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Prevalence and determinants of smoking behavior among older adults in Dhurkot Rural Municipality, Nepal

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Abstract

This study examined the alcohol consumption among older adults in Dhurkot Rural Municipality, Gulmi District, Nepal. A community-based cross-sectional study was conducted among 250 adults aged 60 years and above. Participants were selected from a total eligible population of 665 using the Yamane sample size formula and a systematic random sampling technique. Data were collected through structured face-to-face interviews using a pretested questionnaire. Associations between alcohol consumption and explanatory variables were assessed using chi-square tests, and binary logistic regression analysis was performed to identify independent predictors. Statistical analyses were conducted using IBM SPSS Statistics version 25, with statistical significance set at $p < 0.05$. Alcohol consumption varied significantly across several socio-demographic and socioeconomic characteristics of the respondents. Bivariate analysis showed significant associations between alcohol consumption and age, occupation, household ownership, agricultural land ownership, source of drinking water, access to sanitation, access to electricity, and receipt of the old-age allowance. In the multivariable logistic regression model, age, occupation, and ethnicity remained significant predictors of alcohol consumption. Older adults aged 65–69 years were significantly more likely to consume alcohol than those aged 75 years and above (OR = 8.62; 95% CI: 1.16–63.89). Likewise, respondents engaged in daily wage labour had substantially higher odds of alcohol consumption than those involved in household work (OR = 10.01; 95% CI: 0.89–111.72). In contrast, Brahmin older adults were significantly less likely to consume alcohol than Newar respondents (OR = 0.03; 95% CI: 0.02–0.39), reflecting the influence of cultural and religious norms on drinking behaviour. Alcohol consumption among older adults in Dhurkot Rural Municipality is strongly influenced by age, occupation, and ethnicity. These findings underscore the importance of culturally appropriate and community-based interventions targeting vulnerable groups to reduce harmful alcohol use and promote healthy ageing in rural Nepal.

Keywords: Older adults, alcohol consumption, logistic regression, Socio-demographic factors



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Introduction

General Background

Population ageing is one of the most significant demographic transitions of the twenty-first century. Improvements in healthcare, nutrition, and living conditions have contributed to increased life expectancy, resulting in a rapidly growing population of older adults worldwide. Nepal is also experiencing this demographic shift. According to the Central Bureau of Statistics (CBS, 2021), the proportion of people aged 60 years and above has steadily increased over recent decades owing to declining fertility and mortality rates. While this demographic transition reflects improvements in population health and socioeconomic development, it also presents new public health challenges, particularly those related to chronic diseases, functional decline, mental health, and health-risk behaviours among older adults.

Alcohol consumption is recognized as one of the leading behavioural risk factors contributing to the global burden of disease. The World Health Organization (WHO, 2022) estimates that harmful alcohol use accounts for more than three million deaths annually and is associated with over 200 diseases and injury-related conditions. Excessive alcohol consumption increases the risk of cardiovascular disease, liver disorders, several types of cancer, diabetes, cognitive impairment, depression, and accidental injuries. Among older adults, these risks are further amplified by age-related physiological changes, multiple chronic illnesses, and the frequent use of medications that may interact adversely with alcohol.

Although alcohol consumption is often studied among adolescents and working-age adults, it has received comparatively less attention among older populations. Alcohol use in later life presents unique challenges because ageing alters the body's ability to metabolize alcohol, making older adults more susceptible to its harmful effects even at relatively low levels of consumption. In addition, alcohol use may worsen existing chronic conditions, increase the risk of falls and fractures, impair cognitive functioning, reduce treatment adherence, and diminish overall quality of life (Heuberger, 2009). These health consequences place a substantial burden not only on individuals and their families but also on healthcare systems, particularly in resource-constrained settings.

In Nepal, alcohol consumption is deeply rooted in social, cultural, and religious traditions. Drinking practices vary considerably across ethnic groups, geographic regions, and social contexts. In some communities, alcohol is traditionally consumed during religious ceremonies, festivals, family gatherings, and social celebrations, whereas in others, cultural and religious beliefs discourage or prohibit its use. Previous studies have shown that alcohol consumption is generally more common among certain indigenous and ethnic communities, while it is relatively uncommon among Brahmins because of longstanding cultural and religious norms (Suwal, 2023). Consequently, alcohol consumption in Nepal is influenced not only by individual behaviour but also by broader social and cultural environments.

Older adults living in rural areas may be particularly vulnerable to harmful alcohol use because of limited access to healthcare services, lower educational attainment, economic hardship, social isolation, and inadequate health promotion programmes. Rural communities often experience shortages of health professionals and preventive services, reducing

opportunities for early identification and counselling related to alcohol use. Furthermore, retirement, bereavement, declining physical health, loneliness, financial insecurity, and changing family structures may contribute to alcohol consumption as a coping mechanism among older adults. Understanding these complex interactions is essential for developing effective public health interventions aimed at promoting healthy ageing.

Dhurkot Rural Municipality in Gulmi District represents a predominantly rural setting where agriculture remains the principal occupation and traditional cultural practices continue to influence daily life. Older adults in this municipality frequently depend on farming, informal employment, family support, and government social security allowances for their livelihoods. Differences in socioeconomic status, ethnicity, occupation, access to basic services, and social support may all influence alcohol consumption patterns within this population. Despite these unique contextual characteristics, empirical evidence on alcohol use among older adults in Dhurkot Rural Municipality is scarce.

Previous studies conducted in Nepal and other low- and middle-income countries have examined alcohol consumption among adults and documented its association with adverse physical, mental, and social health outcomes (WHO, 2022; Simkhada et al., 2025). However, relatively few studies have focused specifically on older adults residing in rural communities, where social norms, economic conditions, and access to healthcare differ substantially from urban areas. Consequently, evidence regarding the determinants of alcohol consumption among older adults in rural Nepal remains limited. This knowledge gap restricts the development of evidence-based policies and locally appropriate interventions designed to address harmful alcohol use among the ageing population.

Identifying the factors associated with alcohol consumption among older adults is important for several reasons. First, it provides evidence to guide community-based health promotion programmes aimed at reducing harmful drinking behaviours. Second, it enables policymakers and local governments to identify vulnerable groups requiring targeted interventions. Third, understanding the influence of socioeconomic, demographic, and cultural factors can support the design of culturally sensitive prevention strategies that are more acceptable and effective within rural communities. Such evidence is particularly relevant in Nepal, where the implementation of healthy ageing policies requires locally generated research to address the diverse needs of older populations.

The study investigated the association between alcohol consumption and selected socio-demographic, socioeconomic, and cultural characteristics using bivariate and multivariable statistical analyses. The findings are expected to contribute to the limited evidence on alcohol use among older adults in rural Nepal and provide valuable information for policymakers, public health practitioners, and local governments seeking to promote healthy ageing and reduce alcohol-related health risks.

Objective of the study

To analyze the alcohol consumption among older adults in Dhurkot Rural Municipality, Gulmi, Nepal.

Data and Methods

Study Design and Setting

A community-based cross-sectional study was conducted to examine alcohol consumption and its associated factors among older adults in Dhurkot Rural Municipality, Gulmi District, Nepal. The study was carried out between 15 September and 20 December 2025.

Dhurkot Rural Municipality is located in Gulmi District of Lumbini Province and consists of seven administrative wards. The municipality is predominantly rural, with agriculture serving as the principal source of livelihood. The area is characterized by diverse ethnic groups, traditional social structures, and varying levels of access to health and social services, making it an appropriate setting for investigating alcohol consumption among older adults.

Among the seven wards of Dhurkot Rural Municipality, Jaisithok (Ward No. 4), Bastu (Ward No. 5), and Rajasthal (Ward No. 6) were selected through simple random sampling.

Study Population

The source population comprised all adults aged 60 years and above residing in the selected wards of Dhurkot Rural Municipality. Eligible participants were those who had lived in the study area for at least six months before data collection and were able to provide informed consent. Older adults who were seriously ill, unable to communicate effectively, or unwilling to participate were excluded from the study.

Sample Size Determination

The required sample size was determined using Yamane's formula for finite populations:

$$n = N / (1 + Ne^2)$$

where:

n = required sample size

N = total eligible population (665)

e = margin of error (0.05)

Based on a total eligible population of 665 older adults, the calculated sample size was 250, which was considered sufficient to achieve the study objectives.

Sampling Procedure

A systematic random sampling technique was used to select the study participants. First, a complete list of eligible older adults was obtained from official records maintained by the selected wards. The sampling interval was calculated by dividing the total eligible population by the required sample size ($665/250 = 2.66$), which was rounded to three.

The first participant was selected randomly from the first three eligible individuals, after which every third eligible older adult was included until the required sample size of 250 respondents was achieved. This sampling approach ensured an equal probability of selection and minimized selection bias.

Data Collection Instrument and Procedure

Primary data were collected through face-to-face interviews using a structured interviewer-administered questionnaire. The questionnaire was developed following an extensive review of published literature and previous studies related to alcohol consumption and ageing.

The questionnaire comprised the following sections:

- socio-demographic characteristics;
- socioeconomic characteristics;
- health-related characteristics;
- access to household facilities and social security; and
- current alcohol consumption status.

Before the main survey, the questionnaire was pretested among older adults outside the study area to assess its clarity, relevance, and consistency. Necessary revisions were made based on the findings of the pretest. Trained interviewers collected the data under the direct supervision of the principal investigator to ensure data quality and consistency throughout the fieldwork.

Secondary information was obtained from published journal articles, government reports, books, and reports from national and international organizations.

Study Variables

Dependent Variable: Current alcohol consumption status. Alcohol consumption among older adults, measured as the respondent's current alcohol consumption status (Yes/No). For multivariate analysis, the variable was coded as:

1 = Consumes alcohol

0 = Does not consume alcohol

The prevalence of alcohol consumption was calculated as the proportion of respondents who reported current alcohol use.

The independent variables are: Age, Occupation, Ethnicity, Electricity, Old Age Allowance

Data Management and Statistical Analysis

Completed questionnaires were checked daily for completeness and consistency. The data were coded, entered, cleaned, and analysed using IBM SPSS Statistics Version 25.0. As per need Microsoft Excel and Microsoft Word were used for this article preparation. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to summarize the characteristics of the respondents and estimate the prevalence of alcohol consumption.

Bivariate analysis was performed to examine the association between alcohol consumption and each independent variable using the chi-square test for categorical variables. Adjusted odds ratios (AORs) with 95% confidence intervals (95% CI) were reported, and statistical significance was declared at $p < 0.05$.

Ethical Considerations

Ethical approval was obtained from the appropriate institutional review body before data collection. Written or verbal informed consent was obtained from all participants prior to the interview. Confidentiality and anonymity were maintained throughout the study, and respondents were informed that their participation was voluntary and that they could withdraw from the study at any time without any consequences.

Multivariate Analysis

Binary logistic regression analysis was employed because the dependent variable, current alcohol consumption, was dichotomous (yes/no). Logistic regression is an appropriate statistical method for examining the relationship between a binary outcome variable and multiple independent variables while controlling for potential confounding factors (Hosmer et al., 2013).

Binary logistic regression analysis was used because the dependent variable was binary. This method estimates the probability of an event occurring as a function of one or more explanatory variables and is widely used in epidemiological and public health research (Hosmer et al., 2013). The logistic regression model is expressed as:

$$\log(p/1-p) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k$$

where p is the probability of the outcome, β_0 is the intercept, $\beta_1 \dots \beta_k$ are the regression coefficients, and $X_1 \dots X_k$ represent the independent variables.

RESULTS

The socio demographic variables such as age, sex, marital status, occupation, and education are shown here in percentwise distribution. Table 1 presents the socio-demographic characteristics of the 250 older adults included in the study. Participants were fairly evenly distributed across the four age groups, with the largest proportion aged 60–64 years (28.8%), followed by those aged 75 years and above (25.2%), 65–69 years (23.6%), and 70–74 years (22.4%). The study population was almost equally divided by sex, comprising 127 males (50.8%) and 123 females (49.2%).

Most respondents were married (68.8%), whereas nearly one-third (30.4%) were widowed. Only a small proportion reported being unmarried or separated (0.8% each). Agriculture was the predominant occupation, engaging (66.8%) of respondents, followed by household work (23.2%). Relatively few participants were involved in daily wage labour (4.4%), business (0.8%), service (0.8%), or other occupations such as tailoring, ironsmithing, and foreign employment (4.0%).

Regarding ethnicity, Brahmins constituted the largest group (67.6%), followed by Scheduled Castes (23.2%), Chhetris (7.2%), and Newars (2.0%). Educational attainment was generally low, with (64.0%) of respondents reporting no formal education. Only one-fifth (20.4%) were literate without formal schooling, while relatively few had completed primary (4.4%), secondary (5.6%), or School Leaving Certificate (SLC) and above (5.6%) education.

Table 1

Socio-demographic Characteristics of Older Adults in Dhurkot Rural Municipality, Gulmi District, Nepal, 2025 (N = 250)

Background Characteristics	Number	Percent
Age		
60-64	72	28.8
65-69	59	23.6
70-74	56	22.4
75+	63	25.2
Sex		
Male	127	50.8
Female	123	49.2
Marital Status		
Married	170	68.8
Widow/Widower	76	30.4
Unmarried	2	0.8
Separated	2	0.8
Occupation		
Agriculture	167	66.8
Household work	58	23.2
Daily Wages	11	4.4
Service	2	0.8
Business	2	0.8
Others (Tailoring, Ironsmith, Foreign employment)	10	4
Caste/Ethnicity		
Brahmin	169	67.6
Chhetri	18	7.2
Schedule caste	58	23.2
Newar	5	2.2
Literacy Status		
Illiterate	160	64
Literate	51	20.4
Primary	11	4.4
Secondary	14	5.6
SLC+	14	5.6

Note. Field Survey, 2025

Bivariate Analysis

Table 2 presents the association between alcohol consumption and selected socio-demographic and socioeconomic characteristics of older adults in Dhurkot Rural Municipality.

Age was significantly associated with alcohol consumption ($p < 0.05$). The prevalence of alcohol consumption was highest among respondents aged 65–69 years (40.7%), followed by those aged 60–64 years (26.4%) and 70–74 years (23.2%), while the lowest prevalence was observed among participants aged 75 years and above (15.8%). This finding suggests that alcohol consumption declines with advancing age.

Table 2

Prevalence of Alcohol Consumption Among Older Adults by Selected Background Characteristics in Dhurkot Rural Municipality, Gulmi District, Nepal, 2025 (N = 250)

Background characteristics	<u>Alcohol consumption</u>	
	%	N
Age**		
60-64	26.4	72
65-69	40.7	59
70-74	23.2	56
75+	15.8	63
Occupation***		
Agriculture	23.3	167
Daily Wages	73.3	15
Household Work	23.5	68
Ownership of the Household ***		
Yes	24.5	237
No	61.5	13
Own Agriculture Land***		
Yes	23.8	135
No	66.7	15
Source of Drinking Water ***		
Pipe	18.0	194
Public Well	54.6	55
Access of Toilet ***		
Yes	24.7	239
No	63.6	11
Access of Electricity***		
Yes	16.8	208
No	73.8	42
Old Age Allowance ***		
Yes	34.6	136
No	6.7	114
Ethnicity		
Brahmin	2.4	169
Chhetri	77.8	18
Schedule Caste	0.3	58
Newar	40.0	5

Note. Field Survey, 2025; ***= $p < 0.01$, **= $p < 0.05$, *= $p < 0.10$

Occupation was strongly associated with alcohol consumption ($p < 0.01$). Older adults engaged in daily wage labour reported the highest prevalence of alcohol use (73.3%), substantially exceeding that of respondents involved in agriculture (23.3%) or household work (23.5%). This pattern indicates that older adults employed in physically demanding and economically insecure occupations may be more likely to consume alcohol.

Household ownership also showed a statistically significant association with alcohol consumption ($p < 0.01$). Older adults who did not own a house reported a markedly higher prevalence of alcohol consumption (61.5%) than homeowners (24.5%), suggesting that housing insecurity may be linked to unhealthy behavioural practices.

Similarly, ownership of agricultural land was significantly associated with alcohol use ($p < 0.01$). Respondents without agricultural land had nearly three times the prevalence of

alcohol consumption (66.7%) compared with those who owned land (23.8%). This finding highlights the potential influence of economic vulnerability on alcohol consumption.

Access to basic household amenities was also associated with alcohol use. Older adults relying on public wells for drinking water reported a considerably higher prevalence of alcohol consumption (54.6%) than those with access to piped water (18.0%) ($p < 0.01$). Likewise, respondents without access to toilet facilities (63.6%) and electricity (73.8%) had significantly higher levels of alcohol consumption than those with these amenities ($p < 0.01$).

Receipt of the old-age allowance was significantly associated with alcohol consumption ($p < 0.01$). Older adults receiving the allowance reported a higher prevalence of alcohol use (34.6%) than those who did not receive the allowance (6.7%). Although the cross-sectional nature of the study precludes causal inference, this association suggests that greater financial resources may increase access to alcoholic beverages.

Alcohol consumption also varied across ethnic groups. The highest prevalence was observed among Chhetri (77.8%) respondents, followed by Newar (40.0%), whereas substantially lower prevalence was found among Brahmin (2.4%) and Scheduled Caste (0.3%) respondents. Although ethnic differences were pronounced, they did not reach statistical significance in the bivariate analysis.

Logistic Regression

Dependent Variable: Alcohol Consumption Among Older Adults

Independent Variables: Age, Occupation, Access of electricity, Old Age Allowance and Ethnicity

Table 3 presents the adjusted odds ratios (AORs), 95% confidence intervals (CIs), and significance levels for the explanatory variables. After adjustment for potential confounding factors, age, occupation, and ethnicity remained significantly associated with alcohol consumption.

Among the age groups, respondents aged 65–69 years had significantly higher odds of consuming alcohol than those aged 75 years and above (reference category) (AOR = 8.62; 95% CI: 1.16–63.89; $p < 0.05$). Although respondents aged 60–64 years (AOR = 1.09; 95% CI: 0.18–6.52) and 70–74 years (AOR = 1.46; 95% CI: 0.23–9.18) also had higher odds of alcohol consumption than the reference group, these associations were not statistically significant.

Occupation was another significant predictor of alcohol consumption. Compared with older adults engaged in household work, those involved in daily wage labour were approximately 10 times more likely to consume alcohol (AOR = 10.01; 95% CI: 0.89–111.72; $p < 0.10$). In contrast, no statistically significant difference was observed between respondents engaged in agriculture and those performing household work (AOR = 1.34; 95% CI: 0.27–6.61).

Ethnicity was also significantly associated with alcohol consumption. Compared with Newar respondents, Brahmin older adults had substantially lower odds of alcohol consumption (AOR = 0.03; 95% CI: 0.02–0.39; $p < 0.01$). Although Chhetri (AOR = 8.11; 95% CI: 0.60–109.56) and Scheduled Caste respondents (AOR = 3.75; 95% CI: 0.28–48.64) had higher odds

of alcohol consumption than the reference group, these associations were not statistically significant.

Table 3

Multivariable logistic Regression Analysis of Factors Associated with Alcohol Consumption Among Older Adults in Dhurkot Rural Municipality, Gulmi District, Nepal, 2025 (N = 250)

Explanatory variable	Odds ratio	95% CI	
		Lower	Upper
Occupation			
Agriculture	1.34	.27	6.61
Daily wages	10.01*	.89	111.72
House hold work	1		
Age			
60-64	1.09	.18	6.52
65-69	8.62**	1.16	63.89
70-74	1.46	.23	9.18
75+	1		
Electricity			
Yes	.33	.08	1.32
No	1		
Old Age Allowance			
Yes	1		
No	.65	.15	2.85
Ethnicity			
Brahmin	.03***	.02	.39
Chhetri	8.11	.60	109.56
Schedule caste	3.75	.28	48.64
Newar	1		

Note. Field Survey, 2025; *** = Significant at 0.01, ** = Significant at 0.05, and * = Significant at 0.10

Overall, the multivariable analysis demonstrated that age, occupation, and ethnicity were the principal independent predictors of alcohol consumption among older adults in Dhurkot Rural Municipality.

Discussion

This study examined the factors associated with alcohol consumption among older adults in Dhurkot Rural Municipality, Gulmi District, Nepal. The findings demonstrate that alcohol consumption is shaped by a combination of demographic, occupational, and cultural factors. In the multivariable analysis, age, occupation, and ethnicity emerged as significant predictors, indicating that drinking behaviour among older adults is influenced not only by individual characteristics but also by broader social and cultural contexts.

Age was identified as a significant determinant of alcohol consumption. Older adults aged 65–69 years were more likely to consume alcohol than those aged 75 years and above. This finding suggests that alcohol consumption tends to decline with advancing age, possibly because of deteriorating health, increased use of medications, reduced social participation, and greater awareness of alcohol-related health risks among the oldest age group. Similar findings have been reported by Heuberger (2009), who noted that physiological changes associated with ageing increase older adults' sensitivity to alcohol and often lead to reduced consumption.

Likewise, Grant et al. (2017) observed that alcohol use generally declines in later life, although drinking patterns vary according to health status, social relationships, and previous drinking behaviour.

Occupation was another important predictor of alcohol consumption. Older adults engaged in daily wage labour were significantly more likely to consume alcohol than those involved in household work. Daily wage employment is often characterised by physically demanding tasks, unstable income, and limited social protection, all of which may contribute to psychological stress and unhealthy coping behaviours. In many rural communities, alcohol consumption is also closely linked to workplace culture and social interaction among manual labourers. Similar associations between occupational stress, economic insecurity, and alcohol use have been reported in previous studies, suggesting that disadvantaged working conditions may increase the likelihood of harmful drinking (Grant et al., 2017).

Ethnicity showed a strong association with alcohol consumption in the present study. Compared with the Newar group, Brahmin older adults were significantly less likely to consume alcohol. This finding reflects the influence of long-standing cultural and religious traditions in Nepal, where alcohol consumption is generally discouraged among Brahmins but is more socially accepted in several other ethnic communities. These cultural norms continue to shape drinking practices even in older age. Comparable findings have been reported by Suwal (2023), who highlighted the substantial variation in alcohol use across ethnic groups in Nepal due to differences in cultural beliefs, religious practices, and social customs.

Several socioeconomic factors, including household ownership, agricultural land ownership, access to safe drinking water, sanitation facilities, electricity, and receipt of the old-age allowance, were significantly associated with alcohol consumption in the bivariate analysis. However, these associations did not remain statistically significant after adjustment for other variables in the multivariable model. This suggests that the influence of these factors may be partly explained by demographic and cultural characteristics rather than acting as independent predictors of alcohol consumption. Nevertheless, the higher prevalence of alcohol use among older adults living in poorer socioeconomic conditions highlights the potential role of social disadvantage in shaping health-related behaviours. These findings are consistent with previous research showing that socioeconomic deprivation may increase vulnerability to unhealthy lifestyle behaviours, including alcohol consumption.

Conclusion

This study found that alcohol consumption among older adults in Dhurkot Rural Municipality is significantly associated with age, occupation, and ethnicity. Older adults aged 65–69 years and those engaged in daily wage labour were more likely to consume alcohol, whereas Brahmin older adults were significantly less likely to consume alcohol than other ethnic groups. These findings demonstrate that alcohol consumption among older adults is influenced by a complex interaction of demographic, occupational, and cultural factors.

The findings have important implications for public health policy and practice. Efforts to reduce harmful alcohol consumption among older adults should be integrated into community-based healthy ageing programmes and primary healthcare services. Health education initiatives should be culturally appropriate and focus on populations at greater risk

while actively involving families, community leaders, and local governments in promoting healthy lifestyles among older adults.

This study contributes to the limited body of evidence on alcohol consumption among older adults in rural Nepal and provides valuable information for policymakers and public health practitioners. Future research should employ longitudinal and mixed-methods approaches to better understand the causal pathways and explore the social, cultural, and psychological factors influencing alcohol use among older adults across different regions of Nepal.

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