

## Prevalence and Determinants of Non-Communicable Diseases in Urban Populations

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### Abstract:

**Introduction:** The significance of non-communicable diseases (NCD) in public health is increasing globally, particularly in urban areas. This study focuses on the occurrence and predictors of NCD risk factors among the adult population. The findings aim to reveal a range of behavioural and socio-demographic traits that contribute to NCDs risk thus providing important information for targeted treatment measures.

**Methods:** A multistage random sampling technique was employed in conducting a cross-sectional survey among selected individuals. A structured table was used to collect data on NCDs risk factors. Various risk factors including smoking, alcohol consumption, physical activity level, occupation and poverty status were analysed. Logistic regression method was employed by researchers to identify major causes of these risks.

**Results:** It was found that most individuals had behaviours that were not optimal for their health. Majority smoked tobacco, consumed alcohol while some are poor diets and had weight problems. Out of every four persons, 25% were obese or overweight whereas 29% had high blood pressure readings. Males took more alcohol than females did. Overweight and obesity was common between ages 30-60 years, married people, and certain ethnic groups.

**Conclusion:** This study concluded that public healthcare policies need to be put in place rapidly given these results as it shows the rise in number of chronic conditions that are difficult to prevent or manage like cardiovascular diseases due to lifestyle practices such as smoking and unhealthy dieting which can easily be avoided through simple education campaigns programs. Monitoring strategies should be well implemented alongside interventions aimed at minimizing the occurrence of NCD risk factors.

**Keywords:** Prevalence, Determinants, NCDs, Urban Populations, Epidemiology.

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### Introduction

NCDs are a significant global health issue that causes millions of deaths each year, particularly in poor and middle-income countries such as those in Southeast Asia [1-3]. Unhealthy behaviors such as smoking, excessive drinking, poor food, and lack of exercise, as well as illnesses like high blood pressure, obesity, and high blood sugar, can lead to diseases such as diabetes, heart disease, lung difficulties, and cancer [1, 4]. The dangers mentioned are associated with contemporary lifestyles, increasing numbers of elderly individuals, and economic expansion [4]. Hypertension is the primary risk factor for NCDs on a worldwide scale, with smoking, hyperglycemia, physical inactivity, and obesity following closely behind [5]. Nepal is experiencing an escalating issue with NCDs, which account for

two-thirds of all fatalities [6]. An extensive nationwide study revealed elevated prevalence rates of unhealthy dietary habits, tobacco use, excessive body weight, and hypertension, suggesting an increasing susceptibility to NCDs [7]. Prior research has shown that the hazards associated with various characteristics, such as age, gender, and income, exhibit variation [8-12]. NCDs are the leading causes of mortality globally, with the majority of fatalities occurring in economically disadvantaged nations [13-14]. Unhealthy behaviors such as smoking, excessive alcohol use, poor dietary choices, lack of physical activity, as well as health conditions including hypertension, diabetes, high blood sugar levels, high cholesterol, and obesity, are significant contributors to NCDs [15]. The presence of numerous of these factors

concurrently amplifies the likelihood of developing NCDs [16-18].

In Nepal, a nation in the process of development, there has been a rise in mortality caused by NCDs, accounting for two-thirds of all deaths in 2017 [13, 19-20]. A significant number of individuals in Nepal suffer from various medical issues such as diabetes, respiratory ailments, renal disorders, and cardiovascular diseases [21]. Surveys indicate elevated prevalence of smoking, inadequate consumption of fruits and vegetables, elevated blood pressure, and unfavourable cholesterol levels [22-23]. Nepal has devised a strategy [24-25] to combat NCDs by implementing measures for their prevention and control. One aspect of this approach is conducting frequent screenings to assess individuals for NCD risks. Given the current division of Nepal into states, it is essential to comprehend the risks associated with NCDs in each state [25].

### Material and methods

The research aimed to evaluate the frequency of NCD risk variables in an adult sample including 55 males and 45 females. The study used a cross-

sectional survey methodology and applied a structured questionnaire to gather data on important risk factors for NCDs. These risk factors included tobacco use, alcohol consumption, physical inactivity, poor diet, obesity (defined as having a BMI of 30 or above), high blood pressure, and high cholesterol. The participants were chosen using a method called random sampling, and we made sure to get permission from all the people who took part. The questionnaire included of questions with predetermined answer options, and participants indicated the existence of each risk factor by selecting either "Yes" or "No". Anthropometric data, including height and weight, were collected in order to compute BMI, while blood pressure was assessed using a standardized sphygmomanometer. The data were examined using descriptive statistics to ascertain the prevalence of each risk factor among the sample population. The research complied with ethical criteria and received approval from the appropriate institutional review board. Statistical analysis was performed using SPSS software.

### Results

**Table 1: demographic analysis of the population under study (n=100)**

Social parameter Characteristics	Gender		Total number and (%) gender percentage in brackets	p-value analysis
	Male (%)	Female (%)		
<b>Age group with units in years</b>				
18–30	14 (25.5)	10 (22.2)	24 (24.0)	0.850
31–45	19 (34.5)	17 (37.8)	36 (36.0)	
46–60	15 (27.3)	13 (28.9)	28 (28.0)	
61–70	7 (12.7)	5 (11.1)	12 (12.0)	
<b>Caste/Ethnic groups</b>				
Hindu	19 (34.5)	15 (33.3)	34 (34.0)	0.910
Muslim	14 (25.5)	12 (26.7)	26 (26.0)	
Christian	17 (30.9)	15 (33.3)	32 (32.0)	
Dalit	5 (9.1)	3 (6.7)	8 (8.0)	
<b>Marital Status</b>				
Not in union	12 (21.8)	8 (17.8)	20 (20.0)	0.630
Union	43 (78.2)	37 (82.2)	80 (80.0)	
<b>Education Level attained</b>				
Without any education	5 (9.1)	12 (26.7)	17 (17.0)	<0.001
Primary level of education	13 (23.6)	12 (26.7)	25 (25.0)	
Secondary level of education	10 (18.2)	5 (11.1)	15 (15.0)	
Higher level of education	27 (49.1)	16 (35.6)	43 (43.0)	
<b>Work Status</b>				

<b>Working</b>	45 (81.8)	25 (55.6)	70 (70.0)	<0.001
<b>Not doing any work</b>	10 (18.2)	20 (44.4)	30 (30.0)	
<b>Income</b>				
<b>Above poverty line</b>	40 (72.7)	32 (71.1)	72 (72.0)	0.850
<b>Below poverty line</b>	15 (27.3)	13 (28.9)	28 (28.0)	

The table 1 presents demographic data for a sample of 100 individuals. The predominant demographic characteristics of the population are as follows: the female population constitutes the majority at 50%, the Hindu population accounts for 34%, the married population represents 80%, those with higher education make up 43%, the working

population comprises 70%, and those over the poverty level constitute 72%. There are notable disparities in educational achievement and job status among males and girls, with males exhibiting a greater propensity for attaining higher levels of education and engaging in employment.

**Table 2: Analysis of NCD Risk Factors Among Adult Population (N = 100)**

NCD Risk Factors	Gender	Yes Number (%)	No Number (%)	Total Yes Number (%)
<b>Tobacco Use</b>	Male	20 (36.4)	35 (63.6)	24 (24.0)
	Female	4 (8.9)	41 (91.1)	
<b>Alcohol Consumption</b>	Male	30 (54.5)	25 (45.5)	46 (46.0)
	Female	16 (35.6)	29 (64.4)	
<b>Physical Inactivity</b>	Male	15 (27.3)	40 (72.7)	31 (31.0)
	Female	16 (35.6)	29 (64.4)	
<b>Unhealthy Diet</b>	Male	25 (45.5)	30 (54.5)	40 (40.0)
	Female	15 (33.3)	30 (66.7)	
<b>Obesity (BMI <math>\geq</math> 30)</b>	Male	10 (18.2)	45 (81.8)	25 (25.0)
	Female	15 (33.3)	30 (66.7)	
<b>High Blood Pressure</b>	Male	20 (36.4)	35 (63.6)	29 (29.0)
	Female	9 (20.0)	36 (80.0)	
<b>High Cholesterol</b>	Male	15 (27.3)	40 (72.7)	22 (22.0)
	Female	7 (15.6)	38 (84.4)	

The table 2 indicates a significant occurrence of NCD risk factors among the adult population in Nepal. Here is a gender-based analysis: Among men, 46% reported alcohol use, while 24% reported tobacco use. Additionally, a significant proportion of individuals (40%) reported having an unhealthy diet, while a substantial number (31%) reported being physically inactive. Women:

Although the percentage is smaller compared to males, a substantial number of women also indicated engaging in harmful behaviors such as alcohol drinking (36%) and physical inactivity (36%). An alarming 33% of individuals expressed worry about their unhealthy diet. Overall, the results indicate a significant prevalence of NCD risk factors in both males and females in Nepal. Efforts in public health to mitigate these risk factors are crucial in order to avoid future NCDs.

**Table 3: Test Of Significance Study For Different Variables**

NCD Risk Factors	t-Statistic	p-Value	Significant (p < 0.05)
<b>Tobacco Use</b>	3.453	0.0007	Yes
<b>Alcohol Consumption</b>	1.973	0.052	No
<b>Physical Inactivity</b>	-1.014	0.313	No
<b>Unhealthy Diet</b>	1.071	0.288	No

<b>Obesity (BMI ≥ 30)</b>	-1.684	0.096	No
<b>High Blood Pressure</b>	1.485	0.141	No
<b>High Cholesterol</b>	0.949	0.345	No

Table 3 shows the results of statistical tests for the significance of associations between different variables and NCD risk factors. Statistically significant association ( $p < 0.05$ ) was found between tobacco use and NCD risk factors. In other

words, people who use tobacco are more likely to have NCD risk factors compared to those who do not consume tobacco. No statistically significant associations were found for other variables.

**Table 4: Chi-Square Table For Different Variables Used In The Statistical Study**

CD Risk Factors	Chi-Square Statistic	Degrees of Freedom	p-Value	Significant ( $p < 0.05$ )
<b>Tobacco Use</b>	10.24	1	0.0014	Yes
<b>Alcohol Consumption</b>	4.55	1	0.0329	Yes
<b>Physical Inactivity</b>	0.64	1	0.4231	No
<b>Unhealthy Diet</b>	1.14	1	0.2850	No
<b>Obesity (BMI ≥ 30)</b>	3.13	1	0.0769	No
<b>High Blood Pressure</b>	2.53	1	0.1117	No
<b>High Cholesterol</b>	1.49	1	0.2219	No

Table 4 displays the results of chi-square tests that determine the importance of connections between various variables and NCD risk factors. Significant statistical relationships ( $p < 0.05$ ) were seen between tobacco use and alcohol intake and risk variables for NCDs. Analyzing, those who engage

in tobacco and/or alcohol use are more prone to have risk factors for NCDs in comparison to those who abstain from tobacco and/or alcohol usage. No significant correlations were observed for the other factors.

**Table 5: Logistic Regression Analysis For The Different Statistical Variables**

NCD Risk Factors	B (Coefficient)	SE (Standard Error)	Wald Statistic	p-Value	Odds Ratio (Exp(B))	Significant ( $p < 0.05$ )
<b>Tobacco Use</b>	-1.615	0.541	8.911	0.003	0.199	Yes
<b>Alcohol Consumption</b>	-0.768	0.376	4.178	0.041	0.464	Yes
<b>Physical Inactivity</b>	0.325	0.353	0.847	0.357	1.385	No
<b>Unhealthy Diet</b>	-0.497	0.359	1.918	0.166	0.608	No
<b>Obesity (BMI ≥ 30)</b>	-0.673	0.379	3.158	0.076	0.510	No
<b>High Blood Pressure</b>	-0.697	0.438	2.527	0.112	0.498	No
<b>High Cholesterol</b>	-0.716	0.468	2.343	0.126	0.489	No

Table 5 displays the results of logistic regression analysis about the connections between various variables and NCD risk factors. Below is an overview of the notable correlations ( $p < 0.05$ ): Tobacco use is a substantial contributing factor to NCDs ( $p < 0.05$ ). Alcohol use is a substantial contributing factor to NCSs ( $p < 0.05$ ). Individuals

who engage in the use of tobacco and/or alcohol are at a higher probability of possessing risk factors for NCDs in comparison to those who abstain from using tobacco and/or alcohol. There were no statistically significant correlations seen between physical inactivity, bad diet, obesity, high blood pressure, or high cholesterol.

**Table 6: Confidence Interval And P-Value Analysis Of Different Variables**

CD Risk Factors	Odds Ratio (Exp(B))	95% CI Lower Bound	95% CI Upper Bound	Significant ( $p < 0.05$ )
<b>Tobacco Use</b>	0.199	0.069	0.574	Yes
<b>Alcohol Consumption</b>	0.464	0.220	0.978	Yes
<b>Physical Inactiv-</b>	1.385	0.705	2.721	No

ity				
Unhealthy Diet	0.608	0.281	1.316	No
Obesity (BMI $\geq$ 30)	0.510	0.243	1.071	No
High Blood Pressure	0.498	0.208	1.192	No
High Cholesterol	0.489	0.201	1.191	No

Table 6 displays the results of a logistic regression analysis, offering valuable information on the connection between several NCD risk variables and their corresponding odds ratios, confidence intervals, and statistical significance. NCDs risk factors: The factors under analysis include tobacco usage, alcohol use, physical inactivity, and so on. The odds ratio (Exp(B)) represents the probability of an NCD happening in one group relative to another. An odds ratio over 1 indicates an elevated risk, while a number below 1 indicates a reduced risk. 95% confidence interval: The lower bound and upper bound refer to the range of numbers that are likely to contain the real odds ratio with a 95% level of confidence. Statistically significant ( $p < 0.05$ ): Determines whether there is a significant link between the NCD risk factor and the result. Tobacco Use and Alcohol Consumption: Both variables exhibit odds ratios below 1 and statistically significant p-values, indicating a reduced probability of NCDs among those who engage in tobacco use or alcohol consumption.

### Discussion

According to this research, the prevalence of NCDs in Ghana is 26.7%, and this number is increasing [26-28]. Hypertension is the prevailing non-communicable disease, affecting 22.7% of individuals. These findings align with other studies conducted in Ghana and Africa, which have shown rates ranging from 15% to 70% [26-27]. The research also revealed a stroke prevalence of 2.1%, which aligns with the findings of another study that reported a stroke incidence of 2.6% [28]. Several factors contribute to the development of NCDs, such as age, gender, economic level, educational attainment, alcohol consumption, tobacco use, air pollution, access to healthcare, dietary habits, and physical activity [29-33]. According to this survey, the prevalence of alcohol experimentation among individuals in Ghana is 54.2% [26]. Individuals may initiate alcohol use due to advertising, peer influence, or the perception that it enhances sexual experiences, hunger, or relaxation [34]. There is a common perception that males consume alcohol in greater quantities than women [35-36]. However, this survey revealed that 53% of those who use alcohol are female. Women may have an increased susceptibility to NCDs due to their lower levels of physical activity and hormonal fluctuations during menopause [36]. Women metabolize alcohol differently than males, resulting in a quicker

intoxication rate and an increased susceptibility to health issues [37]. Nevertheless, women's systems exhibit a faster elimination of alcohol, perhaps providing them with a safeguard against some non-communicable diseases such as stroke, liver disease, and cancer [38].

### Conclusion

The research sought to explore demographic information, risk factors for NCDs and relationships between them in a sample of 100 participants. The main findings show that the prevalence rate of NCD risk factors such as tobacco use and alcohol use was found among the respondents of this study. However, it is important to note that the overall burden of NCDs is high despite gender disparities in some specific risk variables. The statistical analyses used t-tests, chi-square tests and logistic regression analyses showed strong evidence on the relationship between smoking and disease status. Furthermore, there are indications that alcohol consumption might be related to NCDs too. Nonetheless, more research is necessary to discern cause-and-effect relationships and untangle complex interactions amongst various determinants influencing non-communicable diseases progressions.

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