



Impact of alcohol and tobacco consumption on poverty: A study in Vietnam

Le Trang Nhung

Faculty of Economics, Thuongmai University, 79 Ho Tung Mau Str., Tu Liem, Hanoi, Vietnam

Abstract

This study examines the consumption patterns of alcoholic beverages and tobacco in Vietnam, focusing on differences by residential area, household head gender, and household income. Using household-level data from the 2018 Vietnam Household Living Standards Survey (VHLSS 2018), the findings reveal that the prevalence of alcohol and tobacco use, as well as their concurrent consumption, is higher in rural areas than in urban areas. Additionally, households headed by men are more likely to consume these substances than those headed by women. Moreover, significant differences in alcohol and tobacco expenditure are observed across income groups, with higher-income households exhibiting greater spending. However, the proportion of alcohol and tobacco expenditure relative to total household spending does not differ significantly between poor and non-poor households, indicating that the financial burden of these substances is comparable across income levels. These findings provide a critical foundation for policy discussions on controlling alcohol and tobacco consumption. Potential interventions include increasing taxes, restricting advertising, and raising public awareness to mitigate the negative public health impacts of these substances.

Keywords: alcohol consumption, tobacco consumption, poverty, Vietnam.

JEL classification: D12, I12, I18, I32, O15.

1. Introduction

The use of alcohol and tobacco poses a significant challenge for public health worldwide, with the burden being particularly severe in low- and middle-income countries. Although the adverse health effects of alcohol and tobacco use (such as an increased risk of non-communicable diseases and premature mortality) have been widely documented, the economic consequences for individuals and households have received far less scholarly attention.

Numerous studies have shown that households in low- and middle-income countries bear a substantial economic burden due to tobacco expenditure. Over 80% of the world's 1.3 billion tobacco users reside in these countries (Small *et al.*, 2024). In Indonesia, households with at least one smoker spend an average of 10.7% of their monthly budget on tobacco, often exceeding their expenditures on essential items such as staple foods, meat, and vegetables (Swarnata *et al.*, 2024). In South Africa, adult smokers spend an average of ZAR 263.1 per month on tobacco products (NDoH & SAMRC, 2024). Even without being expressed as a proportion of income, this expenditure constitutes a substantial financial burden, particularly for lower-income households in South Africa. In India, tobacco expenditure accounts for between 0.54% and 6.3% of household income in rural areas, and between 0.5% and 7.24% in urban areas. Even in a high-income country such as New Zealand, low-income households allocate up to 9.1% of their income to tobacco (Silva *et al.*, 2011).

Compared with tobacco, household expenditure data on alcohol remain relatively limited. However, evidence from Vietnam indicates that the average monthly spending on alcohol among drinkers is approximately USD 3.5, accounting for 1.8% of household income in rural areas (Kim *et al.*, 2013). Although this proportion appears lower than tobacco expenditure in Indonesia, it still represents a diversion of household resources that could have significant implications for very low-income households. In South Africa, although alcohol consumption is more prevalent among higher-income individuals, lower-income groups tend to consume greater quantities and devote a larger proportion of their household budgets to alcohol (Nadkarni *et al.*, 2023). This pattern parallels the trend observed for tobacco expenditure, suggesting that both substances may impose a disproportionate financial burden on poorer households.

The concurrent use of alcohol and tobacco is well-documented to have compounding effects that increase the risk of multiple health conditions. The economic implications of these two substances are typically examined separately, even though consistent evidence indicates that individuals who consume alcohol are more likely to smoke, and vice versa (Leon *et al.*, 2007; Silva *et al.*, 2011). A growing body of literature further supports the co-occurrence of alcohol and tobacco use, yet empirical studies investigating the economic consequences of their joint consumption remain limited. Therefore, this study aims to analyze household expenditure on the concurrent use of tobacco and alcoholic beverages in relation to household characteristics in Vietnam.

2. Research methodology

The data used in this study are drawn from the 2018 Vietnam Household Living Standards Surveys (VHLSS), conducted by the General Statistics Office of Vietnam to assess the living standards of different population groups. The dataset comprises 9,396 households, including 2,381 female-headed and 7,015 male-headed households, of which 6,570 households reside in rural areas and 2,826 in urban areas. The VHLSS 2018 includes detailed indicators of alcohol, beer, tobacco, and “thuốc lá” (local tobacco) consumption, as well as average household income and expenditure measures. In this study, alcohol and beer products are combined into a single category named “alcohol”, while tobacco and “thuốc lá” are grouped as “tobacco”. Although the VHLSS does not provide individual-level expenditure data, household-level expenditure remains a helpful indicator for assessing household consumption patterns.

The study employs statistical analyses to examine differences in the consumption behaviors of alcoholic beverages and tobacco across income groups and residential areas. The Chi-square (χ^2) test is applied to compare frequency distributions among groups. In addition, independent-samples t-tests are used to identify differences in average expenditure between urban and rural households, and between poor and non-poor households, in 2018.

A one-way analysis of variance (ANOVA) is conducted to assess variations in mean household expenditure on the concurrent use of alcoholic beverages and tobacco across different groups. When statistically significant differences are identified, post-hoc analyses using Tamhane's T2 test are performed to determine which specific group pairs differ significantly.

3. Research results

Descriptive statistics on household heads and household characteristics indicate substantial diversity in terms of age, education level, gender, and socioeconomic conditions (Table 1). Regarding household head characteristics, the mean age is 52.4 years (SD = 13.67), indicating considerable variation in age. The average years of education among household heads is 7.52, with a relatively high standard deviation, suggesting notable disparities in educational attainment. In terms of gender composition, male-headed households outnumber female-headed ones.

In terms of household characteristics, most households are located in rural areas, reflecting the predominantly rural composition of the national sample. The average household size is 3.73 members, including 2.66 adults (aged 18 years or older) per household. In economic terms, approximately 9% of surveyed households were classified as poor in 2018. The average monthly household income was VND 3,852,000, with a significant standard deviation (VND 3,530,000), indicating substantial income inequality across households. The mean monthly expenditure on food was VND 5,463,000, also exhibiting high variability (SD = VND 4,127,000), ranging from 0 to VND 68,605,000 per month. This wide dispersion highlights significant differences in households' capacity to meet basic consumption needs.

TABLE 1: Summary statistics

Variable	Symbol	Unit	Mean	Std. dev.	Min	Max	Description
Household head characteristics							
Education	edu	years	7.52	3.69	0	12	Years of schooling
Gender	gender		1.25	0.43	1	2	Male = 1, Female = 0
Age	age	years	52.40	13.67	19	101	
Household characteristics							
Area of residence	area		0.30	0.49	0	1	Urban = 1, Rural = 0
Total household members	member	persons	3.73	1.6	1	15	

Total adult members	member_adult	persons	2.66	1.07	1	9	Number of members aged 18 and above
Poor household in 2018	poor_2018		0.09	0.29	0	1	Poor household in 2018 = 1, otherwise = 0
Average monthly income	income	thousand VND	3,852	3,530	-440	63,295	
Monthly food expenditure	expense	thousand VND	5,463	4,127	0	68,605	

Source: Author's calculation based on VHLSS 2018.

TABLE 2: Alcohol and tobacco use by area of residence

	Rural	Urban	Total
Households consuming alcoholic beverages (%)	52.19	44.55	49.89
Households consuming tobacco (%)	44.96	35.81	42.47
Households consuming both alcohol and tobacco (%)	30.23	22.72	27.97

Source: Author's calculation based on VHLSS 2018.

According to descriptive statistics, 52.19% of rural households and 44.55% of urban households reported consuming alcoholic beverages, while the corresponding figures for tobacco use were 44.96% and 35.81%, respectively. The study also examines the concurrent use of both alcoholic beverages and tobacco. Among 4,688 households consuming alcohol, 2,628 also reported tobacco use, accounting for 56.06%. Similarly, among 3,991 tobacco-using households, 2,628 also consumed alcohol, representing 65.85%. The results further indicate that the prevalence of concurrent alcohol and tobacco use is significantly higher among rural households (30.23%) than among urban households (22.73%), and this difference is statistically significant ($\chi^2 = 55.33$; d.f. = 1; $p < 0.001$).

TABLE 3: Concurrent use of alcohol and tobacco by income quintile

Average income group	Urban areas (%) n = 2,826	Rural areas (%) n = 6,570
Quintile 1 (lowest)	19.77	29.86
Quintile 2	20.42	29.30
Quintile 3	22.29	32.16
Quintile 4	23.05	29.98
Quintile 5 (highest)	22.52	29.85
Total	22.73	30.23

Source: Author's calculation based on VHLSS 2018.

To examine differences in alcohol and tobacco consumption patterns across income levels, the study divides the 9,396 households in the sample into five income quintiles, with Quintile 1 representing the lowest-income group and Quintile 5 the highest-income group. Each quintile comprises approximately 20% of the total sample. The prevalence of concurrent alcohol and tobacco use by income group is presented in Table 3. Results from the Chi-square (χ^2) test indicate that while there are variations in concurrent use across income quintiles, these differences are not statistically significant in either urban areas ($\chi^2 = 3.99$; d.f. = 4; p = 0.47) or rural areas ($\chi^2 = 3.21$; d.f. = 4; p = 0.522).

TABLE 4: Average monthly expenditure on concurrent consumption of alcohol and tobacco

Category	Average monthly expenditure on alcohol and tobacco in 30 days (95% CI)	Share of alcohol and tobacco expenditure in total annual food consumption (95% CI)
	Unit: thousand VND	Unit: %
Gender of household head		
Female-headed households	92.75	1.60
Male-headed households	143.76	2.87
Total	130.83	2.55

Poverty status		
Poor households (2018)	75.78	2.40
Non-poor households	136.24	2..57
Total	130.83	2.55
Monthly per capita income quintile		
Quintile 1 (lowest)	84.30	2.43
Quintile 2	113.00	2.54
Quintile 3	141.17	2.73
Quintile 4	142.95	2.44
Quintile 5 (highest)	172.82	2.59
Total	130.83	2.55
Area of residence		
Urban	140.82	2.06
Rural	126.54	2.76
Total	130.83	2.55

Source: Author's calculation based on VHLSS 2018.

Table 4 compares the average household expenditure on concurrent consumption of alcohol and tobacco, as well as the share of this expenditure in total annual food consumption, across various socio-economic and demographic characteristics: gender of the household head, poverty status in 2018, income quintile, and area of residence. The percentage share was calculated using the mean expenditure values of each income group. On average, households that consume both alcohol and tobacco spend approximately VND 130,830 per month on these products, accounting for 2.55% of their total annual food consumption expenditure.

According to the household head's gender, ANOVA results indicate that households headed by men spend significantly more on concurrent alcohol and tobacco consumption than those headed by women ($F(1, 9,394) = 123.21; p < 0.001$). Moreover, the share of alcohol and tobacco expenditure in total annual food and beverage spending is also significantly higher among male-headed households compared to their female-headed counterparts.

Regarding poverty status, the ANOVA results reveal a statistically significant difference in total expenditure on concurrent alcohol and tobacco consumption between poor and non-poor households ($F(1, 9394) = 74.09$; $p < 0.001$). Specifically, the mean expenditure among non-poor households (VND 136,240) is substantially higher than that of poor households (VND 75,780). The Bartlett's test for homogeneity of variances ($\chi^2(1) = 325.90$; $p < 0.001$) indicates unequal variances between the two groups, reflecting notable disparities in expenditure variability. However, when considering the share of alcohol and tobacco expenditure in total household food and beverage spending, the difference between poor and non-poor households is not statistically significant ($F(1, 9394) = 1.66$; $p = 0.198$). This result implies that although poor households spend less in absolute terms, the relative financial burden of concurrent alcohol and tobacco consumption remains comparable to that of non-poor households.

Regarding income quintiles, the proportion of household expenditure allocated to concurrent alcohol and tobacco consumption remains relatively stable across income groups, ranging from 2.43% to 2.73%. Statistical tests indicate no significant difference in this expenditure share across income groups, suggesting a degree of prioritization for these goods regardless of household income.

Regarding the residential area, the results of the one-way ANOVA show a statistically significant difference in total spending on concurrent alcohol and tobacco use between urban and rural households ($F(1, 9394) = 10.61$; $p = 0.0011$). Specifically, the mean expenditure in urban areas (VND 140,820) is higher than that in rural areas (VND 126,540). However, the Bartlett's test for homogeneity of variances ($\chi^2(1) = 19.90$; $p < 0.001$) suggests unequal variances between the two groups, which should be taken into account when interpreting the results. Moreover, when examining the ratio of alcohol and tobacco expenditure to total household income, the difference between urban and rural areas is also statistically significant ($F(1, 9394) = 79.05$; $p < 0.001$). Rural households allocate a higher proportion of their income to concurrent alcohol and tobacco consumption (2.76%) compared to urban households (2.06%). Nevertheless, the Bartlett's test ($\chi^2(1) = 120.10$; $p < 0.001$) again reveals heterogeneity of variances between the two groups. Overall, these findings indicate that although the absolute level of spending is higher in urban areas, rural households bear a relatively greater financial burden in terms of income share devoted to alcohol and tobacco consumption.

TABLE 5: Mean expenditure on alcohol and tobacco consumption by income quintile

Income quintile	Mean expenditure on alcohol (95% CI)	Mean expenditure on tobacco (95% CI)	Mean expenditure on alcohol and tobacco (95% CI)
Unit	thousand VND	thousand VND	000 VND
Quintile 1 (lowest)	39.90	44.39	84.30
Quintile 2	45.40	67.61	113.00
Quintile 3	59.79	81.38	141.17
Quintile 4	68.72	74.23	142.95
Quintile 5 (highest)	93.51	79.30	172.82
Total	61.46	69.38	130.83

Source: Author's calculation based on VHLSS 2018.

To examine whether concurrent expenditure on alcohol and tobacco is higher than spending on either product alone, the study compared mean expenditure levels. As shown in Table 5, the average monthly expenditure on concurrent alcohol and tobacco use was VND 130,830 - more than twice the average expenditure on alcohol (VND 61,460) or tobacco (VND 69,370) alone. This spending pattern suggests that households engaging in concurrent use do not offset the consumption of one substance by reducing the other, but rather maintain or increase spending on both.

The difference in concurrent alcohol and tobacco expenditure across income quintiles was statistically significant ($F(4, 9391) = 56.92, p < 0.001$) (Table 5). To further identify which income groups differed significantly, Tamhane's T2 post hoc test was conducted. The results indicate that all higher-income groups had substantially greater concurrent expenditure than the lowest-income group ($p < 0.05$). Households in the highest income quintile (Quintile 5) spent significantly more on both alcohol and tobacco than all other groups, while no statistically significant difference was found between Quintiles 3 and 4. Overall, the findings suggest that concurrent alcohol and tobacco expenditure tends to increase with income, although the disparity is most pronounced between the highest- and lowest-income households.

4. Discussion

Based on the empirical findings, this study highlights several notable aspects regarding alcohol and tobacco consumption patterns in Vietnam.

First, there is a distinct urban–rural divide in household consumption behaviors. The results show that the proportion of households consuming alcohol, tobacco, and both substances concurrently is higher in rural areas than in urban areas, consistent with the findings of Jolex & Kaluwa (2022). This disparity may be attributed to cultural, socioeconomic, and community-based factors. In rural contexts, the use of these stimulants is often intertwined with community lifestyles and social gatherings. In contrast, in urban areas, greater health awareness and the influence of consumption control measures may contribute to lower prevalence rates.

Second, the data also indicate that households with male heads exhibit higher levels of concurrent alcohol and tobacco consumption compared to those headed by females. This finding is consistent with the general patterns observed in previous studies on gender differences in substance use. Wilsnack *et al.* (2018) reported that men tend to consume alcohol more frequently than women due to cultural, social, and biological factors. For many men, drinking is often perceived as a means of social interaction and an expression of personal identity.

Third, the study reveals a significant difference in total expenditure on concurrent alcohol and tobacco consumption between poor and non-poor households. However, when considering the expenditure ratio, the difference between the two groups is not statistically significant. This non-significant result implies that although poor households spend less in absolute terms, the proportion of their spending on alcohol and tobacco products does not differ substantially from that of non-poor households. In other words, despite lower total expenditures, the financial burden associated with concurrent alcohol and tobacco consumption may remain comparable between poor and non-poor households.

Fourth, the results show no statistically significant difference across income groups in the prevalence of concurrent alcohol and tobacco use. This consistency across income levels suggests that the consumption behavior for these two products is not strongly influenced by household income. However, when examining expenditure levels, the study finds a statistically significant difference among income groups. Households with higher income levels spend more on alcohol and tobacco products compared to those in lower income

groups. This result is consistent with previous studies, such as Silva *et al.* (2011), which reported that higher-income individuals tend to spend more on such stimulants rather than reducing their consumption. Furthermore, the findings suggest that concurrent users do not appear to substitute or offset one substance for the other; instead, they are likely to maintain high consumption levels of both, reinforcing the combined financial and health burden associated with dual use.

5. Conclusion

This study provides valuable insights into household consumption behavior regarding alcohol and tobacco use in Vietnam, highlighting notable differences across residential areas, income levels, and household head gender. These findings provide an empirical foundation for evidence-based policymaking to mitigate the adverse health and economic effects of these substances. To address the dual burden posed by alcohol and tobacco consumption, policymakers and public health authorities should consider implementing comprehensive control measures. Potential interventions include raising excise taxes on alcoholic and tobacco products, enhancing public awareness of the health and financial consequences of concurrent use, and tightening restrictions on advertising and marketing. Such strategies would help reduce overall consumption and alleviate the associated public health and socioeconomic impacts, particularly among vulnerable population groups.

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