

Alcohol use, and suicidal ideation and behaviour in Guyana: Findings from a population-based cross-sectional study

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Abstract

Aims: To examine associations between alcohol use, heavy episodic drinking (HED), and suicidal ideation and behaviour in Guyana.

Materials and methods: This cross-sectional secondary analysis used weighted data from 2,661 adult participants in the 2016 World Health Organization STEPwise risk factor survey. Participants were classified into four alcohol-use groups: Non-drinkers: never drank or no alcohol in the past 12 months; Past 12-month drinkers: drank in the past year but not in the past 30 days; Current drinkers (non-Heavy Episodic Drinkers [HEDs]): drank in the past 30 days without consuming six or more drinks on any occasion; and Current drinkers (HEDs): drank in the past 30 days with at least one episode of six or more drinks. Adjusted odds ratios were estimated for suicidal ideation and behaviour, using Non-drinkers as the reference.

Results: Eighty-two participants (3.1%) reported a lifetime suicide attempt, and 4.3% had seriously considered suicide in the past 12 months. The prevalence of past-year suicidal ideation ranged from 4.0% (current drinkers) to 4.7% (non-drinkers; $p > 0.05$). After adjustment for age, sex, ethnicity, employment, education, income, marital status, and region, alcohol-use patterns were not significantly associated with past-year suicidal ideation or lifetime suicide attempts. An incidental finding was that participants with current HED had higher odds of reporting that a family member had died by suicide (aOR 1.68, 95% CI [1.04, 2.70]; $p = 0.033$).

Conclusion: Alcohol use and HED were not associated with suicidal ideation or suicide attempts in this population. However, HED was more common among participants reporting a family history of death by suicide.

Introduction

Globally, alcohol consumption remains high. Recent growth in alcohol consumption has been disproportionately concentrated in low- and middle-income countries (LMICs; Griswold et al., 2018). The estimated number of people aged 15 years or older with alcohol use disorder (AUD) increased from 84 million in 1990 to 111 million in 2021. During the same period, deaths directly attributable to AUD increased from 110,000 to 158,000 (Jokinen et al., 2021). Beyond individual harm, AUD contributes to substantial psychosocial and health burdens within families (Jokinen et al., 2021).

A systematic review of household and family alcohol use in LMICs reported significant associations between parental alcohol misuse and adolescent suicidality, depression, anxiety, substance use, problem behaviour, teenage pregnancy, and self-harm (Xie et al., 2025). These patterns

are of particular concern in LMICs, where health system resources are limited.

Alcohol use has been consistently associated with suicidal ideation and suicidal behaviour across diverse settings (Pompili et al., 2010). A meta-analysis reported a pooled odds ratio (OR) of 6.97 for suicide attempts associated with any acute alcohol use, with substantially higher odds (OR = 37.18) observed at high levels of consumption (Borges et al., 2017). Alcohol intoxication is associated with disinhibition, impulsivity, and impaired judgement, which may increase short-term risk of suicidal ideation or suicidal behaviour. Alcohol may also be used to reduce psychological distress or fear preceding a suicide attempt.

Suicide is recognised as a major global public health concern (World Health Organization [WHO], 2025). In 2021, an estimated 73% of global suicide deaths occurred in LMICs (WHO, 2025). In 2019, suicide accounted for 97,339 deaths

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in the Americas—representing a 56% increase compared to 2000 (Pan American Health Organization [PAHO], 2021). The age-standardized suicide death rate varies widely across countries in the region, ranging from 0.3 deaths per 100,000 population in Barbados to 40.8 deaths per 100,000 in Guyana (PAHO, 2021). Guyana has the highest recorded suicide mortality rate in the Americas region, and one of the highest rates globally. While the association between AUD and suicidal behaviour is well established in high-income countries (WHO, 2025), nationally representative, population-based analyses examining individual alcohol use patterns in relation to suicidal behaviour in LMICs remain limited. This was reinforced for Guyana by a 2022 systematic review which concluded that despite high rates of suicidal ideation and behaviour in that country, published research remains limited (Shaw et al., 2022).

A literature review identified three studies relevant to suicidality in Guyana and LMICs. Thornton et al. (2019) examined 190 high-risk youths aged 11 to 21 separated from their biological parents at the time of assessment to identify risk factors for suicide in South Africa and Guyana. Among the Guyanese youth, 60% endorsed suicide ideation and suicide attempt, or suicide attempt only. Youth stress was significantly associated with the attempt (odds ratio [OR], 1.88, $p = .05$). These findings are informative for identifying clinical correlates within a vulnerable subgroup, but not for estimating the prevalence or broader determinants of suicidal behaviour in the general Guyanese population. However, only 15 Guyanese youth were included in the study. In a systematic review of 43 studies from 18 LMICs on household alcohol use and adolescent behavioural outcomes, Jokinen et al. (2021) found associations with suicidality. This study also emphasized that there was substantial heterogeneity between studies, weak adjustment for confounding, limited control groups, and recommended the need for better population-sample research in order to offer indirect cross-national evidence. Guyana and other English-speaking Caribbean countries were not represented in the review, as the only countries from the Americas were Brazil and Mexico. A third study by Xie et al. (2025) was an analysis from the Global Burden of Disease 2021 estimates on alcohol use disorders. It was not a primary Guyanese study of suicidal behaviour. It produced an indirect estimate and is better suited to describing modelled trends in alcohol-related burden than to estimating suicide behaviour in Guyana itself. This study reported that between 1990 and 2021, Caribbean nations demonstrated an upward trend in AUD-related age-standardised mortality (Average Annual Percentage Change [AAPC] = 0.11%).

Thus, a population-based random sample derived from the Guyana WHO STEPwise approach to Surveillance (STEPS) survey should provide stronger evidence on suicidal behaviour in Guyana than the three studies mentioned above. The survey is a nationally representative household survey of adults aged 18 to 69 years, uses a cluster sample design to produce estimates for the target population, and includes a mental health/suicide module with direct questions on suicide attempts, including lifetime and past-12-month attempts. Although prospective cohort studies would strengthen causal inference, such designs are resource-

intensive and uncommon in LMIC settings. The 2016 Guyana STEPS dataset offers a feasible opportunity to examine the association between alcohol use and suicidal behaviour using previously collected, nationally representative data (Ministry of Public Health, Guyana, 2015).

This study examines whether Guyanese adults who consume alcohol—particularly those engaging in heavy episodic drinking—are more likely to report suicidal ideation or suicidal behaviour compared to non-drinkers.

Materials and Methods

Design

A cross-sectional design was used to study the associations between alcohol use, heavy episodic drinking (HED) and suicidal ideation and behaviour.

Setting

Guyana is situated in northeastern region of South America. In 2016, Guyana implemented the World Health Organization (WHO) STEPwise Approach to Chronic Disease Risk Factor Surveillance (STEPS; Ministry of Public Health, Guyana, 2015; WHO, 2017). The survey data is publicly available through an online application (Ministry of Public Health, Guyana, 2015). The national survey used multistage sampling: 288 enumeration districts were selected with probability proportional to size from the 2012 census frame; 12 households were then randomly selected within each district, and one adult per household was recruited based on availability (i.e., who was at home at the time of the visit) and willingness to participate (Motilal et al., 2025). For individuals who refused to participate, enumerators were instructed to collect age and sex data (WHO, 2017). The survey gathered demographics, behavioural risk factors, physical measurements, and metabolic indicators. Optional modules on dietary salt intake, nutrition, mental health, and violence were also included.

Variables

Outcomes

The primary outcomes were suicidal ideation and suicidal behaviours. These were defined based on self-reported responses to the following questions:

- Mental Health Question 1 (MH 1): *During the past 12 months, have you seriously considered attempting suicide?*
- Mental Health Question 3 (MH 3): *During the past 12 months, have you made a plan on how you would attempt suicide?*
- Mental Health Question 4 (MH 4): *Have you ever attempted suicide?*
- Mental Health Question 5 (MH 5): *During the past 12 months, have you attempted suicide?*

The results of additional Mental Health Questions, MH 2, and MH 5 to MH 10, are also reported.

Exposures

The primary exposure variable was alcohol consumption, assessed using self-reported intake. Alcohol users were defined as those who had consumed any alcohol in the past 12 months. Five categories are presented in the dataset:

- Category A: Never consumed alcohol;
- Category B: Alcohol in the past but, no alcohol use in last 12 months;
- Category C: No alcohol in past 30 days but alcohol use in the past 12 months;
- Category D: Alcohol use in past 30 days but less than 6 drinks on any occasion; and
- Category E: Alcohol use in past 30 days and 6 drinks or more, on any one occasion (heavy episodic drinking [HED]).

Heavy episodic drinking was defined as the consumption of six or more standard alcoholic drinks on a single occasion within the past 30 days (The Global Health Observatory, 2025). In this STEPS survey, this is the equivalent of one regular beer (285 ml), a single measure of spirits (30 ml), a medium-sized glass of wine (120 ml), or a measure of aperitif (60 ml). A showcard was used to represent each of these pictorially. The net alcohol content of a standard drink was approximately 10g of ethanol (Ministry of Public Health, Guyana, 2015).

Confounders

Potential confounding factors included the following: age, sex, ethnicity, marital status, employment status, income level, and geographic region. Age categories followed national census groupings. Annual income was reported either as an estimated amount or within predefined ranges. Employment status was categorized as government-employed, private-sector employed, self-employed, unemployed, or homemaker. Ethnicity was self-identified and grouped into Afro-Guyanese, Indo-Guyanese, Amerindian, or Mixed ethnicity. These variables are established predictors of alcohol consumption patterns (Collins, 2016) and suicidal ideation/behaviour in the general population. Other variables include unemployment (Milner et al., 2013), income (Näher et al., 2020), marital status and educational attainment (Øien-Ødegaard et al., 2021). A minimum of 10% change-in-estimate was used to guide confounder selection (Lee, 2014).

Analysis

For this analysis, participants were distributed into four alcohol-use groups, with Categories A and B combined into 'Non-drinkers'.

1. Non-drinkers: Never consumed alcohol or no alcohol use in last 12 months
2. Past 12-month drinkers: No alcohol in past 30 days but alcohol use in the past 12 months
3. Current drinkers (not HED): Alcohol use in past 30 days but less than 6 drinks on any occasion
4. Current drinkers (HED): Alcohol use in past 30 days and 6 drinks or more, on any one occasion (HED).

We explored whether these four groups differed by demographic characteristics and by the prevalence of suicidal ideation and suicidal behaviours. Greater details on the statistical analysis are presented below.

Statistical Analyses

Data were weighted to align the sample with the Guyanese population distribution based on age (18–69 years), sex, ethnicity, and [geographic region](#). Weighting was conducted using the Rake Weight procedure in SPSS, which generates post-stratification weights to calibrate the sample to the 2012 census (Statistics Guyana, 2016). All analyses, including descriptive and multivariable logistic regression models, were conducted with these weights applied using the *Weight Cases by RakedWeight* function in SPSS to ensure population representativeness. The Raked Weights were normalized (relative) weights scaled approximately to the sample size. Therefore, no additional scaling or rescaling adjustment was required prior to analysis.

Descriptive statistics are presented as frequencies and percentages for categorical variables. Pearson's chi-square tests were used to examine bivariate associations between categorical variables. Analysis of variance (ANOVA) was used to compare means across more than two groups, with Bonferroni-adjusted post hoc pairwise comparisons. Binary logistic regression was used to examine predictors of dichotomous outcomes, including mental health (MH) outcomes, and to estimate crude odds ratios (cORs) and adjusted odds ratios (aORs) with corresponding 95% confidence intervals and *p*-values. Confounder selection was guided by the $\geq 10\%$ change-in-estimate criterion, and was used to inform the decisions regarding inclusion of variables. Adjusted models included age, sex, ethnicity, employment, education, income, marital status, and region as covariates. Multinomial regression was used only in exploratory analyses to examine associations between alcohol consumption categories and sociodemographic variables.

Prior to the binary logistic regression analyses, multicollinearity among covariates was assessed using tolerance and variance inflation factor (VIF) statistics derived from a regression model including age, sex, ethnicity, marital status, education, income, employment, and region. All tolerance values were > 0.8 and all VIF values were < 2.0 , indicating no evidence of problematic multicollinearity. Accordingly, all covariates were retained in the adjusted analyses.

A *p*-value of < 0.05 was deemed statistically significant. All analyses were conducted in SPSS version 25.0.

Results

Population Description

A total of 2,661 participants were included in the analysis. Table 1 presents the socio-demographic characteristics of the sample and their distribution across four alcohol-use groups. Non-drinkers made up less than half of the respondents ($n = 1,157$; 43.5%). Past 12-month drinkers made up 440 participants (16.5%). Current drinker (non-HED) numbered 626 individuals (23.5%), while Current drinker (HED) consisted of 438 participants (16.4%).

Table 1

Associations between Socio-Demographic Variables and Alcohol-Use Groups

Socio-Demographic Variable		Sample proportions (n/%) ^a					p-value
		(n = 2,661)	Non-drinkers (n/%) ^b	Past 12-month drinkers (n/%) ^b	Current drinker (non-HED) (n/%) ^b	Current drinker (HED) n (%) ^b	
Age (years, mean $\pm$ SD)		38.6 $\pm$ 13.4	40.74 $\pm$ 13.92	36.68 $\pm$ 13.19	37.59 $\pm$ 12.89	36.46 $\pm$ 11.86	< 0.001
Sex	Male	1,318 (49.5)	348 (26.4%)	204 (15.5%)	406 (30.8%)	360 (27.3%)	< 0.001
	Female	1,345 (50.5)	809 (60.1%)	237 (17.6%)	221 (16.4%)	78 (5.8%)	
Ethnicity	East Indian	1,060 (39.9)	478 (45.1%)	173 (16.3%)	212 (20.0%)	197 (18.6%)	< 0.001
	African	779 (29.3)	316 (40.6%)	109 (14.0%)	236 (30.3%)	118 (15.1%)	
	Amerindian	280 (10.5)	160 (57.1%)	50 (17.9%)	43 (15.4%)	27 (9.6%)	
	Mixed + Other	542 (20.3)	204 (37.6)	108 (19.9)	135 (25.0)	95 (17.5)	
Marital status	Never married/ Separated/ Divorced	1,040 (39.1)	376 (36.2)	205 (19.7)	269 (25.9)	190 (18.3)	< 0.001
	Married/ Cohabiting	1,524 (57.3)	719 (47.2)	227 (14.9)	335 (22.0)	243 (15.9)	
	Widowed	93 (3.5)	62 (66.7%)	7 (7.5%)	19 (20.4%)	5 (5.4%)	
	≤ Primary	1,400 (52.6)	638 (45.6)	219 (15.6)	301 (21.5)	242 (17.3)	
Education	Secondary	893 (33.6)	375 (42.0)	157 (17.6)	220 (24.6)	141 (15.8)	0.021
	≥ Tertiary	370 (13.8)	143 (38.6)	65 (17.6)	107 (28.9)	55 (14.9)	
Income (GYD; n = 2,166)	< 900k	1,345 (62.1)	617 (45.9)	215 (16.0)	309 (23.0)	204 (15.2)	< 0.001
	900k – 1.5m	406 (18.7)	142 (35.0)	68 (16.7)	121 (29.8)	75 (18.5)	
	> 1.5m	415 (19.2)	141 (34.0)	69 (16.6)	99 (23.9)	106 (25.5)	
Employment	Employed (any)	1,823 (68.6)	645 (35.4)	308 (16.9)	491 (26.9)	379 (20.8)	< 0.001
	Homemaker Retired/ Unemployed/ Student	477 (17.9)	319 (66.9%)	73 (15.3%)	62 (13.0%)	23 (4.8%)	
		359 (14.7)	192 (53.5)	60 (16.7)	71 (19.8)	36 (10.0)	
Region	1–3	649 (24.4)	293 (45.1)	128 (19.7)	131 (20.2)	97 (14.9)	< 0.001
	4 (Urban)	1,110 (41.7)	436 (39.3%)	173 (15.6%)	298 (26.8%)	203 (18.3%)	
	5–10 (Rural/ Interior)	901 (33.9)	427 (47.4)	140 (15.5)	197 (21.9)	137 (15.2)	

Notes: ^a Row percentages. ^b Column percentages. *p*-values from χ^2 tests (or ANOVA for age). Minor categories collapsed (Mixed + Other ethnicity; ≤ Primary, ≥ Tertiary education; income bands; employment groups). *N* varies based on the weighting process and the response rate for questions on income.ⁱ

Suicide-Related Outcomes

Table 2 summarizes the prevalence of suicide-related outcomes in the sample. While 4.3% (*n* = 116) of participants reported suicidal ideation in the past year (MH 1), only 19.6% of those individuals sought professional help. A lifetime history of suicide attempts was reported by 3.1% of the population (MH 3), with 31.5% of these attempts occurring within the last 12 months (MH 5). Healthcare utilization following an attempt was notably low; only 39.5% of those who attempted suicide sought medical care, and 29.0% were hospitalized overnight. The most common methods reported were drowning (21.9%) and hanging (21.8%). Additionally, approximately one-tenth of respondents identified a history of suicide attempts (10.2%) by, or deaths (9.3%) of a close family member.

Table 3 presents bivariate associations between alcohol-use categories and these suicide-related outcomes. No statistically significant associations were found between alcohol consumption and seriously considering suicide (MH 1; *p* = 0.927), seeking professional help (MH 2; *p* = 0.465), or having ever attempted suicide (MH 4; *p* = 0.585). Similarly, there was no significant relationship between alcohol categories and recent suicide attempts (*p* = 0.623) or the method used in the last attempt (*p* = 0.730). In contrast, three significant associations were identified. There was a significant relationship between alcohol consumption and having planned for suicide (MH 3; χ^2 = 8.33, *p* = 0.040), with the highest proportions seen among drinkers with no consumption in the past 30 days (50%) and those engaging in HED (55.6%). Additionally, significant associations were observed for family history: participants who were drinkers but had not consumed alcohol in the last 30 days and those

in the HED group reported higher rates of family suicide attempts (13.4% and 12.2% respectively; $p = 0.020$) and

family suicide deaths (12.3% and 12.2%, respectively; $p = 0.001$).

Table 2

Suicide-Related Outcomes (n = 2 661)

Suicide-Related Outcome (n)		Yes n (%)	No n (%)
Mental Health Questions (MH 1, 3, 4 and 5)			
MH 1	During the past 12 months, have you seriously considered attempting suicide? (n = 2,658)	116 (4.3%)	2,542 (95.7%)
MH 3	During the past 12 months, have you made a plan about how you would attempt suicide? (n = 115)	40 (35.0%)	75 (65.0%)
MH 4	Have you ever attempted suicide? (n = 2,655)	82 (3.1%)	2,573 (96.9%)
MH 5	During the past 12 months, have you attempted suicide? (n = 82)	26 (31.5%)	56 (68.5%)
Other Suicide Related Outcomes (n)			
Mental Health Questions (MH 2, and MH 6 to MH 10)			
MH 2	Did you seek professional help for these thoughts? (n = 116)	23 (19.6%)	93 (80.4%)
MH 7	Did you seek medical care for this attempt? (n = 81)	32 (39.5%)	49 (60.5%)
MH 8	Were you admitted to hospital overnight because of this attempt? (n = 82)	24 (29.0%)	58 (71.0%)
MH 9	Has anyone in your close family (mother, father, brother, sister or children) ever attempted suicide? (n = 2,619)	267 (10.2%)	2,352 (89.8%)
MH 10	Has anyone in your close family (mother, father, brother, sister or children) ever died from suicide? (n = 2,634)	246 (9.3%)	2,388 (90.7%)
MH 6	What was the main method you used the last time you attempted suicide? (n = 78)	Method	n (%)
		Drug overdose	13 (16.4%)
		Hanging	17 (21.8%)
		Self-cutting	6 (7.6%)
		Drowning	17 (21.9%)
		Firearm	5 (6.8%)
		Other	20 (25.4%)

Note: Of the 2,661 participants, non-respondents numbered MH 1 = 3, MH 4 = 6, MH 9 = 42, and MH 10 = 27. Of the 116 persons admitting to seriously considering attempting suicide in the past 12 months, non-respondent numbered MH 3 = 1, MH 2 = 0, MH 5 = 34. Of the 82 participants admitting to a suicide attempt in the past 12 months, non-respondents numbered MH 6 = 4, MH 7 = 1, and MH 8 = 0.

Table 3

Associations Between Mental Health Outcomes and Alcohol Categories (n = 2,661)

Suicide-Related Outcomes		Non-drinkers	Past 12-month drinkers	Current drinker (non-HED)	Current drinker (HED):	p-value
MH 1. During the past 12 months, have you seriously considered attempting suicide? (n = 2,658)	Yes	54 (4.7%)	19 (4.3%)	25 (4.0%)	19 (4.4%)	.927
	No	1,101 (95.3%)	422 (95.7%)	601 (96.0%)	417 (95.6%)	
MH 2. Did you seek professional help for these thoughts? (n = 115)	Yes	13 (24.1%)	2 (11.1%)	5 (20.8%)	2 (10.5%)	.465
	No	41 (75.9%)	16 (88.9%)	19 (79.2%)	17 (89.5%)	
MH 3. During the past 12 months, have you made a plan about how you would attempt suicide? (n = 113)	Yes	15 (28.3%)	9 (50.0%)	5 (20.8%)	10 (55.6%)	.040
	No	38 (71.7%)	9 (50.0%)	19 (79.2%)	8 (44.4%)	
MH 4. Have you ever attempted suicide? (n = 2,655)	Yes	39 (3.4%)	11 (2.5%)	16 (2.6%)	16 (3.7%)	.585
	No	1116 (96.6%)	429 (97.5%)	610 (97.4%)	418 (96.3%)	
MH 5. During the past 12 months, have you attempted suicide? (n = 82)	Yes	11 (28.2%)	5 (45.5%)	4 (25.0%)	6 (37.5%)	.623
	No	28 (71.8%)	6 (54.5%)	12 (75.0%)	10 (62.5%)	
MH 7. Did you seek medical care for this attempt? (n = 81)	Yes	16 (41.0%)	5 (45.5%)	4 (26.7%)	7 (43.8%)	.716
	No	23 (59.0%)	6 (54.5%)	11 (73.3%)	9 (56.3%)	
MH 8. Were you admitted to hospital overnight because of this attempt? (n = 80)	Yes	12 (31.6%)	2 (18.2%)	5 (31.3%)	4 (26.7%)	.843
	No	26 (68.4%)	9 (81.8%)	11 (68.8%)	11 (73.3%)	
MH 9. Has anyone in your close family (mother, father, brother, sister or children) ever attempted suicide? (n = 2619)	Yes	102 (8.9%)	58 (13.4%)	55 (9.0%)	52 (12.2%)	.020
	No	1,044 (91.1%)	374 (86.6%)	559 (91.0%)	375 (87.8%)	
	Yes	103 (9.0%)	53 (12.3%)	37 (6.0%)	53 (12.2%)	

MH 10. Has anyone in your close family	No	1047 (91.0%)	379 (87.7%)	582 (94.0%)	380 (87.8%)
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Alcohol use remained significantly associated with family history of suicidal behaviour after adjustment (see Table 4). Drinkers who had not consumed alcohol in the past 30 days had higher odds of reporting a family member who had attempted suicide (aOR 1.72, 95% CI[1.15, 2.57], $p = 0.008$)

or died by suicide (aOR 1.64, 95% CI[1.07, 2.51], $p = 0.022$), compared to abstainers. Participants who consumed six or more drinks in the past 30 days also had higher odds of reporting a family member who died by suicide (aOR 1.62, 95% CI[1.02, 2.58], $p = 0.042$).

Table 4

Associations between alcohol use categories and suicide related outcomes (n = 2,661)

Suicide-Related Outcomes (Dependent variables)		Past 12-month drinkers (aOR, 95% CI),	p-value	Current drinker (non-HED) (aOR, 95% CI),	p-value	Current drinker (HED) (aOR, 95% CI),	p-value
MH 1. During the past 12 months, have you seriously considered attempting suicide? (n = 2,658)	No (ref)	1		1		1	0.287
	Yes	0.90 [0.48, 1.67]	0.727	1.19 [0.68, 2.07]	0.551	1.41 [0.75, 2.67]	
MH 2. Did you seek professional help for these thoughts? (n = 115)	No (ref)	1		1		1	0.407
	Yes	-	0.998	2.85 [0.45, 18.01]	0.266	3.20 [0.20, 50.16]	
MH 3. During the past 12 months, have you made a plan out how you would attempt suicide? (n = 113)	No (ref)	1		1		1	0.024
	Yes	3.85 [0.72, 20.59]	0.115	0.86 [0.20, 3.76]	0.845	8.24 [1.31, 51.69]	
MH 4. Have you ever attempted suicide? (n = 2,655)	No (ref)	1		1		1	0.239
	Yes	0.53 [0.22, 1.26]	0.152	0.96 [0.48, 1.94]	0.917	1.56 [0.74, 3.28]	
MH 5. During the past 12 months, have you attempted suicide? (n = 82)	No (ref)	1		1		1	0.254
	Yes	6.85 [0.35, 134.59]	0.205	1.18 [0.17, 7.97]	0.869	3.26 [0.43, 24.91]	
MH 7. Did you seek medical care for this attempt? (n = 81)	No (ref)	1		1		1	0.653
	Yes	14.98 [0.70, 318.77]	0.083	0.18 [0.01, 3.02]	0.230	1.78 [0.14, 22.06]	
MH 8. Were you admitted to hospital overnight because of this attempt? (n = 80)	No (ref)	1		1		1	0.710
	Yes	0.23 [0.01, 11.15]	0.460	0.72 [0.08, 6.52]	0.767	0.61 [0.05, 8.01]	
MH 9. Has anyone in your close family (mother, father, brother, sister or children) ever attempted suicide? (n = 2,619)	No (ref)	1		1		1	0.085
	Yes	1.72 [1.15, 2.57]	0.008	1.08 [0.71, 1.65]	0.705	1.48 [0.95, 2.32]	
MH 10. Has anyone in your close family (mother, father, brother, sister or children) ever died from suicide? (n = 2,634)	No (ref)	1		1		1	0.042
		1.64 [1.07, 2.51]	0.022	0.79 [0.49, 1.28]	0.339	1.62 [1.02, 2.58]	

Notes: ^aReferent independent alcohol category=Never drinkers or no alcohol in past 12 months. ^bAdjusted for age, sex, ethnicity, employment, education, income, marital status and region, ‘-’ = in calculable.

Multivariable logistic regression models (Table 4), adjusted for age, sex, ethnicity, marital status, education, income, employment, and region, showed no statistically significant associations between alcohol use and suicidal ideation or suicide attempts.

As shown in [Supplementary Table 1](#), several socio-demographic factors were associated with suicide outcomes in bivariate analyses. For those who had seriously considered suicide in the past 12 months, there were associations with age, sex, ethnicity, education and employment status ($p < 0.05$ for all). [Supplementary Table 2](#)

displays crude odds ratios for alcohol use and each suicide-related variable.

Discussion

In this large, nationally representative sample of the Guyanese population, 4.3% of respondents reported suicidal ideation (SI) in the past 12 months. This prevalence is similar to estimates reported in the USA (Samples et al., 2025) and among Bhutanese refugees (Ao et al., 2016). The study population contained almost equal proportions of non-drinkers and drinkers, and no associations were observed between categories of alcohol consumption and suicidal outcomes. This finding was unexpected.

A recent multi-country, non-peer-reviewed analysis using WHO STEPS data from eight LMICs including Guyana, identified statistically significant but small associations between alcohol use and suicidal behaviours (Villarreal-Zegarra et al., 2025). In pooled adjusted models, ever drinking alcohol was associated with only a 3% higher prevalence of SI and a 1% higher prevalence of lifetime suicide attempts. However, in the Guyana-specific analyses, ever drinking was not significantly associated with either SI (aPR = 0.99, 95% CI 0.97–1.01) or lifetime suicide attempts (aPR = 1.01, 95% CI 0.99–1.02). By contrast, a country-specific analysis from Bhutan showed much stronger associations, with markedly higher odds of SI (aOR = 3) and suicide attempts (aOR = 5) among current drinkers (Dendup et al., 2020). Together these findings suggest that although alcohol use is a consistent correlate of suicidal behaviour across LMICs, the strength of these associations varies considerably. Differences in population characteristics, cultural norms around alcohol use, and the prevalence of harmful drinking may contribute to this variability. This study did not demonstrate the 3% higher prevalence of SI and a 1% higher prevalence of lifetime suicide attempts by those who ‘ever drank’ found by Villarreal-Zegarra (2025). This may have been due to the grouping variables used in this study, combining the ‘Never drank’ with the ‘No drinks in past 12 months.’

In our study, individuals with a family history of suicide attempts or deaths were more likely to be drinkers, particularly those who had not consumed alcohol in the past 30 days or those in the heavy drinking category. This relationship highlights a potential link between familial mental health history and alcohol-use patterns. Prior work has documented similar familial and societal connections between alcohol use and suicide (Roy, 2000; Seegobin et al., 2022). Increased drug and alcohol use following suicide bereavement is well recognised (Eng et al., 2019), reflecting both coping responses to grief and shared genetic vulnerabilities for substance-use disorders and suicidal behaviours.

Our findings differ from several previous studies that have reported positive associations between alcohol use and suicidal behaviour. Earlier reviews noted that alcohol was frequently detected in suicide decedents or attempters, although these studies were often descriptive and limited by small sample sizes, lack of controls, and ascertainment bias (Cherpitel et al., 2004). A later review reported that alcohol use disorders were associated with higher odds of both SI (OR 2.0–2.5) and suicide attempts (OR 2.6–3.7; Borges & Loera, 2010).

A meta-analysis combining case-control and case-crossover studies demonstrated a dose-response relationship between alcohol use and suicidal behaviour (Borges et al., 2017). More recent reviews have also reported associations between alcohol use and suicidal behaviour; however, these reviews did not formally assess the certainty of the evidence using GRADE or a comparable framework (Amiri & Behnezhad, 2020; Lange et al., 2024). Notably, some large population-based studies have similarly reported no association between binge drinking and SI (Kittel et al., 2019).

In our dataset, individuals who consumed alcohol in the past month—whether more than or less than six drinks—had higher crude and adjusted odds of SI compared with those who never drank or who had abstained in the past year. Adjusted odds ratios were 26.2% to 41.4% higher than crude estimates. Among those with a history of suicide attempts, adjusted odds ratios increased by up to 41.8% in the highest and most recent consumption categories. However, none of these associations reached statistical significance.

Several factors may explain these null findings. A qualitative study examining life pathways for 15 completed suicides in Guyana identified three predominant pathways: “hard life” (46%), mental illness (20%), and interpersonal stress (20%; Shaw et al., 2025). Broader analyses have also highlighted major social and structural determinants—including economic instability, racial polarisation, and high exposure to trauma—that shape health outcomes in Guyana (Halley & Cowden, 2023).

The country’s longstanding challenges in mental health infrastructure likely amplify these contextual drivers (WHO & Ministry of Health, Guyana, 2008). It is plausible that such factors overshadow alcohol use as contributors to SI and suicide-related behaviour (SB). Studies of Guyanese youth have similarly pointed to pressure, expectations, coping limitations, and exposure to suicide as key risk factors (Arora et al., 2020).

The choice of suicide method may also be relevant. A narrative review of SB and SI in Guyana found that pesticide ingestion remains the most common means of suicide (Shaw et al., 2025). Despite regulatory efforts, access to pesticides is widespread, particularly in agricultural communities. Suicide following interpersonal conflict, often by pesticide ingestion, has been repeatedly documented in Guyana (Shaw et al., 2023). The ready availability of a highly lethal method may facilitate impulsive suicidal acts in response to acute psychosocial stressors without alcohol necessarily being involved as a precipitant. This contextual pattern may therefore partly explain why alcohol use was not independently associated with suicidal behaviour in the present analysis, although this hypothesis could not be directly examined using the STEPS data.

Strengths and Limitations

This study has several strengths, including its large sample size and the use of a random household sample drawn from 288 enumeration districts. Fieldwork procedures were rigorously designed to support nationally representative data collection. Our inquiries revealed that despite the careful identification of the households, the selection of the final respondent in the household was more of a convenience selection, which may have introduced some bias. Weighted analyses were applied to correct for sampling and nonresponse bias, ensuring appropriate representation of key demographic groups. While this procedure does not explicitly account for clustering and design effects in variance estimation, which would typically prevent overly precise estimates, it ensures that the point estimates are calibrated to the national population and are more generalizable to the study’s context. Another limitation of

this study is the relatively small number of participants reporting specific suicide-related behaviors. While multivariable models were used to control for strong sociodemographic confounders, the resulting small cell sizes for these sub-groups led to wide confidence intervals and unstable odds ratio estimates in the adjusted analysis. These specific point estimates should be interpreted with caution, and greater weight should be given to the direction of the association and the findings from outcomes with larger sample sizes, such as suicidal ideation and family history.

However, limitations must also be acknowledged. Although weights accounted for unequal probabilities of selection, the analysis did not incorporate primary sampling units or clustering. As a result, confidence intervals may be narrower than they would be under full complex survey procedures, potentially increasing the risk of Type I error. Nonetheless, the main findings were null.

The study's cross-sectional design prevents establishing directionality in the relationship between alcohol use and suicidal behaviours. Measures of alcohol use, mental health, and suicidal ideation are sensitive, raising the possibility of underreporting. Other biases common to cross-sectional surveys—including recall bias, social desirability bias, and nonresponse bias—may also apply. Importantly, STEPS does not assess alcohol use disorders; studies reporting stronger associations often rely on validated tools such as the Alcohol Use Disorders Identification Test (AUDIT; Ledden et al., 2022; Richards et al., 2020). Acute alcohol use prior to suicide attempts, a key risk factor, was also not captured. Finally, this survey did not assess the risk factors of individuals who died by suicide, among whom alcohol use is more common (Lange et al., 2022).

Next Steps

Future research should employ validated measures of alcohol use disorders and consider longitudinal designs to clarify causal relationships between alcohol use and suicidal behaviours. Qualitative research may also help to identify culturally specific themes around alcohol and suicide in Guyana (Halley & Cowden, 2023). Routine screening for SI, alcohol misuse, psychoactive substance use, and bereavement-related distress in clinical settings—especially in rural and agricultural communities—may provide opportunities for early intervention.

Conclusions

After adjusting for sociodemographic confounders and addressing disproportional selection through weighting, this study concludes that individual alcohol consumption and heavy episodic drinking are not direct predictors of suicidal ideation or behaviour in the Guyanese population. However, a significant relationship persists between specific drinking patterns and a family history of suicide. This association highlights an important link between familial mental health history and substance use, suggesting that alcohol may play a role in the intergenerational cycle of trauma or as a coping mechanism for those bereaved by suicide. Future interventions should prioritize mental health support and

substance use screening for families affected by suicide loss, particularly in rural and agricultural communities.

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Disclaimer

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