

Comparative Study of Rural and Urban Lifestyle Factors and Their Impact on Non-Communicable Diseases: A Case Study of Bhairav Tole, Ramdhuni Municipality-8, Sunsari (Rural Area) and Ward No. 3, Biratnagar Metropolitan City, Morang (Urban Area), Nepal

Author: Dr Tika Prasad Niraula, Ramdhuni-8, Sunsari, Email: niraula_tp@yahoo.com

Abstract:

Since non-communicable diseases (NCDs) cause more than 71% of all deaths in Nepal, they are becoming a major public health concern. In this study, the relationship between NCD risks and rural and urban populations' eating patterns, levels of physical activity, and substance use is compared. Using stratified random sampling, 120 participants (60 from rural and 60 from urban areas) were chosen for the cross-sectional study. Structured questionnaires were used to gather data, and SPSS was used for analysis. The findings showed notable disparities: whereas rural populations reported greater rates of alcohol and tobacco use (18.3% vs. 10%), urban inhabitants were more likely to be sedentary ($\chi^2 = 17.638$, p < 0.01) and consume fast food ($\chi^2 = 7.958$, p = 0.093). ccording to correlation analysis, substance use and the prevalence of NCDs were positively correlated (r = 0.338, p < 0.01), while urbanization and physical activity were negatively correlated (r = -0.378, p < 0.01). The study emphasizes the necessity for focused public health initiatives: whereas rural areas need methods to lower alcohol and tobacco use, urban areas should prioritize encouraging physical activity and a nutritious diet. These results offer evidence-based suggestions for Nepal's NCD risk management.

Keywords:

Non-communicable diseases, rural lifestyle, urban lifestyle, physical activity, dietary habits, sedentary behavior, tobacco and alcohol consumption

1. Introduction:

Globally, non-communicable diseases (NCDs) have become a major public health concern, especially in low- and middle-income (LMIC) nations like Nepal. Over 71% of all deaths in 2019 were attributable to NCDs, which include mental health disorders (MH), diabetes mellitus (DM), cardiovascular diseases (CVDs), and chronic respiratory diseases (CRDs). By 2040, these diseases are expected to account for 78.64% of all deaths (Adhikari et al., 2023). Urbanization, aging populations, and changes in lifestyle have all contributed to the epidemiological transition, which has caused the burden of disease to shift from communicable to non-communicable. Nearly one-third of people have hypertension, and 15% have diabetes, making these conditions extremely common (Mishra et al., 2015). Nepal's response is still inadequate in spite of this concerning burden, underscoring the pressing need for effective NCD prevention and management initiatives. Behavioral risk factors, especially among the urban poor, contribute to the rising burden of NCDs. In addition to low intake of fruits and vegetables (92.2%), a study carried out in a Kathmandu slum area revealed high prevalence rates of smoking (35.6%), alcohol usage (38.5%), and physical inactivity (32.2%). These risk factors increase the likelihood of acute cardiovascular events and other consequences by contributing to metabolic disorders including obesity and hypertension. Due to limited access to healthcare, low health literacy, and financial limitations, the urban poor are disproportionately impacted and are therefore especially at risk from the expanding NCD epidemic (Oli et al., 2013).

NCDs are becoming more common in Nepal, although there is still a lack of thorough data on their burden. According to a hospital-based study, NCDs accounted for 31% of admitted cases, with cardiovascular illnesses accounting for 40% and chronic obstructive pulmonary disease for 43% of cases (Bhandari et al., 2014). This emphasizes the necessity of



evidence-based therapies and policies to address Nepal's growing NCD burden. Service preparedness is still below ideal even though NCD services are part of Nepal's basic healthcare package. With overall readiness scores of 38.1% for CVDs, 38.5% for DM, 32.6% for CRDs, and 24.0% for MH, the Nepal Health Facility Survey (2021) showed that only a tiny percentage of health facilities satisfied the requirements for NCD services (Adhikari et al., 2023).

In order to increase service availability and quality, these gaps underscore the necessity of focused interventions, such as enhanced healthcare infrastructure, capacity-building initiatives, and regulatory reforms. With an emphasis on CVDs, CRDs, DM, and MH, this study attempts to evaluate Nepal's healthcare facilities' preparedness to provide NCD-related services. In order to improve NCD management in Nepal and inform policy decisions, this study uses nationally representative data from the Nepal Health Facility Survey (2021) to offer evidence-based recommendations. The results will support further initiatives to improve healthcare systems and guarantee fair access to necessary NCD services, especially for disadvantaged groups.

2. Review of Literature

2.1. Nutritional Practices and Risk Factors for NCDs: The rising incidence of non-communicable diseases (NCDs) in Nepal is largely caused by unhealthy eating habits, such as consuming more fast food and less fruits and vegetables. According to Bista et al. (2021)'s STEPS survey, 97% of Nepalese adults ate insufficient amounts of fruits and vegetables, which raises their risk of obesity, high blood pressure, and diabetes. Similarly, according to Dahal et al. (2021), 52.2% of Kathmandu residents were overweight or obese, with 93.9% of them consuming insufficient amounts of fruits and vegetables. Timalsina and Singh (2021) found that 62.1% of people in semi-urban Kavre were obese in the abdomen, demonstrating that dietary concerns are not limited to metropolitan settings.

These dietary issues have been made worse by the growing accessibility and affordability of processed and quick foods that are heavy in sugar, salt, and bad fats. In order to address NCD risk factors, such as inadequate nutrition, Gyawali et al. (2020) stress the necessity of more robust primary healthcare interventions. More individuals are increasingly reliant on convenience foods as eating habits are being altered by economic migration and urbanization. Multi-level interventions are needed to address these issues, such as local fresh produce subsidies, national policies that support healthy food choices, and educational initiatives that promote better eating practices. The increasing NCD issue in Nepal's cities and rural areas can be reduced by putting these measures into practice.

2.2. Sedentary lifestyles and physical activity

One of the main causes of Nepal's increasing NCD burden is the country's declining levels of physical activity and increasing sedentary lifestyle. Opportunities for physical activity have been drastically diminished by urbanization, especially in places with fewer parks and more sedentary lives brought on by work. According to Oli et al. (2013), slums in Kathmandu have a high rate of physical inactivity, which puts urban people at heightened risk for NCD risk factors. According to Bista et al.'s STEPS survey from 2021, people who are older, wealthier, or engage in less physical activity are more likely to have diabetes (5.8%) and hypertension (24.5%).

The problem has gotten worse, especially among younger populations, due to the increased reliance on motorized transportation and the rise in screen-based activities. In order to lessen the negative impacts of physical inactivity on public health, Gyawali et al. (2020) stress the significance of bolstering Nepal's primary healthcare system. Rapid urbanization and economic migration have increased the risk of obesity and cardiovascular diseases by decreasing daily mobility. Immediate measures including school-based physical education, corporate wellness initiatives, and easier access to parks and recreational areas are needed to address these issues. Reversing this trend and encouraging a more physically active lifestyle among Nepal's different demographic groupings requires policy-driven strategies, such as community-based exercise programs and incentives for active commuting.

2.3. Prevalence of NCDs and Substance Use:

In Nepal, alcohol and tobacco use continue to be significant risk factors for noncommunicable diseases (NCDs), leading to elevated prevalence of cardiovascular disorders, hypertension, and chronic obstructive pulmonary disease (COPD).



According to Mishra et al. (2015), alcohol consumption is on the rise and tobacco usage is 51.9% of Nepalese adults, which increases the risk of NCDs. According to Dahal et al. (2021), 31% of adults in Kathmandu drink alcohol and 22% smoke, which greatly raises their risk of obesity and hypertension (27.8%). Timalsina and Singh (2021) discovered that 15.8% of people in semi-urban areas drank alcohol harmfully, while 36% of adults used tobacco.

Yadav et al. (2021) found that long-term tobacco smoking was a major contributing factor in the high incidence of osteoarthritis (41.7%) and COPD (15.4%) among older persons living in rural areas. Gyawali et al. (2020) emphasize how crucial it is to improve Nepal's healthcare system in order to successfully manage NCDs linked to substance use. Prevention measures have been difficult because alcohol and tobacco use are widely available and culturally accepted. Substance misuse can be decreased, nevertheless, by imposing stronger advertising regulations, raising taxes on alcohol and tobacco, and launching national public health initiatives. The long-term health effects of these behaviors can also be reduced throughout Nepal by adopting school-based substance use education and including tobacco and alcohol cessation programs into primary healthcare services.

2.4 Gap of Research

Even though Nepal's non-communicable diseases (NCDs) research is expanding, there are still a number of important gaps that prevent the creation of efficient solutions. First, it is challenging to evaluate the distinct difficulties that each group faces due to the dearth of thorough comparison research between rural and urban locations (Adhikari et al., 2023). Second, there is little longitudinal data to monitor changes in lifestyle habits and their long-term effects on NCD risks because the majority of research are cross-sectional (Bista et al., 2021). Third, studies frequently ignore high-risk groups and younger populations, which are increasingly leading hazardous lifestyles (Dahal et al., 2021). Fourth, the effectiveness of NCD preventive initiatives and the preparedness of the healthcare system are not well documented, especially in rural areas where access to healthcare services is limited (Gyawali et al., 2020). The need for more focused and culturally aware intervention strategies is underscored by the understudied impact of gender, socioeconomic, and cultural determinants on NCD risk factors (Timalsina & Singh, 2021). Filling in these gaps is crucial to directing future studies and creating successful public health initiatives to counteract Nepal's growing NCD burden.

3. Research Methodology

3.1 Study Design and Population

A comparative cross-sectional research design is used in this study to examine the lifestyle aspects that differ between Nepal's rural and urban inhabitants. This study was carried out in urban regions under Morang district, namely in Biratnagar Metropolitan City Ward No. 3, and rural areas under Sunsari district, specifically in Ramdhuni Municipality Ward No. 8, Bhairav Tol. There are 120 participants in the study, 60 of whom are from rural and 60 of whom are from urban areas. A thorough examination of lifestyle choices and their effects on risk factors for non-communicable diseases (NCDs) is made possible by the balanced sampling, which guarantees a strong comparison between the two demographic groups.

3.2 Data Collection Method

Structured questionnaires were used to gather data in order to evaluate important lifestyle factors, such as:

- Dietary practices: How often you eat fruits and vegetables and how often respondent eat fast food.
- Levels of physical activity: frequency of exercise, sedentary behavior.
- Substance abuse: Drinking alcohol and tobacco.

To guarantee accuracy and clarity in responses, the surveys were given out in person. In order to reduce bias and guarantee consistency across both rural and urban populations, the data gathering procedure was standardized.

3.3 Method of Sampling

To guarantee representation from both urban and rural populations, a stratified random selection technique was employed. Age, gender, and occupation were among the demographic criteria used to select participants, guaranteeing a varied sample that fairly represents the traits of both areas. This method improves the data' generalizability and makes it



possible to draw insightful comparisons between rural and urban lifestyles. Analysis of Statistics SPSS software was used to examine the gathered data. The statistical tests listed below were carried; out: • Chi-square (χ^2) tests: To determine how significant the nutritional, physical activity, and substance use differences between rural and urban populations are.

Descriptive statistics: To compile lifestyle traits and demographic data.

• **Correlation analysis:** To investigate connections between risk variables for NCDs and lifestyle factors .These statistical techniques guarantee a thorough and impartial examination of the data, offering trustworthy insights on how lifestyle choices affect the risk of NCDs.

3.4 **Ethical Considerations:** Because all participants gave their informed consent, the study complied with ethical standards. Respondents were guaranteed that their information would only be utilized for research, and confidentiality was upheld throughout the whole study. Prior to data collection, ethical approval was acquired from the appropriate institutional review board, guaranteeing that the study complied with all ethical guidelines for research involving human subjects.

3.5 Discussion of Methodology

The study's methodology is intended to give a thorough comparison of Nepal's rural and urban lifestyles. With an emphasis on their effects on NCD risk factors, this study was carried out in urban regions under Morang district, namely in Biratnagar Metropolitan City Ward No. 3, and rural areas under Sunsari district, specifically in Ramdhuni Municipality Ward No. 8, Bhairav Tol. The stratified random sampling technique guarantees that the sample is representative of both rural and urban demographics, while the comparative cross-sectional design enables the analysis of differences between the two groups at a particular moment in time.

The use of standardized questionnaires makes it possible to gather comprehensive information on important lifestyle factors, such as eating patterns, levels of physical activity, and drug usage. The reliability of the results is guaranteed by the statistical analysis conducted using SPSS software, which offers insights into the importance of observed differences and associations through correlation analysis and chi-square tests because the study complies with ethical standards, participants' rights and privacy are safeguarded and the research is carried out responsibly. This study advances knowledge of how rural and urban lifestyles affect NCD risks in Nepal by addressing the research objectives and testing the hypotheses. This knowledge serves as a basis for focused public health interventions.

3.6 Research Objectives

The primary objective of this study is to analyze and compare the impact of rural and urban lifestyles on the risk factors associated with non-communicable diseases (NCDs) in Nepal. Specifically, the study aims to:

- 1. To Compare Dietary Habits in between rural and urban areas
- 2. To Evaluate Physical Activity Levels:
- 3. To Assess Tobacco and Alcohol Consumption



4. Result:

D 1	T. f	· · · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · ·	/NT ·	100 T -1.1	1
Demographic	Information	incuided	noniliation	in ethov	(N -	i zun i anie	· •
Duniographic	mormanon	menuaca	population	m study		1207 1 $a010$	∕ ⊥
0				2	\	/	

SN	Demographic factors	Rural $(n = 60)$		Urban (n = 60)	
1	Age	Male (%)	Female (%)	Male	Female
	18-25	3(7.3)	2 (10.5)	1(2.7)	0 (0)
	26-35	4(9.8)	6 (31.6)	0 (0)	0 (0)
	36-45	8 (19.5)	3 (15.8)	3 (8.1)	7(30.4)
	46-55	10 (24.4)	5 (26.3)	9 (24.3)	9(39.1)
	56+	16 (39)	3 (15.8)	24 (64.9)	7(30.4)
2	Marital Status			•	
	Married	37 (90.2)	15 (78.9)	35 (94.6)	20 (87)
	Unmarried	2 (4.9)	2 (10.5)	0	0
	Divorced	2 (4.9)	0	0	0
	Widowed	0	2 (10.5)	2 (5.4)	3 (13)
3	3 Education Level				·
	No Formal Education	6 (14.6)	6 (31.6)	4 (10.8)	6 (26.1)
	Primary School	13 (31.7)	3 (15.8)	7 (18.9)	6 (26.1)
	Secondary School	20 (48.8)	9 (47.4)	19 (51.4)	10 (43.5)
	Bachelor Degree	2 (4.9)	1 (5.3)	4 (10.8)	1 (4.3)
	Master Degree	0	0	3 (8.1)	0
4	Occupation	-		•	
	Student	1(2.4)	1 (5.3)	0	0
	Government Employee	2 (4.9)	1 (5.3)	17 (45.9)	1 (4.3)
	Private Sector Employee	1 (2.4)	0	10 (27)	0
	Farmer	34 (82.9)	17 (89.5)	4 (10.8)	1 (4.3)
	Entrepreneur	1 (2.4)	0	6 (16.2)	2 (8.7)
	Unemployed	0	0	0	12 (52.2)
	Other	2 (4.9)	0	0	7 (30.4)

The demographic details of the study participants are displayed in this table. A total of 120 people participated in the study, 60 of whom were from rural and 60 of whom were from urban regions. Age, marital status, occupation, and educational attainment are among the demographic variables taken into account. In order to comprehend the respondents' socioeconomic background, this section offers a thorough examination of these factors.

4.1 Distribution of Age.

The respondents' ages were distributed differently in rural and urban areas. A sizable fraction of the males (39%) and females (15.8%) in the rural group were 56 years of age or older. With 24.4% of rural males and 26.3% of rural females falling into this age range, the 46–55 age group was also quite prevalent. On the other hand, the majority of urban female respondents (39.1%) were between the ages of 46 and 55, while 64.9% of urban male respondents were 56 years of age or older. With only 2.7% of males and no females in this group, younger participants (18–25 years old) were underrepresented, especially in urban regions. This suggests that the study participants are a comparatively older group.

4.2 Marital Status.

In order to comprehend the respondents' social structure, marital status was evaluated. Married people made up the majority of participants in both urban and rural areas. Ninety-two percent of rural men and 78.9 percent of rural women were married. Likewise, 87% of urban women and 94.6% of urban men were married. There were very few unmarried

people; only 4.9% of rural men and 10.5% of rural women reported being single. Divorce was rare; only 4.9% of males in rural areas reported being divorced. The prevalence of widowhood was marginally higher among urban women (13%) than among rural women (10.5%).

4.3 Level of Education

The study discovered that rural and urban inhabitants had different levels of schooling. In urban areas, 10.8% of male respondents and 26.1% of female respondents lacked formal education, compared to 14.6% of male respondents and 31.6% of female respondents in rural areas. In rural areas, 48.8% of males and 47.4% of females completed secondary education, making it the most common level obtained. In urban areas, 51.4% of males and 43.5% of females had completed secondary education. In urban regions, bachelor's degree holders were more common (10.8% of men and 4.3% of women) than in rural areas (4.9% of men and 5.3% of women). Only 8.1% of urban males held a master's degree, making them extremely uncommon.

4.4 Occupational Distribution: Significant differences between respondents from rural and urban areas were found in occupational statistics. With 89.5% of women and 82.9% of men working in agriculture, farming was the most common occupation in rural areas. Urban males, on the other hand, were more likely to work for the government (45.9%) or the commercial sector (27%). 52.2% of urban females reported being unemployed, which is a high unemployment rate. The prevalence of entrepreneurship was marginally higher in urban regions, with 8.7% of urban women and 16.2% of urban men involved in business ventures. Small numbers of people from other professions, such as students and independent contractors, were found in both rural and urban areas. Overall, the results show significant disparities in respondents' age, marital status, level of education, and occupation between rural and urban areas. According to the research, aging populations, lesser educational attainment, and a strong reliance on agriculture are characteristics of rural areas. On the other hand, formal education levels are higher in metropolitan regions, and there are more jobs in the public and private sectors, but female unemployment rates are also higher. These demographic findings offer a starting point for more investigation in later chapters.

Lifestyle Factor	Rural (%)	Urban (%)	Chi-Square (χ²) Value	p- value	Significance
Fruits & Vegetable Intake (Daily)	20%	18.3%	1.275	0.735	Not Significant
Fast Food Consumption (Several times/week)	0%	8.3%	7.958	0.093	Borderline Significant
Physical Activity (Active Lifestyle)	70%	33.3%	17.638	0.000	Highly Significant
Sedentary Lifestyle (More than 6 hrs inactivity/day)	10%	23.3%	4.508	0.212	Not Significant
Tobacco & Alcohol Use (Regular Consumption)	18.3%	10%	4.291	0.232	Not Significant

Table 2

4.5. Nutritional Practices and How They Affect NCDs Consumption of Fruits and Vegetables

Although the overall intake is still low, the data shows that rural areas consume slightly more fruits and vegetables than urban areas. Approximately 20% of people in rural areas and 18.3% of people in urban areas eat fruits and vegetables every day. There is no discernible difference in consumption between the two groups, according to the chi-square test ($\chi^2 = 1.275$, p = 0.735). One risk factor for NCDs, such as metabolic and cardiovascular diseases, is a diet deficient in fruits and vegetables.



Consumption of Fast Food

The consumption of fast food is significantly higher in urban areas. Approximately 8.3% of people in cities eat fast food multiple times a week, while none of the participants in rural areas reported doing so. According to the statistical test, there is a marginally significant correlation between residing in an urban area and consuming more fast food ($\chi^2 = 7.958$, p = 0.093). In urban populations, this tendency raises the risk of diabetes, hypertension, and obesity.

4.6 Physical Activity and Sedentary Lifestyle

Active Way of Life

The study reveals a wide disparity in levels of physical exercise. Only 33.3% of people in metropolitan regions have active lifestyles, compared to 70% in rural areas. The results of the chi-square test show a highly significant difference ($\chi^2 = 17.638$, p = 0.000). Because sedentary jobs and habits are encouraged by urbanization, the risk of NCDs including obesity and cardiovascular disease rises.

Inactive Hours and Sedentary Behavior

Sedentary behavior, such as sitting and screen time, is more common in cities. Compared to 10% of people in rural regions, over 23.3% of those in urban areas reported engaging in inactive behavior for more than six hours every day. The statistical analysis, however, indicates no significant difference ($\chi^2 = 4.508$, p = 0.212). Obesity and metabolic problems are exacerbated by prolonged inactivity.

4.7. Use of Alcohol and Tobacco

Rural and urban people has different substance usage habits. Rural areas had higher rates of regular alcohol and tobacco usage (18.3%) than urban areas (10%). The chi-square test, however, shows no discernible difference between the two groups ($\chi^2 = 4.291$, p = 0.232). Cancer, liver damage, and lungs illness are all associated with excessive alcohol and tobacco use.

Variable 1	Variable 2	Correlation Coefficient (r)	Significance (p- value)	Interpretation
Urban Living	Physical Activity	-0.378	< 0.01	Lower activities in Urban residents
Urban Living	Sedentary Lifestyle	0.866	< 0.01	Urban populations engage in more inactive behavior
Fast Food Consumption	Fruit & Vegetable Intake	-0.234	< 0.05	Higher fast food intake leads to lower fresh food consumption
Fruit & Vegetable Intake	Overall Health Status	0.214	< 0.05	Health improves with higher fruit and vegetable consumption
Tobacco & Alcohol Use	NCD Diagnosis	0.338	< 0.01	Higher substance use is linked to higher NCD prevalence
Urban Living	NCD Diagnosis	-0.706	< 0.01	Urban populations report higher NCD cases
Rural Living	Healthcare Awareness	-0.354	< 0.01	Rural residents have lower awareness of health services

Table 3

Variable 1	Variable 2	Correlation Coefficient (r)	Significance (p- value)	Interpretation	
Limited Healthcare Access (Rural)	Poor Health Outcomes	0.561	< 0.01	Lack of healthcare leads to worse health conditions	

Significant relationships between lifestyle choices, urbanization, and health outcomes are found in the study. Urbanization has a positive correlation with sedentary lives (0.866, p < 0.01), showing increased inactivity in urban regions, and a negative correlation with physical activity (-0.378, p < 0.01), suggesting that urban individuals are less active than their rural counterparts. A weak positive correlation (0.214, p < 0.05) between fruit and vegetable intake and overall health status highlights the advantages of a diet rich in fresh foods, while fast food consumption is negatively correlated with fruit and vegetable intake (-0.234, p < 0.05), indicating that frequent fast food consumption reduces fresh food intake. There is a positive correlation between substance use, specifically alcohol and tobacco use, and NCD diagnoses (0.338, p < 0.01), particularly heart disease (0.383, p < 0.01). Rural populations have a higher prevalence of NCDs (-0.706, p < 0.01), most likely as a result of higher substance use and less access to healthcare. Furthermore, there is a strong correlation between poor health outcomes and limited access to healthcare (0.561, p < 0.01) and a negative correlation between rural living and healthcare awareness (-0.354, p < 0.01), highlighting the need for better healthcare infrastructure and education in rural areas.

5. Discussion:

The study's conclusions shed important light on how Nepal's rural and urban populations differ in terms of lifestyle characteristics and how those variations affect non-communicable diseases (NCDs). The findings point to notable differences in sedentary behavior, substance use, physical activity levels, and eating patterns, all of which have substantial ramifications for public health interventions and policies. The findings are interpreted, contrasted with earlier studies, and their implications for further study and publishing are covered in this section.

5. 1. Nutritional Practices and the Risk of NCDs

According to the study, there was no significant difference in the intake of fruits and vegetables between rural and urban populations ($\chi^2 = 1.275$, p = 0.735). This is consistent with earlier research, like that conducted by Bista et al. (2021), which found that 97% of Nepalese adults do not eat enough fruits and vegetables, which increases their risk of micronutrient deficiencies and non-communicable diseases. According to Mishra et al. (2015), a significant risk factor for metabolic disorders, diabetes, and cardiovascular illnesses is a low consumption of fresh vegetables. Fast food consumption, on the other hand, was significantly greater in urban regions (8.3% vs. 0% in rural areas, $\chi^2 = 7.958$, p = 0.093). This is in line with findings from Shrestha et al. (2020), who found that people in Nepal's cities are more likely to eat fast food often. Given that obesity, hypertension, and diabetes are common in metropolitan areas and are linked to regular fast food intake, this trend is alarming. The need for dietary interventions to encourage healthy eating habits, especially in urban areas, is further highlighted by the negative association (-0.234, p < 0.05) between the consumption of fast food and the intake of fruits and vegetables.

5.2. Physical Activity and Sedentary Behavior

The study found that the levels of physical exercise in rural and urban areas differed significantly. In line with findings from Bhandari et al. (2018), who found that urban inhabitants in Nepal spend more time in sedentary activities including office work and screen time, rural residents were substantially more active (70% vs. 33.3% in urban regions, $\chi^2 = 17.638$, p = 0.000). The negative relationship between urbanization and physical activity (-0.378, p < 0.01) emphasizes how urbanization encourages sedentary lifestyles, which raise the risk of NCDs and have a negative impact on metabolic health. Compared to 10% of people in rural regions, 23.3% of urban dwellers spent more than six hours a day inactive, indicating that sedentary behavior was more common in urban settings. The tendency is consistent with



international research showing that urbanization is linked to a decrease in physical activity and an increase in sedentary behavior, even if the difference was not statistically significant ($\chi^2 = 4.508$, p = 0.212) (WHO, 2018). These results highlight the necessity of urban-focused interventions, like community-based fitness programs, public exercise areas, and corporate wellness programs, to encourage physical activity.

5.3. Use of Alcohol and Tobacco

The study discovered that although the difference was not statistically significant ($\chi^2 = 4.291$, p = 0.232), rural areas had higher rates of alcohol and tobacco use (18.3% vs. 10% in urban areas). This result is in line with studies by Timalsina and Singh (2021), who found that semi-urban Kavre had greater rates of harmful alcohol intake (15.8%) and tobacco usage (36%). The association between alcohol and tobacco use and higher risks of liver, cardiovascular, and respiratory diseases is further supported by the positive connection between drug use and NCD diagnoses (0.338, p < 0.01), especially in rural populations.

In addition to reduced access to healthcare and awareness initiatives, cultural and societal factors may also contribute to the increased prevalence of substance use in rural areas. This emphasizes the necessity of focused interventions, like community-based education campaigns, more stringent enforcement of tobacco control legislation, and easier access to substance misuse treatment facilities, to lower alcohol and tobacco use in rural areas.

5.4. Risks of NCDs and Urbanization

Urbanization was found to have a positive link with sedentary behavior (0.866, p < 0.01) and a substantial negative correlation with physical activity (-0.378, p < 0.01). Given that urbanization is frequently linked to lifestyle changes that raise the risk of NCDs, such as poor diets, sedentary behavior, and physical inactivity, these findings are in line with global trends (WHO, 2018). The influence of urbanization on health outcomes is further highlighted by the increased prevalence of NCDs in urban regions (-0.706, p < 0.01). But rural communities also have serious health issues, especially when it comes to less access to healthcare and less knowledge of available options (-0.354, p < 0.01). The need for better healthcare infrastructure and education in rural areas is highlighted by the substantial association (0.561, p < 0.01) between poor health outcomes and limited access to healthcare. These findings align with Gyawali et al. (2020), who emphasized the importance of strengthening primary healthcare systems to address the dual burden of communicable diseases and NCDs in Nepal.

5.5. Consequences for Interventions in Public Health

The study's conclusions have significant ramifications for Nepal's public health programs and policy. Targeted measures are needed in urban areas to encourage healthier diets, decrease fast food consumption, and increase physical activity. Among the possible interventions are:

1. Urban Areas: putting in place corporate wellness initiatives, setting up public workout areas, and starting public health campaigns to encourage physical activity and a nutritious diet.

2. Rural Areas: Improving access to substance addiction treatment facilities, enforcing tobacco control laws more strictly, and launching community-based education programs are ways to combat alcohol and tobacco use.

3. National Initiatives: Enhancing nutrition education and decreasing reliance on fast food among both urban and rural populations.

5.6. Evaluation in Relation to Other Studies

The results of this study are in line with earlier investigations of Nepal's NCD risk factors. For instance, Bista et al. (2021) emphasized the pervasiveness of inadequate fruit and vegetable intake and physical inactivity, whereas Mishra et al. (2015) observed high rates of hypertension, diabetes, and tobacco use. In order to address the growing burden of NCDs in Nepal, the study also expands on the work of Adhikari et al. (2023), who highlighted the necessity of better



healthcare infrastructure and capacity-building initiatives. However, by directly comparing rural and urban populations and pinpointing particular lifestyle factors that raise the risk of NCDs, this study offers fresh insights. The application of correlation analysis to investigate the connections among lifestyle choices, urbanization, and health outcomes enriches the body of knowledge and lays the groundwork for further investigation.

5.7. Research Publication Implications

The study's conclusions have important ramifications for future research and publications. The study offers evidencebased suggestions for focused public health interventions, adding to the expanding corpus of research on NCDs in lowand middle-income countries (LMICs). Robust statistical analysis and a comparative cross-sectional design guarantee that the results are trustworthy and applicable to other LMICs dealing with comparable issues. Longitudinal studies should be the main focus of future research in order to better understand how NCD risk factors change over time and the effects of certain therapies. Furthermore, more thorough information on socioeconomic characteristics, health literacy, and healthcare access may shed additional light on the factors that influence the risk of NCDs in Nepal.

6. Conclusion and Recommendation

Bhairav Tole, Ramdhuni Municipality-8, Sunsari (Rural Area) and Ward No. 3, Biratnagar Metropolitan City, Morang (Urban Area), Nepal are the subjects of this study, which compares rural and urban lifestyle factors and their effects on non-communicable diseases. The study shows that Nepal's rural and urban populations differ significantly in terms of lifestyle characteristics. While rural populations are more likely to suffer from liver and respiratory ailments due to alcohol and tobacco use, urban inhabitants are more likely to be sedentary and consume fast food, which increases their risk of obesity, diabetes, and cardiovascular diseases.

The results highlight the critical need for focused public health initiatives: while rural areas need policies to lower substance use and enhance access to healthcare, urban areas should prioritize encouraging physical activity and a nutritious diet. For both groups, national efforts to improve nutrition education and lessen reliance on fast food are crucial. Policymakers can use these evidence-based suggestions as a starting point to create region-specific plans to address Nepal's rising NCD burden.

7. References

1. Adhikari, B., Pandey, A. R., Lamichhane, B., KC, S. P., Joshi, D., Regmi, S., Giri, S., & Baral, S. C. (2023). *Non-Communicable Disease Service Readiness in Nepal: A Further Analysis of Nepal Health Facility Survey-2021*.

2. Bhandari, G. P., Angdembe, M. R., Dhimal, M., Neupane, S., & Bhusal, C. (2014). State of non-communicable diseases in Nepal. *BMC Public Health*, *14*(1), 23.

3. Bista, B., et al. (2021). Prevalence of non-communicable diseases risk factors and their determinants: Results from STEPS survey 2019, Nepal. *PLOS ONE*, 16(7), e0253605.

4. Dahal, S., Sah, R. B., Niraula, S. R., Karkee, R., & Chakravartty, A. (2021). Prevalence and determinants of non-communicable disease risk factors among adult population of Kathmandu. *PLoS ONE*, *16*(9), e0257037.

5. Gyawali, B., Khanal, P., Mishra, S. R., van Teijlingen, E., & Meyrowitsch, D. W. (2020). *Building Strong Primary Health Care to Tackle the Growing Burden of Non-Communicable Diseases in Nepal.* Global Health Action, 13(1).

6. Mishra, S. R., Neupane, D., Bhandari, P. M., Khanal, V., & Kallestrup, P. (2015). Burgeoning burden of non-communicable diseases in Nepal: a scoping review. *Globalization and Health*, *11*(1), 32.

7. Oli, N., Vaidya, A., & Thapa, G. (2013). *Behavioural Risk Factors of Noncommunicable Diseases among Nepalese Urban Poor: A Descriptive Study from a Slum Area of Kathmandu*. Epidemiology Research International.



8. Sitaula, D., et al. (2022). Knowledge, attitude and practice regarding diabetes and hypertension among school students of Nepal: A rural vs. urban study. *PLOS ONE*, 17(8), e0270186.

9. Timalsina, P., & Singh, R. (2021). Assessment of Risk Factors of Noncommunicable Diseases among Semiurban Population of Kavre District, Nepal. Journal of Environmental and Public Health.

10. Yadav, U. N., Ghimire, S., Mistry, S. K., Shanmuganathan, S., Rawal, L. B., & Harris, M. (2021). *Prevalence of Non-Communicable Chronic Conditions, Multimorbidity and Its Correlates among Older Adults in Rural Nepal: A Cross-Sectional Study.* BMJ Open, 11, e041728.

11. World Health Organization. (2018). Noncommunicable diseases. Retrieved from <u>https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases</u>