported diminished incidences of excessive episodic alcohol consumption during the pandemic.[11]

Other factors associated with alcohol consumption include young age, education level, socioeconomic status, parenthood, smoking, and experience of physical assault or discrimination.[12-16] Notably, a pronounced prevalence of excessive consumption is evident among youthful individuals and those with limited educational backgrounds,[7] further aligning with an elevated likelihood of engaging in smoking practices.[13] Conversely, men who live with their children,[12] demographic subsets susceptible to stress-related contexts,[14] instances of aggression or violence,[17]as well as nations characterized by modest to low income levels, exhibit proclivities towards HD behaviors.[16] In the presence of such evidence, these variables have been posited to investigate the association with HD.

Despite similar or even lower rates of alcohol consumption among individuals with low socioeconomic status,[18] vulnerable and marginalized populations exhibit elevated rates of alcohol-related mortality and hospitalization.[19] However, information on this issue is scarce in Latin America as a whole, and specifically in Honduras, a low-middle income country.[11,20,21] Indeed, there is no current national estimate of the prevalence of HD in Honduras.

Therefore, the present study analyzed data from the National Survey of Demography and Health (Endesa, in Spanish) to determine the prevalence and factors associated with HD in men and women from Honduras in 2019. This study aims to provide essential information for decision-makers, establish a benchmark for future national studies, and examine unexplored variables.

Materials and methods

A cross-sectional study was conducted, which consisted of a secondary analysis of publicly available data from the latest Endesa (2019). This survey, executed between the months of June and December, conducted by the National Institute of Statistics (INE, in Spanish) in collaboration with the Ministry of Health within the framework of the sixth round of the Multiple Indicator Cluster Surveys (MICS-6) by the United Nations International Children's Emergency Fund (Unicef). The Endesa provides information on the country's sociodemographic conditions and the most relevant diseases.

The 2019 Endesa provides estimates of various indicators for children, women, and men at the national level, in urban and rural areas, and in health regions (the 18 departments plus the two metropolitan areas). The sampling framework was developed based on data from the 2013 National Population and Housing Census. For the Endesa 2019, main strata of urban and rural areas were selected within each region. Enumeration areas were systematically chosen with a probability proportional to the number of households in each area, and then a systematic sample of 20 households was drawn from each area, resulting in a total of 24 520 households. Computer-assisted personal interviews were employed, successfully conducted in 20 669 households, resulting in a response rate of 93 percent.[22]

As a secondary source of information, we used digitized databases (mn.sav and wm.sav) of two questionnaires from the Endesa 2019: the questionnaire for individual women aged 15-49 and the questionnaire for individual men aged 15-59. The survey report and data can be found on the INE's website.[23]

Sample size

The total interviewed sample consisted of 28 206 participants, with 8 927 being men and 19 279 women, respectively. Cases with missing values for any study

variable were excluded from the analysis, including HD (men: n= 13; women: n= 23), having children (men: n= 3; women: n= 0), being people who smoke (men: n= 6; women: n= 23), health insurance (men: n= 5; women: n= 9), having suffered a physical attack (men: n= 11; women: n= 12), and being a victim of a crime (men: n= 4; women: n= 22). After this process, the final sample size was 8 885 for men and 19 184 for women.

Outcome variable

The Centers for Disease Control and Prevention (CDC) definition of HD was used: eight or more drinks per week for women and fifteen or more drinks per week for men.[24] The variable was obtained by combining the following two questions: "During the last month, on how many days did you consume at least one alcoholic drink?" and "On the days you drank alcohol in the last month, how many drinks did you typically have per day?" One alcoholic drink is equivalent to a can of beer, a glass of wine, a shot of brandy, vodka, or other types of drink.

The operationalization procedure was similar to that followed in the Behavioral Risk Factor Surveillance System.[25] First, the proportion of days in the month when the person drank was estimated by dividing the result of the first question by 30. Then, this value was multiplied by the number of drinks usually consumed on the days they drank (response to the second question), and this product was further multiplied by 7. This value served as an estimator of the number of drinks consumed per week, which in turn was used to calculate the dichotomous variable based on the sex-specific criteria outlined above. It should be noted that binge drinking is part of an overarching construct named excessive alcohol consumption, which also includes special criteria regarding underage drinking and drinking during pregnancy.[26] In this study, however, following other reports that use a similar operationalization,[27] the same heavy drinking criteria were applied to all participants. The binary variable was coded as HD (1) and No HD (0).

Covariates

The sociodemographic variables were the following:

Age: was categorized into the following groups 15-20, 21-29, 30-39, 40-49, and 50-59 years, the latter only for men. According to the Honduran Childhood and Adolescence Code, individuals under the age of 18 are classified as children, and those aged between 18 and 21 are considered minor adults.[28] In accordance with this legal framework, the Honduran Institute for the Prevention of Alcoholism, Drug Addiction, and Substance Dependency prohibits the sale of alcoholic beverages to minors.[29] It is worth noting that in the advertising materials provided by the *Cervecería Hondureña*, the promotion of alcoholic beverage sales is limited exclusively to individuals over the age of 21.

Education level: first to third grade or less, fourth to sixth grade and seventh to ninth grade, high school, and higher education.

Area of residence: It was categorized into urban and rural areas (urbanity was defined by a. population of 2 000 inhabitants and more, b. inhabitants between 1 500 and 1 999 with at least one of these characteristics: urbanization, education center, health center or at least 10% availability of sewerage and urban population center in the 2001 census; while the rural area includes everything that does not meet the above definition).[30]

Marital status: currently married/cohabiting, previously married/cohabiting, never married/cohabiting.

Ethnicity of household head: non-indigenous, indigenous, and Garifuna.

Having children: no children, having children but not living with them, and having children and living with at least one of them.

Geographical zone: central-western, western, northwestern, northeastern, central-eastern, and southern.

Wealth quintiles: In the Endesa/MICS 2019, it was constructed through a principal component analysis that encompassed the housing features, amenities, services, sanitation, among others. Subsequently, the index was categorized into quintiles ranging from the poorest to the wealthiest.[22]

The health variables considered were whether the participants were current smokers (asked as "Do you currently smoke?": no/yes) and had health insurance (no/yes). Regarding variables related to life experiences, the following were included: having been a victim of physical assault in the last three years (no/yes), crime in the last three years (no/yes) and discrimination in the last 12 months (no/yes).

Statistical analysis

All analyses were performed using the statistical software R (version 4.0.3). The complex sampling design of Endesa

was taken into account to conduct prevalence estimates and inferential analysis by sex, for which the survey package (version 4.0) was used, where the survey design variables (primary sampling unit, stratum, and sample weight) were specified. It should be noted that the Endesa only includes relative weights, not expansion weights.[23] This is sometimes done to prevent inferential analyses from being overpowered, but it results in not being able to estimate the number of people in the population that are represented by the individuals in the sample.[31,32]

First, sex-specific characteristics were examined through univariate summaries, including frequencies and prevalence estimates for qualitative variables, and means and standard deviations for quantitative variables. Bivariate analyses were then conducted to evaluate the association between categorical variables and the presence of HD, using the chi-square test and considering the Rao-Scott correction method. Variables that were found to be significantly associated with the outcome variable were simultaneously entered into multivariable models using Poisson regressions in combination with robust Horvitz-Thompson standard errors, which are a generalization of the commonly used sandwich estimators.[33] This approach is preferred in cross-sectional studies where traditional odds ratios may be difficult to interpret.[34] As a result, adjusted prevalence ratios and their 95% confidence intervals (CI) were estimated. A significance level of $p< 0.05$ was considered statistically significant. In the adjusted models, the presence of multicollinearity was assessed using the generalized variance inflation factor (GVIF); a GVIF greater than 10 would indicate possible multicollinearity.

Ethical considerations

This study did not require the approval of an ethics committee as it involved a secondary analysis of publicly available data. The Endesa does not provide information that enables the identification of participants; therefore, the confidentiality of participant information was ensured. Additionally, the Biomedical Research Ethics Committee of the Faculty of Medical Sciences (CEIB-FCM, in Spanish) at the National Autonomous University of Honduras approved the protocol for primary data collection.

Results

Population characteristics

The age of male participants ranged from 15 to 59 years (Median = 30, IQR = 21-42), while that of females ranged from 15 to 49 years (Median = 29, IQR = 21-38). Both genders had mostly attained an education level equal to or lower than the first-third grade or less. Additionally, the majority of participants were either currently married or cohabiting at the time of the survey. More than 80% identified their head of household's ethnicity as non-indigenous, and slightly over half of the population lived in rural areas. 22.1% of men and 1.9% of women were current adult smokers. The prevalence of HD among men was 2.8%, while that among women was 0.7% (table I).

Bivariate associations

Significant bivariate associations were observed between HD and various variables in the male population, including age, marital status, having children, area of residence, geographic zone, men who currently smoke, having experienced physical assault, and not having experienced discrimination. For women, significant bivariate associations were found between HD and the following variables: age, education level, marital status, having children, area of residence, geographic zone, wealth quintile, women who currently smoke, having health insurance, having been a victim of physical assault, crime in last three year and discrimination in the last twelve months (table II).

Multivariable analysis

In the adjusted model for men, it was observed that being older (aged 21 to 49), having children but not living with them, men who were smokers at the time, and having been a victim of physical assault in the past three years were associated with higher prevalence of HD. Conversely, living in a rural area, residing in the central-western region of the country, and having been a victim of discrimination in the last twelve months were associated with lower prevalence of HD (table III).

In the female population, an adjusted model was tested with all variables that were significant in the bivariate analyses. However, a very high GVIF was observed for the wealth quintile variable (GVIF = 16), indicating the presence of multicollinearity in the model. Therefore, two adjusted models were tested, one with the wealth variable and another without it. In the first model, it was observed that women in the fourth wealth quintile had a higher prevalence of HD. In the second model, it was found that having education between the second and third basic cycle, as well as having higher education, were associated with a higher prevalence of HD in women. Likewise, having previously been married or cohabiting, being a current smoker, and having been a victim of physical assault in the last three years

Table I
CHARACTERISTICS OF THE STUDY POPULATION. HONDURAS, ENDESA 2019

Variables	*Men*		*Women*	
	n	*Prevalence (95%CI)*	*n*	*Prevalence (95%CI)*
Heavy drinking				
No	8 661	97.2 (96.7,97.7)	19 070	99.3 (99.2,99.5)
Yes	224	2.8 (2.3,3.3)	114	0.7 (0.5,0.8)
Age				
15-20	2 012	22.6 (21.5,23.7)	4 484	23.0 (22.3,23.7)
21-29	2 349	26.1 (24.9,27.2)	5 620	29.3 (28.5,30.0)
30-39	1 907	21.7 (20.6,22.8)	4 991	26.0 (25.2,26.8)
40-49	1 481	17.3 (16.3,18.2)	4 089	21.7 (21.1,22.3)
50-59	1 136	12.4 (11.6,13.2)		
Education level (grade)				
1st-3rd or less	1 888	19.0 (18.0,20.1)	2 952	13.7 (13.0,14.4)
4th-6th	3 343	34.8 (33.6,36.0)	6 715	32.8 (31.8,33.9)
7th-9th	1 378	16.1 (15.1,17.1)	3 056	15.7 (15.0,16.4)
Middle school	1 534	19.4 (18.2,20.6)	4 475	25.1 (24.1,26.1)
Higher education	742	10.7 (09.5,11.8)	1 986	12.7 (11.7,13.6)
Marital status				
Currently married or cohabiting	4 822	53.6 (52.3,54.9)	10 654	54.8 (53.8,55.7)
Previously married or cohabiting	846	10.2 (09.3,11.0)	3 161	17.1 (16.4,17.8)
Never married or cohabiting	3 217	36.2 (35.0,37.4)	5 369	28.2 (27.3,29.0)
Has children				
No	3 738	42.7 (41.4,43.9)	5 415	28.8 (28.0,29.6)
Yes, but doesn't live with them	1 036	11.9 (11.0,12.7)	741	3.8 (3.5,4.1)
Yes, and lives with at least one	4 111	45.5 (44.2,46.8)	13 028	67.4 (66.6,68.2)
Ethnicity of head of household				
Non-indigenous	7 330	87.1 (86.0,88.2)	15 662	86.8 (85.9,87.6)
Indigenous	1 450	12.0 (10.9,13.2)	3 212	12.1 (11.3,12.9)
Garifuna	105	0.9 (0.6,1.1)	310	1.1 (0.9,1.4)
Area of residence				
Urban	3 309	45.8 (43.6,48.0)	7 895	48.5 (46.5,50.5)
Rural	5 576	54.2 (52.0,56.4)	11 289	51.5 (49.5,53.5)
Geographical zone				
Central-eastern	1 867	30.6 (28.9,32.3)	3 953	29.8 (28.2,31.4)
Western	1 318	10.3 (09.6,11.0)	2 856	10.3 (09.8,10.9)
North-western	1 867	30.2 (28.7,31.7)	4 201	30.9 (29.7,32.1)
North-eastern	1 378	09.5 (08.7,10.2)	3 101	9.7 (9.1,10.4)
Central-western	1 492	11.2 (10.5,12.0)	3 068	11.5 (10.8,12.1)
Southern	963	8.2 (7.5,8.9)	2 005	7.7 (7.3,8.2)
Wealth quintile				
First (poorest)	2 256	19.4 (17.8,21.0)	4 285	16.7 (15.4,17.9)
Second	2 098	20.6 (19.1,22.1)	4 191	19.0 (17.8,20.1)
Third	1 714	20.4 (18.9,21.9)	3 810	20.5 (19.3,21.7)
Fourth	1 454	19.3 (17.7,20.8)	3 681	22.4 (21.3,23.6)
Fifth (richest)	1 363	20.4 (18.6,22.1)	3 217	21.5 (19.9,23.0)

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(continuation)				
Current smoker				
No	6 952	77.9 (76.7,79.2)	18 877	98.1 (97.9,98.4)
Yes	1 933	22.1 (20.8,23.3)	307	1.9 (1.6,2.1)
Health insurance				
No	7 908	84.1 (82.9,85.4)	17 480	87.8 (86.8,88.7)
Yes	977	15.9 (14.6,17.1)	1 704	12.2 (11.3,13.2)
Physical assault victimization				
No	8 596	96.4 (95.9,96.9)	18 634	96.6 (96.2,96.9)
Yes	289	3.6 (3.1,4.1)	550	3.4 (3.1,3.8)
Discrimination				
No	7 968	89.4 (88.6,90.2)	17 001	88.4 (87.8,8.9)
Yes	917	10.6 (9.8,11.4)	2 183	11.6 (11.1,12.2)
Crime victimization				
No	8 168	90.1 (89.1,91.0)	18 163	93.6 (93.1,94.1)
Yes	717	9.9 (9.0,10.9)	1 021	6.4 (5.9,6.9)

CI: confidence interval.
Endesa: National Survey of Demography and Health.

Table II

Bivariate associations between exposure variables and heavy drinking. Honduras, Endesa 2019

Variables	*Men*			*Women*		
	Heavy drinking		*p*	*Heavy drinking*		*p*
	No n (%)	*Yes n (%)*		*No n (%)*	*Yes n (%)*	
Age			0.002*			0.010*
15-20	1 992 (98.5)	20 (1.5)		4 466 (99.5)	18 (0.5)	
21-29	2 269 (95.9)	80 (4.1)		5 570 (99.0)	50 (1.0)	
30-39	1 850 (97.0)	57 (3.0)		4 958 (99.3)	33 (0.7)	
40-49	1 439 (97.1)	42 (2.9)		4 076 (99.6)	13 (0.4)	
50-59	1 111 (97.9)	25 (2.1)				
Education level (grade)			0.166			<0.001*
1st-3rd or less	1 843 (97.5)	45 (2.5)		2 947 (99.9)	5 (0.1)	
4th-6th	3 261 (97.2)	82 (2.8)		6 690 (99.5)	25 (0.5)	
7th-9th	1 342 (97.1)	36 (2.9)		3 026 (99.0)	30 (1.0)	
Middle School	1 501 (97.9)	33 (2.1)		4 444 (99.4)	31 (0.6)	
Higher education	714 (95.6)	28 (4.4)		1 963 (98.7)	23 (1.3)	
Marital status			0.024*			<0.001*
Currently married or cohabiting	4 705 (97.6)	117 (2.4)		10 617 (99.6)	37 (0.4)	
Previously married or cohabiting	881 (95.5)	35 (4.5)		3 124 (98.6)	37 (1.4)	
Never married or cohabiting	3 145 (97.0)	72 (3.0)		5 329 (99.2)	40 (0.8)	
Has children			<0.001*			0.022*
No	3 659 (97.3)	79 (2.7)		5 372 (99.1)	43 (0.9)	
Yes, but doesn't live with them	979 (93.9)	57 (6.1)		727 (98.7)	14 (1.3)	
Yes, and lives with at least one	4 023 (98.0)	88 (2.0)		12 971 (99.5)	57 (0.5)	
Ethnicity of head of household			0.180			0.340
Non-indigenous	7 158 (97.4)	172 (2.6)		15 572 (99.3)	90 (0.7)	
Indigenous	1 405 (96.1)	45 (3.9)		3 197 (99.5)	15 (0.5)	
Garifuna	98 (95.6)	7 (4.4)		301 (98.5)	9 (1.5)	

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(continuation)						
Area of residence			0.002*			<0.001*
Urban	3 197 (96.4)	112 (3.6)		7 815 (98.9)	80 (1.1)	
Rural	5 464 (97.9)	112 (2.1)		11 255 (99.7)	34 (0.3)	
Geographical zone			0.016*			0.006*
Central-eastern	1 817 (96.4)	50 (3.6)		3 932 (99.2)	21 (0.8)	
Western	1 297 (98.3)	21 (1.7)		2 846 (99.6)	10 (0.4)	
North-western	1 820 (97.2)	47 (2.8)		4 166 (99.2)	35 (0.8)	
North-eastern	1 318 (96.3)	60 (3.7)		3 065 (99.1)	36 (0.9)	
Central-western	1 464 (98.4)	28 (1.6)		3 059 (99.7)	9 (0.3)	
Southern	945 (98.2)	18 (1.8)		2 002 (99.9)	3 (0.01)	
Wealth quintile			0.088			<0.001*
First (poorest)	2 219 (98.0)	37 (2.0)		4 281 (99.9)	4 (0.1)	
Second	2 056 (97.7)	42 (2.3)		4 184 (99.8)	7 (0.2)	
Third	1 674 (97.3)	40 (2.7)		3 783 (99.3)	27 (0.7)	
Fourth	1 395 (96.1)	59 (3.9)		3 638 (98.9)	43 (1.1)	
Fifth (richest)	1 317 (96.7)	46 (3.3)		3 184 (98.9)	33 (1.1)	
Current smoker			<0.001*			<0.001*
No	6 867 (98.7)	85 (1.3)		18 803 (99.6)	74 (0.4)	
Yes	1 794 (91.7)	139 (8.3)		267 (86.3)	40 (13.7)	
Health insurance			0.936			0.006*
No	7 710 (97.2)	198 (2.8)		17 385 (99.4)	95 (0.6)	
Yes	951 (97.2)	26 (2.8)		1 685 (98.7)	19 (1.3)	
Physical assault victimization			<0.001*			<0.001*
No	8 394 (97.4)	202 (2.6)		18 532 (99.4)	102 (0.6)	
Yes	267 (92.4)	22 (7.6)		538 (97.3)	12 (2.7)	
Discrimination			0.026*			<0.001*
No	7 759 (97.0)	209 (3.0)		16 907 (99.4)	94 (0.6)	
Yes	902 (98.6)	15 (1.4)		2 163 (98.6)	20 (1.4)	
Crime victimization			0.228			<0.001*
No	7 967 (97.3)	201 (2.7)		18 068 (99.4)	95 (0.6)	
Yes	694 (96.3)	23 (3.7)		1 002 (98.1)	19 (1.9)	

Endesa: National Demographic and Health Survey.
* Statistically significant difference with a *p*-value < 0.05.

were also related to a higher prevalence of HD. On the contrary, living in a rural area and residing in the southern zone of the country were associated with a lower prevalence of HD (table IV).

Discussion

This study aimed to determine factors associated with HD among men and women in Honduras. The study found that approximately three out of every hundred Honduran men aged 15 to 59 years and one out of every hundred Honduran women aged 15 to 49 years exhibit heavy drinking patterns. This gender difference is similar to that found in a previous study conducted in Brazil, where the male-to-female prevalence ratio was between 1.8 and 2.5.[7] Although HD is more common in men, there are indications that the gender gap is narrowing due to the increasing frequency of excessive alcohol consumption among women.[9,10] According to the literature, women are more susceptible to physical and psychiatric illnesses. Conventional gender norms encourage reduced alcohol intake in women, who also tend to perceive more significant adverse social repercussions, while these gender norms promote increased consumption among men.[35-37] In this analysis, it was found that men aged 21 to 49 had higher levels of HD. Consumption patterns often increase with age, and they carry a higher risk in adulthood, leading to greater morbidity and mortality.[11,38]

Studies have found that a higher level of education is associated with a reduction in excessive alcohol consumption, in individuals with university education (10.4%) and if the years of education increases by 3.61 years, the risk is reduced by 50%.[39,40] In this study,

Table III
Adjusted prevalence ratios for men obtained from a Poisson regression. Honduras, Endesa 2019

Variables	*aPR*	*95%CI*	*p*
Age			
15-20	Ref. group		
21-29	2.17	1.22,3.88	0.009*
30-39	2.06	1.07,3.96	0.031*
40-49	2.19	1.03,4.67	0.042*
50-59	1.83	0.86,3.87	0.115
Marital status			
Currently married or cohabiting	Ref. group		
Not anymore married or cohabiting	1.08	0.65,1.77	0.772
Previously married or cohabiting	1.74	0.94,3.24	0.078
Has children			
No	Ref. group		
Yes, but doesn't live with them	1.81	1.05,3.13	0.034*
Yes, and lives with at least one	0.92	0.50,1.70	0.796
Area of residence			
Urban	Ref. group		
Rural	0.65	0.46,0.91	0.013*
Geographical zone			
Central-eastern	Ref. group		
Western	0.67	0.38,1.18	0.164
North-western	0.94	0.60,1.48	0.795
North-eastern	1.26	0.80,1.99	0.313
Central-western	0.56	0.32,0.97	0.040*
Southern	0.59	0.33,1.06	0.078
Current smoker			
No	Ref. group		
Yes	5.80	4.10,8.21	<0.001*
Physical assault victimization			
No	Ref. group		
Yes	1.77	1.01,3.09	0.046*
Discrimination			
No	Ref. group		
Yes	0.43	0.22,0.85	0.015*

aPR: adjusted prevalence ratio; CI: confidence interval; Ref group: reference group; Endesa: National Demographic and Health Survey.
* Statistically significant difference with a *p*-value <0.05.

women with education ranging from fourth to ninth grade and those with higher education tend to exhibit HD. Similarly, in the adjusted model, women in the fourth quintile of wealth demonstrated HD. Among other reasons, this could be attributed to an emerging trend of excessive consumption among women with higher education or socioeconomic status; which could be explained due to an "innovation" tendency shared only in higher education segments of society, mostly

Table IV
Adjusted prevalence ratios for women obtained from a Poisson regression. Honduras, Endesa 2019

Variables	*aPR*	*95%CI*	*p*
Age			
15-20	Ref. group		
21-29	1.84	0.90,3.78	0.097
30-39	1.52	0.67,3.44	0.315
40-49	0.93	0.36,2.37	0.877
Education level (grade)			
1st-3rd or less	Ref. group		
4th-6th	3.03	1.08,8.52	0.036*
7th-9th	3.54	1.18,10.58	0.024*
Middle school	2.16	0.73,6.40	0.163
Higher education	3.65	1.23,10.78	0.019*
Marital status			
Currently married or cohabiting	Ref. group		
Previously married or cohabiting	2.21	1.24,3.92	0.007*
Never married or cohabiting	1.42	0.75,2.69	0.281
Has children			
No	Ref. group		
Yes, but doesn't live with them	1.12	0.48,2.61	0.794
Yes, and lives with at least one	0.57	0.28,1.14	0.110
Area of residence			
Urban	Ref. group		
Rural	0.44	0.26,0.74	0.002*
Geographical zone			
Central-eastern	Ref. group		
Western	1.32	0.59,2.94	0.496
North-western	1.32	0.76,2.29	0.322
North-eastern	1.58	0.84,2.97	0.158
Central-western	0.61	0.26,1.42	0.248
Southern	0.22	0.07,0.76	0.016*
Current smoker			
No	Ref. group		
Yes	18.7	11.51,30.40	<0.001*
Health insurance			
No	Ref. group		
Yes	1.44	0.87,2.36	0.155
Physical assault victimization			
No	Ref. group		
Yes	2.05	1.08,3.88	0.028*
Discrimination			
No	Ref. group		
Yes	1.55	0.92,2.63	0.101
Crime victimization			
No	Ref. group		
Yes	1.44	0.78,2.66	0.248

aPR: adjusted prevalence ratio; CI: confidence interval; Ref group: reference group; Endesa: National Survey of Demography and Health. The sociodemographic quintile was not included in the model due to collinearity issues.
* Statistically significant difference with a *p*-value <0.05.

attributed as a symbol of greater gender equality.[16] This study also found that women who have been previously married or in cohabitation present higher HD, similar to findings in a study on excessive drinking.[9] Likewise, this investigation found that men who do not live with their children are associated with HD, contrary to findings in other studies on parenthood and excessive consumption, in young men between 18-29 years with children, the probability of alcohol consumption decreases from 0.08 to 0.03.[12] It can be explained because parents who live with their children improve health behaviors due to their responsibility towards their family.[41]

In this analysis, rural residence is associated with lower HD prevalence for both men and women. These findings align with studies conducted, one in Honduras among male residents of rural areas (percent drinking alcohol heavily in males = 0%)[42] and another in a Latin American country where higher consumption levels were observed in urban areas (0.34% more likely to have HD than individuals with rural residences).[43] It is worth noting that some reviews have reported higher alcohol consumption in rural areas.[44] The higher prevalence of problematic drinking noted in urban areas might be attributed to factors such as increased accessibility and marketing, as well as elevated stress levels and feelings of isolation.[45]

Both male and female current smoking behaviors are associated with increased HD prevalence. The relationship is multifactorial, but one explanation is the heightened dopaminergic activation and subsequent dopamine release in the mesolimbic pathway.[46] Studies have found that moderate to high alcohol consumption increases the propensity for tobacco smoking.[13] Furthermore, a previous study in Latin America showed that individuals who had smoked during the previous month had more than twice the prevalence of alcohol abuse, compared to those who had not (aPR = 2.43).[18] Consequently, evidence suggests that the consumption of one substance enhances tolerance to the other and its reinforcing potential.[17,47] Regarding exposure to violence, being a victim of physical assault was associated with HD in both sexes. Women are considered a vulnerable group exposed to constant stress,[14] while men experience more interpersonal problems (17.9 and 6.2% compared to women),[48] leading to continued exposure to stressful events being associated with alcohol consumption to counteract negative effects.[49] Alcohol is a disinhibitor that decreases behavior regulation and increases impulsive behaviors such as physical aggression.[50,51] Thus, reporting being a victim of physical violence in this study could be a consequence rather than a cause of alcohol consumption.[52] Furthermore, even though the analysis reveals that discriminated men do not present increased HD, in the Latino context, a significant association between discrimination and increased consumption patterns has been demonstrated. This may be because this population is determined by conditions such as migration, nationality and ethnicity, which may make them susceptible to discrimination and, in turn, trigger mental health problems. These alterations together increase the state of vulnerability that Latinos have and in response can lead them to present risky behaviors such as excessive alcohol consumption.[53,54]

Regarding the limitations of this study, it is worth noting that alcohol consumption was evaluated through face-to-face interviews, which could lead to an underestimation of the actual amount consumed. Additionally, the question formulation used to measure alcohol consumption did not account for the concentration of each drink. As the study was designed as cross-sectional, there may be limitations to establishing temporality and causality. Lastly, the definition of HD used in the study was based on the CDC criterion, which is specific to the US and not internationally recognized.

In conclusion, the presented data can provide an initial overview of HD as a health problem in Honduras and how experiential, demographic and health factors may influence its prevalence. This allows for the creation of specific research lines to address issues of prevention, promotion, and health education on alcohol consumption. Given the lack of information, it is necessary to continue monitoring the trends of hazardous alcohol consumption and analyze how the national landscape has been modified by the Covid-19 pandemic. In turn, it has been demonstrated that the creation of health policies aimed at the adolescent population and vulnerable groups can be an effective alternative.[55] Therefore, it is suggested that decision-makers implement actions to reduce the availability of alcohol[56] and develop clinical practice guidelines focused on primary and multidisciplinary care that consider reducing alcohol consumption or dependence.[57] In this sense, social participation to consider the needs of those affected and evaluate the quality of the health services provided can be a comprehensive approach that allows adapting current health programs.

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References

1. World Health Organization. Global status report on alcohol and health 2018. Geneva: WHO, 2018 [cited August 11, 2023]. Available from: https://www.who.int/publications/i/item/9789241565639
2. American Cancer Society. Alcohol Use and Cancer. Kennesaw, GA: American Cancer Society, 2020 [cited August 11, 2023]. Available from: https://www.cancer.org/cancer/risk-prevention/diet-physical-activity/alcohol-use-and-cancer.html
3. Roerecke M, Vafaei A, Hasan OSM, Chrystoja BR, Cruz M, Lee R, *et al*. Alcohol consumption and risk of liver cirrhosis: a systematic review and meta-analysis. Am J Gastroenterol. 2019;114(10):1574-86. https://doi.org/10.14309/ajg.0000000000000340
4. Nelson TF, Xuan Z, Lee H, Weitzman ER, Wechsler H. Persistence of heavy drinking and ensuing consequences at heavy drinking colleges. J Stud Alcohol Drugs. 2009;70(5):726-34. https://doi.org/10.15288/jsad.2009.70.726
5. Trangenstein PJ, Morojele NK, Lombard C, Jernigan DH, Parry CDH. Heavy drinking and contextual risk factors among adults in South Africa: findings from the International Alcohol Control study. Subst Abuse Treat Prev Policy. 2018;13(1):43. https://doi.org/10.1186/s13011-018-0182-1
6. Azagba S, Shan L, Latham K, Manzione L. Trends in binge and heavy drinking among adults in the United States, 2011-2017. Subst Use Misuse. 2020;55(6):990-7. https://doi.org/10.1080/10826084.2020.1717538
7. Ribeiro LS, Nogueira-Damacena G, Landmann-Szwarcwald C. Prevalência e fatores sociodemográficos associados ao beber pesado no Brasil: análises transversais da Pesquisa Nacional de Saúde. Rev Bras Epidemiol. 2021;24. https://doi.org/10.1590/1980-549720210042
8. White AM. Gender differences in the epidemiology of alcohol use and related harms in the United States. Alcohol Res. 2020;40(2). https://doi.org/10.35946/arcr.v40.2.01
9. Hernández-Vásquez A, Chacón-Torrico H, Vargas-Fernández R, Grendas LN, Bendezu-Quispe G. Gender differences in the factors associated with alcohol binge drinking: a population-based analysis in a Latin American Country. Int J Environ Res Public Health. 2022;19(9). https://doi.org/10.3390/ijerph19094931
10. Grittner U, Wilsnack S, Kuntsche S, Greenfield TK, Wilsnack R, Kristjanson A, *et al*. A multilevel analysis of regional and gender differences in the drinking behavior of 23 countries. Subst Use Misuse. 2020;55(5):772-86. https://doi.org/10.1080/10826084.2019.1702700
11. Garcia-Cerde R, Valente JY, Sohi I, Falade R, Sanchez ZM, Monteiro MG. Alcohol use during the COVID-19 pandemic in Latin America and the Caribbean. Rev Panam Salud Publica. 2021;45:1-11. https://doi.org/10.26633/RPSP.2021.52
12. McKetta S, Keyes KM. Heavy and binge alcohol drinking and parenting status in the United States from 2006 to 2018: An analysis of nationally representative cross-sectional surveys. PLoS Med. 2019;16(11). https://doi.org/10.1371/journal.pmed.1002954
13. Lee K, Giovannucci EL, Kim J. The effect of smoking and sex on the association between long-term alcohol consumption and metabolic syndrome in a middle-aged and older population. J Epidemiol. 2021;31(4):249-58. https://doi.org/10.2188/jea.JE20190328
14. Chang X, Yang Y, Li R. The characteristics of husbands and violence against women in Wuhan, China: a cross-sectional study. BMC Women's Health. 2022;22(1):73. https://doi.org/10.1186/s12905-022-01650-z
15. Nolen-Hoeksema S. Gender differences in risk factors and consequences for alcohol use and problems. Clin Psychol Rev. 2004;24(8):981-1010. https://doi.org/10.1016/j.cpr.2004.08.003
16. Grittner U, Kuntsche S, Gmel G, Bloomfield K. Alcohol consumption and social inequality at the individual and country levels-results from an international study. Eur J Public Health. 2013;23(2):332-9. https://doi.org/10.1093/eurpub/cks044
17. Oliveira-Conegundes LS, Valente JY, Bertini-Martins C, Andreoni S, Sanchez ZM. Binge drinking and frequent or heavy drinking among adolescents: prevalence and associated factors. J Pediatr (Rio J). 2020;96(2):193-201. https://doi.org/10.1016/j.jped.2018.08.005
18. Caira-Chuquineyra B, Fernandez-Guzman D, Quispe-Vicuña C, Gutierrez-Rodriguez R, Valencia PD. Factors associated with alcohol abuse in the Peruvian population: analysis of a national health survey 2019. J Public Health (Oxf). 2023;45(2):e204-14. https://doi.org/10.1093/pubmed/fdac116
19. Boyd J, Sexton O, Angus C, Meier P, Purshouse RC, Holmes J. Causal mechanisms proposed for the alcohol harm paradox-a systematic review. Addiction. 2022;117(1):33-56. https://doi.org/10.1111/add.15567
20. Taype-Rondan A, Bernabe-Ortiz A, Alvarado GF, Gilman RH, Smeeth L, Miranda JJ. Smoking and heavy drinking patterns in rural, urban and rural-to-urban migrants: the PERU MIGRANT Study. BMC Public Health. 2017;17(1). https://doi.org/10.1186/s12889-017-4080-7
21. Paraje GR, Guindon GE, Chaloupka FJ. Prices, alcohol use initiation and heavy episodic drinking among Chilean youth. Addiction. 2021;116(3):485-94. https://doi.org/10.1111/add.15167
22. Instituto Nacional de Estadísticas, Secretaría de Salud de Honduras. Encuesta Nacional de Demografía y Salud / Encuesta de Indicadores Múltiples Por Conglomerados (ENDESA/MICS 2019). Tegucigalpa: Instituto Nacional de Estadísticas, Secretaría de Salud de Honduras, 2021.
23. Instituto Nacional de Estadísticas en Honduras. Inicio - INE Instituto Nacional de Estadísticas Honduras. Honduras: Instituto Nacional de Estadísticas en Honduras, 2023 [cited August 11, 2023]. Available from: https://ine.gob.hn/v4/
24. Centers for Disease Control and Prevention. Frequently Asked Questions About Alcohol. CDC, 2021 [cited August 11, 2023]. Available from: https://www.cdc.gov/alcohol/faqs.htm
25. Centers for Disease Control and Prevention. Calculated Variables in the 2021 Data File of the Behavioral Risk Factor Surveillance System. CDC, 2021 [cited August 11, 2023]. Available from: https://www.cdc.gov/brfss/annual_data/2021/pdf/2021-calculated-variables-version4-508.pdf
26. Centers for Disease Control and Prevention. Excessive Alcohol Use. CDC, 2022 [cited August 11, 2023]. Available from: https://www.cdc.gov/chronicdisease/resources/publications/factsheets/alcohol.htm
27. Howard JT, Perrotte JK, Flores K, Leong C, Nocito JD III, Howard KJ. Trends in binge drinking and heavy alcohol consumption among pregnant women in the US, 2011 to 2020. JAMA Netw Open. 2022;5(8). https://doi.org/10.1001/jamanetworkopen.2022.24846
28. Congreso Nacional. Decreto nº 73-96 del Código de la Niñez y la Adolescencia. República de Honduras: Diario Oficial la Gaceta, 1996 [cited October 24, 2023]. Available from: https://www.se.gob.hn/media/files/leyes/LI.pdf
29. Diario Oficial la Gaceta. Acuerdo Número: 01-2022. Instituto Hondureño para la Prevención del Alcoholismo, Drogadicción y Farmacodependencia, 2023 [cited October 24, 2023]. Available from: https://www.tsc.gob.hn/web/leyes/Acuerdo-01-2022-IHADFA.pdf
30. Instituto Nacional de Estadística de Honduras. Tomo 1 Características generales de la población. Definiciones. Tegucigalpa: INE de Honduras, 2013 [cited August 11, 2023]. Available from: https://www.ine.gob.hn/publicaciones/Censos/Censo_2013/01Tomo-I-Poblaci%C3%B3n/definiciones.html
31. Lee E, Forthofer R. Analyzing complex survey data. United States of America: SAGE Publications, 2006.
32. Aday LA, Cornelius LJ. Designing and conducting health surveys: a comprehensive guide. Jossey-Bass, 2006.
33. Barros AJ, Hirakata VN. Alternatives for logistic regression in cross-sectional studies: an empirical comparison of models that directly estimate the prevalence ratio. BMC Med Res Methodol. 2003;3(1). https://doi.org/10.1186/1471-2288-3-21

34. Fonseca-Martinez BA, Bielefeldt-Leotti V, de Sousa e Silva GD, Neves-Nunes L, Machado G, Corbellini LG. Odds ratio or prevalence ratio? an overview of reported statistical methods and appropriateness of interpretations in cross-sectional studies with dichotomous outcomes in veterinary medicine. Front Vet Sci. 2017;4:193. https://doi.org/10.3389/fvets.2017.00193
35. Erol A, Karpyak VM. Sex and gender-related differences in alcohol use and its consequences: Contemporary knowledge and future research considerations. Drug Alcohol Depend. 2015;156:1-13. https://doi.org/10.1016/j.drugalcdep.2015.08.023
36. Wang W, Zhornitsky S, Le TM, Dhingra I, Zhang S, Krystal JH, *et al*. Cue-elicited craving, thalamic activity, and physiological arousal in adult non-dependent drinkers. J Psychiatr Res. 2019;116:74-82. https://doi.org/10.1016/j.jpsychires.2019.06.005
37. Fama R, Le Berre AP, Sullivan EV. Alcohol's unique effects on cognition in women: a 2020 (Re)view to Envision future research and treatment. Alcohol Res. 2020;40(2). https://doi.org/10.35946/arcr.v40.2.03
38. Wartberg L, Kriston L, Thomasius R. Prevalence of problem drinking and associated factors in a representative German sample of adolescents and young adults. J Public Health (Oxf). 2019;41(3):543-9. https://doi.org/10.1093/pubmed/fdy163
39. Huerta MC, Borgonovi F. Education, alcohol use and abuse among young adults in Britain. Soc Sci Med. 2010;71(1):143-51. https://doi.org/10.1016/j.socscimed.2010.03.022
40. Rosoff DB, Clarke TK, Adams MJ, McIntosh AM, Davey-Smith G, Jung J, *et al*. Educational attainment impacts drinking behaviors and risk for alcohol dependence: results from a two-sample Mendelian randomization study with ~780,000 participants. Mol Psychiatry. 2021;26:1119-32. https://doi.org/10.1038/s41380-019-0535-9
41. Joutsenniemi K, Martelin T, Kestilä L, Martikainen P, Pirkola S, Koskinen S. Living arrangements, heavy drinking and alcohol dependence. Alcohol Alcohol. 2007;42(5):480-91. https://doi.org/10.1093/alcalc/agm011
42. Galo J, Feeney M, Zambrano K, Galo C, Clinchot D. Comprehensive evaluation of male health in four communities in rural Honduras. Prev Med Rep. 2018;12:46-53. https://doi.org/10.1016/j.pmedr.2018.08.009
43. Meneses K, Cisneros MV, Braganza ME. Análisis socioeconómico del consumo excesivo de alcohol en Ecuador. Rev Cienc salud. 2019;17(2):293-308. https://doi.org/10.12804/revistas.urosario.edu.co/revsalud/a.7938
44. Loewen-Friesen E, Bailey J, Hyett S, Sedighi S, de Snoo ML, Williams K, *et al*. Hazardous alcohol use and alcohol-related harm in rural and remote communities: a scoping review. Lancet Public Health. 2022;7(2):e177-87. https://doi.org/10.1016/S2468-2667(21)00159-6
45. Castaldelli-Maia JM. Urbanicity and alcohol use epidemiology in the 21st century. Curr Opin Psychiatry. 2023;36(3):243-8. https://doi.org/10.1097/YCO.0000000000000860
46. Adams S. Psychopharmacology of tobacco and alcohol comorbidity: a review of current evidence. Curr Addict Rep. 2017;4:25-34. https://doi.org/10.1007/s40429-017-0129-z
47. Naciones Unidas. Salud de la población joven indígena en América Latina: un panorama general. Santiago de Chile: Naciones Unidas, 2011[cited August 11, 2023]. Available from: https://www.cepal.org/es/publicaciones/35357-salud-la-poblacion-joven-indigena-america-latina-un-panorama-general
48. Magalhães-Silveira C, Siu ER, Wang YP, Viana MC, Guerra de Andrade A, Andrade LH. Gender differences in drinking patterns and alcohol-related problems in a community sample in São Paulo, Brazil. Clinics. 2012;67(3):205-12. https://doi.org/10.6061/clinics/2012(03)01
49. Kiekens WJ, Fish JN, Gordon AR, Russell ST. Everyday discrimination and alcohol use among sexual minority adults in a U.S. national probability sample. Subst Use Misuse. 2022;57(9):1383-91. https://doi.org/10.1080/10826084.2022.2083172
50. Gulati NK, Stappenbeck CA, George WH, Davis KC. Predicting rape events: The influence of intimate partner violence history, condom use resistance, and heavy drinking. Aggr Behav. 2021;47(1):69-77. https://doi.org/10.1002/ab.21927
51. Valencia-Martín JL, Galán I, Segura-García L, Camarelles-Guillem F, Suárez-Cardona M, Brime-Beteta B. Episodios de consumo intensivo de alcohol "Binge drinking": retos en su definición e impacto en salud. Rev Esp Salud Publica. 2020;94:e1-17 [cited August 11,2023]. Available from: https://repisalud.isciii.es/bitstream/handle/20.500.12105/11474/Episodios-DeConsumoI ntensivo_2020.pdf?sequence=1
52. Thompson MP, Sims L, Kingree JB, Windle M. Longitudinal associations between problem alcohol use and violent victimization in a national sample of adolescents. J Adolesc Health. 2008;42(1):21-27. https://doi.org/10.1016/j.jadohealth.2007.07.003
53. Lee CS, O'Connor BM, Todorova I, Nicholls ME, Colby SM. Structural racism and reflections from Latinx heavy drinkers: Impact on mental health and alcohol use. J Subst Abuse Treat. 2021;127. https://doi.org/10.1016/j.jsat.2021.108352
54. Otiniano-Verissimo AD, Grella CE, Amaro H, Gee GC. Discrimination and substance use disorders among Latinos: the role of gender, nativity, and ethnicity. Am J Public Health. 2014;104(8):1421-8. https://doi.org/10.2105/AJPH.2014.302011
55. World Health Organization. Global strategy to reduce the harmful use of alcohol. Geneva: WHO, 2010.
56. World Health Organization. The SAFER Technical Package: Five Areas of Intervention at National and Subnational Levels [Internet]. Geneva: WHO, 2019 [cited August 11, 2023]. Available from: https://apps.who.int/iris/handle/10665/330053
57. Kaye JT, Johnson AL, Baker TB, Piper ME, Cook JW. Searching for personalized medicine for binge drinking smokers: smoking cessation using varenicline, nicotine patch, or combination nicotine replacement therapy. J Stud Alcohol Drugs. 2020;81(4):426-35. https://doi.org/10.15288/jsad.2020.81.426