

Original Research



Financial burden of alcohol consumption and household expenses among adult males in Colombo District: a cross-sectional study

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Abstract

Introduction: Alcohol consumption has created a significant economic burden globally, also in developing countries like Sri Lanka. In Colombo District, increased household spending on alcohol compromises essential needs such as food, healthcare and education. Understanding the financial impact of alcohol use is timely to plan out targeted public health policies and economic interventions.

Objectives: To describe the financial impact of alcohol use on household expenses among adult males in Colombo District

Methods: A cross-sectional survey was conducted from June 2019 to June 2020 among 1,106 Sinhala-speaking adult males in the Colombo District. The study objective was to assess the financial burden of alcohol consumption and household expenses among adult males in Colombo district. A two-stage cluster sampling method selected 58 clusters from *Grama Niladhari* divisions. Data were collected using an interviewer-administered, validated questionnaire. Alcohol consumption patterns and monthly household expenditures on alcohol and other goods were compared across low-, middle- and high-income groups. The Mann–Whitney U and Kruskal–Wallis tests were used to assess differences in spending behaviour between current, non-current and lifetime abstainers of alcohol.

Results: Out of 1106 participants, 29.3% were current drinkers. Among low- and middle-income groups, current drinkers had spent significantly lower money on food, household items, and medical care compared to lifetime abstainers ($p < 0.05$). Current drinkers consistently spent more on alcohol than occasional users ($p < 0.001$), which contributed to household financial strain. In contrast, alcohol spending had no significant impact on high-income households. Expenditure on education and transport remained stable across all groups. The results highlight alcohol's disproportionate financial burden on poorer households that aggravate economic vulnerability and reducing access to basic needs and health services.

Conclusions & Recommendations: Alcohol consumption strains household budgets in low- and middle-income groups, worsening poverty. Awareness campaigns must target vulnerable communities to promote financial and health literacy. Policy reform is essential to mitigate alcohol-related harm, reduce economic disparities, and protect long-term family and national well-being.

Key words: *Alcohol drinking, Alcohol economics, Alcohol abuse, Economic burden*

Introduction

Alcohol consumption has become a significant economic burden worldwide with a greater impact in developing countries (1). The financial strain of alcohol use is well-known to extend across healthcare, workplace productivity, and household budgets (2). In Sri Lanka, where income disparities are substantial, the financial consequences of alcohol use are deeply felt at individual, family and national levels (3). While the government generates revenue from alcohol taxation, the costs associated with healthcare lost productivity and social harm far outweigh these earnings (4-5). Among all districts in Sri Lanka, Colombo stands out as a focal point, given its higher income levels, urban lifestyle and easy access to alcohol (6-7).

The global economic cost of alcohol consumption ranges from 0.4% to 5.44% of a country's GDP (8). In Sri Lanka, alcohol-related diseases alone accounted for approximately USD 885.85 million in 2015, representing nearly 1.07% of the GDP [3]. This burden falls disproportionately on low-income households, where alcohol expenditure is often at the expense of essential needs such as food, education and healthcare (9-10). For many Sri Lankan workers with unstable incomes, alcohol consumption further exacerbates financial struggles (3).

Rising household spending on alcohol is an increasing concern. According to the 2016 Household Income and Expenditure Survey, alcohol expenses grew from Rs. 123.69 (2.7% of total expenditure) in 2013 to Rs. 474 (2.9%) in 2016 (11). This burden is particularly harsh on poorer families, with the lowest income groups spending up to 20% of their earnings on alcohol (12). This phenomenon, known as the "crowding-out effect," leaves less money for food, schooling, and medical care, deepening the cycle of poverty (13).

Beyond household finances, alcohol also impacts workplace productivity. Work absenteeism and premature deaths contribute to economic losses that

exceed alcohol tax revenues (13). These losses not only hinder economic growth but also place immense pressure on the healthcare system. Similar patterns are observed in other Asian countries. In India, spending on alcohol and tobacco has been linked to financial distress (9, 14), while in Vietnam, alcohol consumption reduces household spending on food and other necessities (15).

Although average household incomes rose to Rs. 104,581 in 2016 (16), alcohol consumption also increased along with reduced productivity and greater dependence on government-funded healthcare. As the nation's economic hub, Colombo is at the centre of this issue. Despite existing measures like taxation and public awareness campaigns, alcohol remains deeply embedded in Sri Lankan culture. The gap between alcohol tax revenue and its true economic cost highlights the need for stronger policies. To gain an updated understanding, this study aims to assess the financial burden of alcohol consumption on household expenses among adult males in the Colombo district.

Methods

A cross-sectional study was conducted in Colombo District, Sri Lanka from June 2019 to June 2020. This district features a diverse population spread across urban, rural and estate sectors, with the urban sector accounting for 77.6% of the total population. The study population comprised adult males aged 18 years and above who were permanent residents of the Colombo District. Eligibility criteria required individuals to have lived continuously in the district for at least six months prior to data collection. Exclusion criteria included individuals who were living or working abroad during the study period, those who were hospitalized, jailed, or institutionalized at the time of data collection, those who cannot speak Sinhala language and individuals deemed mentally unfit to participate in the survey.

The sample size for this study was calculated using alcohol use prevalence estimates from the 2015 Sri Lanka STEPS survey, which reported 34.8% of current drinkers. According to the standard formula in prevalence studies, with a 95% confidence level ($Z=1.96$) and a precision level of 4% ($d=0.04$), the minimum required sample sizes were estimated at 582 for lifetime abstainers, 211 for non-current drinkers, and 546 for current drinkers. Given the use of a cluster sampling design, a design effect of 2 was applied to account for intra-cluster correlation, resulting in an adjusted sample size of 1092. With an additional margin for non-response, the final sample of 1,160 individuals was drawn from 55 clusters (20 individuals per cluster). For this purpose, out of all *Grama Niladhari* (the smallest administrative unit in Sri Lanka) divisions of Colombo, 55 were selected as clusters proportionate to their cumulative populations. Within each selected GN division, 20 households were selected, with the first household randomly chosen and subsequent eligible participants selected systematically from that house or neighbouring houses if necessary. When multiple eligible individuals were present in one household, one was randomly selected.

The principal investigator (PI) developed the study instrument through literature review and consulting experts. The variables were adapted from the validated tool used in Sri Lanka's 2016 National Income and Expenditure Survey. The instrument was developed in English as an interviewer-administered questionnaire which was then translated into Sinhala and back translated for consistency of meaning. Face validity was ensured by the PI and supervisors, confirming that all financial burdens related to alcohol-related expenses were covered. Content validity was reviewed by experts to ensure clarity. The tool was pre-tested on a group of 20 unsampled study subjects. Reliability was tested through test-retest reliability on 5% of study subjects using Spearman's coefficient which returned sufficient reliability ($r=0.7$). To ensure data quality, recall bias

was minimized through cross-verification. Trained data collectors obtained informed consent and ensured confidentiality, voluntary participation and data quality.

Data analysis

Data from Epicollect 5 were imported into Statistical Package for the Social Sciences (SPSS) version 20 for analysis. The median per capita expenditure of alcohol and interquartile range (IQR) was assessed among current and non-current drinkers. The Mann-Whitney U test was used to compare alcohol expenditures between current and non-current drinkers to check for statistical significance (18). The median per capita alcohol expenditure was compared across three income groups, namely low-income households (below the 25th percentile), middle-income households (between the 25th and 50th percentiles) and high-income households (above the 50th percentile).

Alcohol consumption was classified according to WHO STEPS criteria. A current drinker was a study subject who had consumed any amount of alcohol within the past 30 days. A never drinker (lifetime abstainer) was defined as a study participant who had never consumed even a single standard drink of alcohol in their lifetime. A former drinker was someone who had consumed alcohol at some point in their life but not within the past 12 months. A non-current drinker was defined as a participant who had consumed alcohol within the past 12 months but not in the last 30 days. Current drinkers were further classified as daily drinkers (participants who consumed alcohol daily for the last 30 days) and non-daily drinkers (participants who consumed alcohol during the last 30 days but not on a daily basis) over the past 30 days.

The study analysed household spending on food and non-alcoholic beverages, housing, education, health and transport. and examined it across the same three income groups using the Kruskal Wallis test (18).

Results

A total of 1106 individuals responded to the study, giving a response rate of 95.4%. Their mean age was

45.7 (SD=17.4) years. The majority were urban residents (77.7%) and Sinhalese (75.6%) (Table 1).

Table 1: Socio-demographic characteristics of the study population (N=1106)

Characteristic		No.	%
Age	18 - 29 years	275	24.9
	30 - 44 years	273	24.7
	45 - 59 years	242	21.9
	60 - 74 years	280	25.3
	75 - 88 years	36	3.2
Ethnicity	Sinhala	836	75.6
	Tamil	110	9.9
	Muslim	159	14.4
	Burgher	1	0.1
Religion	Buddhist	787	71.2
	Hindu	81	7.3
	Islam	159	14.4
	Catholic/Christian	79	7.1
Educational qualification	No formal schooling	45	4.1
	Elementary education 1 – 5	11	1.0
	Secondary	757	68.4
	Tertiary (Degree or above)	293	26.5
Employment status	Employed (Permanent)	212	19.2
	Employed (Temporary)	246	22.2
	Self-employed	270	24.4
	Retired	71	6.4
	Unemployed	307	27.8
Marital status	Unmarried	339	30.7
	Married	752	68
	Separated/ Divorced	6	0.5
	Widowed	9	0.8
Personal average monthly	< 83.3	68	6.1
Income (USD)	83.3 - 166.6	370	33.5
	166.7 - 250.0	211	19.1
	250.1 and above	82	7.4
	No response	375	33.9
Income category	Low income (< \$151)	257	23.2
	Middle income (\$151 – 218)	579	52.4
	High income (> \$218)	270	24.4

The household income distribution was skewed with a median of \$276 (IQR: \$168). Based on income quartiles, participants were categorized into low-income (<\$151), middle-income (\$151–218) and high-income (>\$218) groups. The majority (52.4%) belonged to the middle-income category. There were 324 current drinkers (29.3%; 95% CI: 26.7%,

32.0%), 99 non-current drinkers (8.9%; 95% CI: 7.4%, 10.8%), 168 former drinkers (15.2%; 95% CI: 13.2%, 17.4%) and 515 lifetime abstainers (46.6%; 95% CI: 43.6%, 49.5%). Among the current drinkers, 21% (n=68) were daily drinkers and 256 (79%) were non-daily drinkers (Figure 1).

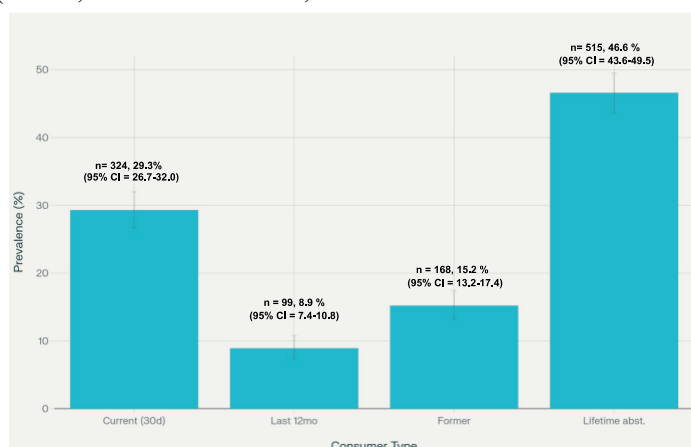


Figure 1: Distribution of study participants in the alcohol economic burden study in Colombo District by drinking status (N=1106)

The x-axis shows the types of consumers: Current drinker (30 days); Consumed last 12 months (not current); Former drinker; and Lifetime abstainer. 95% error bars shown for the 95% confidence interval of each category.

Daily drinkers spent significantly more on alcohol than non-daily drinkers across all income categories (Table 2). In the low-income category, median monthly spending on alcohol was \$78.10 (IQR: \$38.30) vs. \$10.08 (IQR: \$12.61) for non-daily drinkers ($p<0.001$). In the middle-income group,

daily drinkers spent \$85.67 (IQR: \$27.71) compared to \$11.09 (IQR: \$15.12) for non-daily drinkers ($p<0.001$). High-income daily drinkers spent \$113.38 (IQR: \$100.88), while non-daily drinkers spent \$15.62 (IQR: \$28.06) ($p<0.001$).

Table 2: Distribution of alcohol expenditure among current drinkers according to household monthly income categories (n=324)

Household monthly income category*	Status of current drinkers	Median (USD)*	Q1 (USD)	Q3 (USD)	Significance **
Low-income (n=72)	Daily drinker	78.1	55.4	93.7	p<0.001
	Non-daily drinker	10.1	6.1	17.6	
Middle-income (n=180)	Daily drinker	85.7	68.0	95.7	p<0.001
	Non-daily drinker	11.1	6.6	21.7	
High-income (n=72)	Daily drinker	112.1	64.2	16.5	p<0.001
	Non-daily drinker	15.6	8.5	36.5	

*In 2020, the average exchange rate was approx. 198.48 LKR per USD; **Mann Whitney U test used to assess significance

Expenditure patterns across different income categories show notable differences in spending

among drinker groups, particularly in low- and middle-income households (Table 3). Never drinkers

spent significantly more on food & non-alcoholic beverages compared to current drinkers (USD 154.74) and non-current drinkers (USD 124.04) in both low-income (USD 178.06) and middle-income groups (USD 157.67) ($p<0.001$). A similar trend was observed in household item expenditures, where never drinkers spent most in both low-income (USD 37.97 vs. 29.15; $p=0.03$) and middle-income groups (USD 49.38 vs. 38.59; $p<0.001$). Medical care costs also showed significant variation, with never

drinkers in low-income ($p=0.019$) and middle-income ($p<0.01$) groups spending the highest. However, education and transport expenditures did not show any significant association with drinking status across income groups. In the high-income category, spending patterns remained relatively uniform across all drinker groups with no significant differences. These findings suggest that the financial impact of drinking habits is more pronounced in lower-income households.

Table 3: Relationship of alcohol consumption and income groups by household expenditure

Household monthly income	Drinking status	Median expenditure in USD (difference between quintiles 1 and 3)				
		FNAB*	Household items	Medical care	Education	Transport
Low (n=257)	Current	124.0 (102.8-174.4)	29.2 (20.3-44.9)	10.1 (7.6-15.1)	26.5 (25.2-27.7)	5.0 (2.5-27.7)
	Non-current	128.7 (85.1-180.5)	29.8 (17.9-56.6)	12.6 (8.8-17.6)	27.7 (16.1-37.8)	6.1 (3.0-12.6)
	Never	154.7 (122.9-212.8)	37.9 (24.7-62.8)	15.1 (10.1-17.6)	22.7 (7.1-30.2)	10.1 (3.0-20.2)
	Significance	p=0.001	p<0.05	p<0.05	p>0.05	p>0.05
Middle (n=579)	Current drinker	157.6 (129.1-201.7)	38.6 (27.3-55.4)	10.1 (7.6-17.6)	30.2 (17.6-45.4)	21.6 (5.0-61.7)
	Non-current drinker	169.4 (145.4-197.6)	46.6 (29.5-71.0)	12.6 (10.1-17.6)	30.2 (17.1-50.4)	25.2 (5.0-57.9)
	Never drinker	178.1 (145.2-227.9)	49.4 (38.9-71.2)	15.1 (10.1-20.2)	35.3 (20.2-55.4)	28.5 (10.1-47.9)
	Significance	p<0.001	p<0.001	p<0.01	p>0.05	p>0.05
High (n=270)	Current drinker	193.5 (153.9-289.5)	58.7 (36.3-162.7)	11.3 (7.5-15.1)	45.4 (25.2-60.5)	50.4 (21.4-81.9)
	Non-current drinker	175.4 (145.2-258.6)	53.9 (41.1-92.1)	13.9 (10.1-25.2)	45.4 (27.7-55.4)	57.9 (15.1-84.5)
	Never drinker	186.9 (149.2-286.9)	58.6 (39.2-85.2)	12.6 (10.1-15.1)	42.8 (25.2-60.5)	45.4 (21.4-80.6)
	Significance	p>0.05	p>0.05	p>0.05	p>0.05	p>0.05
Total (N=1106)	Current drinker	156.7 (127.2-201.7)	40.1 (27.1-61.8)	10.1 (7.6-15.1)	30.2 (20.2-50.4)	22.7 (5.1-65.5)
	Non-current drinker	166.4 (127.1-201.7)	45.9 (28.3-69.8)	12.6 (10.1-25.2)	32.8 (17.6-52.9)	22.7 (5.0-62.9)
	Never drinker	175.4 (141.2-235.9)	49.2 (36.2-74.2)	15.1 (10.1-17.6)	34.3 (17.6-55.4)	25.2 (8.1-50.4)
	Significance	p<0.001	p<0.001	p<0.001	p>0.05	p>0.05

Discussion

In this study, spending on alcohol varied by income level. A clear pattern emerged with daily drinkers consistently spending more on alcohol than those who drank less frequently ($p < 0.001$). Among lower- and middle-income groups, this expenditure on alcohol was at the cost of essential needs, including food ($p < 0.01$), necessities ($p < 0.05$), and medical care ($p < 0.01$). The findings indicate that alcohol consumption places a significant strain on purchasing household items and medical care among daily drinkers of lower- and middle-income groups. Regardless of income level, those who drank daily spent considerably more on alcohol than those who consumed it less frequently ($p < 0.001$). This aligns with previous studies (10, 14) that found that alcohol expenditure often competes with essential household spending (3). In lower-income households, alcohol use was directly linked to reduced spending on household needs and healthcare, exacerbating financial difficulties for already struggling families as described by other researchers (1, 19). This suggests that current drinkers in lower income category ($p < 0.001$) may prioritize alcohol consumption despite low incomes, potentially at the expense of other essentials, which aligns with earlier findings about alcohol competing with basic household needs such as food and medical care (20).

Sri Lanka's workforce is largely employed in the informal sector, where incomes are both low and unstable (21-22). In such households, alcohol expenses divert funds away from crucial needs like food, education and medical care (23). Research has consistently shown that high spending on alcohol and tobacco results in budget cuts for vital necessities, ultimately harming long-term family well-being (9). Beyond its impact on household budgets, alcohol consumption also contributes to increased healthcare costs, further straining family finances (3, 24-25). This study found that frequent drinkers, particularly

those of working age were at a higher risk of injury and the associated financial burden.

Among low- and middle-income groups, spending on household items ($p < 0.05$) and medical care ($p < 0.05$) was significantly lower among current drinkers, indicating that alcohol consumption diverts funds from essential needs. Lower spending among current drinkers may be confounded by factors like income, employment, education, health status, mental health, household size and access to services, which also influence essential expenditure patterns. This result confirms previous research highlighting the financial strain due to alcohol in economically unstable households (3). However, education and transport expenditure remained unaffected across all income levels ($p > 0.05$), possibly due to their necessity in daily life as well as availability of free education in Sri Lanka (26-27). This finding contrasts with other study reports that conclude lower educational attainment in families when chief occupant indulges in problem drinking (28). In high-income households, alcohol spending did not significantly affect any expense category, highlighting the disparity in financial resilience.

Chronic illnesses linked to alcohol use, such as liver disease and cardiovascular conditions, impose an even greater long-term financial strain (3, 29). As families allocate more of their resources to managing alcohol-related health problems, they are forced to cut down on other essential expenditures, deepening their economic struggles (1, 30). The financial impact extends beyond individual households, placing a heavy burden on the national healthcare system and reducing overall productivity. Addressing these issues requires policy measures aimed at mitigating alcohol-related harm and reducing its financial toll. Public awareness campaigns, particularly in low-income communities, could play a crucial role in alleviating these challenges.

A few limitations of the study are noted. Sample size calculations were based on cumulative population data rather than male-only population figures. Excluding females limits the study's generalizability to entire population. The accuracy of data on alcohol consumption and financial expenditure may have been affected by recalling past behaviours or costs. The COVID-19 pandemic during which the study's data was collected might have influenced the expenditure and drinking patterns of the subjects.

Conclusions & Recommendations

This study reveals that alcohol consumption, in

particular daily drinking, imposes a significant financial burden on households, especially among low- and middle-income groups. Daily drinkers consistently spent more on alcohol in contrast to reduced expenditure on essential needs such as food, household items and healthcare. These financial trade-offs were not observed among high-income earners suggesting that economically vulnerable families disproportionately bear the economic impact of alcohol use. The findings highlight the urgent need for targeted public health interventions. Integrating alcohol harm reduction into existing social and health support systems is essential to mitigate long-term impact on both families and the national economy.

Public Health Implications

- The findings highlight alcohol consumption as a major contributor to financial instability among low- and middle-income households in Colombo District of Sri Lanka.
- The diversion of limited income from essential needs such as food, healthcare, and housing, exacerbates existing health disparities and deepens poverty cycles.
- These patterns contribute to long-term negative health outcomes and increased reliance on public healthcare services.
- Addressing this issue requires integrated strategies, including fiscal policy, health education, and community outreach, with targeted interventions to reduce alcohol use and its impact on families and national health systems.

Author Declarations

Competing interest: There are no competing interests for any author

Ethics approval and consent to participate: Ethics clearance was granted by the Ethics Review Committee of the Faculty of Medicine, University of Colombo, Sri Lanka (Reference: EC-19-050). Administrative approval for the study was obtained from the Provincial Director of Health Services (PDHS), Western Province and Regional Director of Health Services (RDHS), Colombo District before commencing the study. Informed written consent was obtained from each participant prior to data collection.

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Contributions: MK conceptualized the study, designed the methodology and oversaw data collection, contributed to data analysis and interpretation, and drafted and revised the manuscript critically for important intellectual content. NT contributed to design the study methodology, data analysis, validation of results and interpreted findings and provided critical revisions and contributed to drafting the manuscript. VK contributed to design the study methodology, data analysis and interpreted findings; and provided critical revisions and contributed to drafting the manuscript.

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