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## Original Research Article

## Prevalence of risk factors of non-communicable diseases in young adult populations of Shuklagandaki Municipality, Tanahun District, Nepal

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## ABSTRACT

**Background:** Non-communicable diseases (NCDs) are known as chronic diseases which do not transmit from person to person. NCDs have a long duration and slow progression. Chronic non-communicable diseases constitute the major burdens of illness and disability in almost all countries of the world. The study assessed the prevalence of risk factors for non-communicable diseases among young adults in the Shuklagandaki Municipality of Tanahun district.

**Materials and Methods:** A cross-sectional analytical study was conducted from June to October 2018 among young adults (20–40 years) in the Shuklagandaki Municipality of Tanahun district. The required study sample size was 336. Multistage probability sampling was applied to study sites and respondents and used World Health Organization's (WHO) STEPWISE SURVEY 1 and 2 to collect data. For this, we adopted WHO's STEPS tool edition 2.2, Nepalese translated by NHRC during the stepwise survey in 2013.

**Results:** The proportion of smoking was 14% which was higher in males (30%) than in females (6.2%). Alcohol consumption among young adults was 23.5%. Physical inactivity was seen among 38.4% of respondents. The prevalence of hypertension, diabetes and CVDs were 5.7%, 6% and 7% respectively. Sex and marital status were found to be significantly associated (p-value<0.005) with smoking. Likewise, sex and monthly income were associated (P-value<0.005) with alcohol consumption. Sex, marital status and education were associated (P-value<0.005) with physical inactivity. Smoking and sitting time were associated (P-value<0.005) with hypertension.

**Conclusion:** The study showed a high prevalence of smoking and alcoholism amongst the young adult population. Awareness programs on prevalent risk factors have to be conducted for preventing exposure to risk factors.

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## 1. Introduction

NCDs include chronic diseases, principally cardiovascular disease, diabetes, cancer, and asthma/chronic pulmonary disease (COPD), in addition to injuries and mental illness.<sup>1</sup> In 2018, NCDs killed 41 million persons every year, equal to 71% of all deaths worldwide.<sup>2</sup> NCDs are estimated to account for 37% of total deaths in Afghanistan, 56% of total

deaths in Bhutan, 59% of all deaths in Bangladesh and 60% of total deaths in India.<sup>3</sup> Similarly, in Nepal, out of the total deaths NCDs account for nearly 60%.<sup>4</sup>

Risk factors for NCDs include modifiable, non-modifiable and metabolic factors. WHO has prioritized the four behavioral factors i.e. consumption of tobacco, alcohol and unhealthy diets, and physical sedentariness.<sup>5</sup> As per the study conducted in Lalitpur district of Nepal in adolescents, 17.2% were currently involved in smoking and

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8.1% in alcohol consumption.<sup>6</sup> The prevalence of smoking and alcohol were 37.1% and 28.5% in 2008<sup>7</sup> but it had been decreased in 2013 as the prevalence of smoking and alcohol use were 18.5% and 17.4%. Moreover, the daily consumption of fruits and vegetables was 1.8 servings on average in 2013.<sup>8</sup> Furthermore, more studies stated a higher rate of tobacco and alcohol consumption in Nepal.<sup>8</sup>

This study focused to assess the prevalence of risk factors of non-communicable diseases and their associated factors amongst the young adult population of Shuklagandaki Municipality of Tanahun district, Nepal.

## 2. Methods

We conducted a cross-sectional study amongst the young adult people (20–40 years) in the Shuklagandaki Municipality of Tanahun district. We determined the study sample size considering the average prevalence of risk factors in 34% of various studies conducted in Nepal. The final sample size was 336 with a permissible error of 5% and a 95% confidence limit.

Multistage probability sampling was performed in this study. There were 12 wards in Shuklagandaki Municipality. Out of 12 wards, 25% of total wards i.e., three wards were drawn as a sample using the lottery method. From the selected wards 100, 130 and 106 sample households were taken from four, five and seven wards through proportionate sampling techniques. Each household was selected through systematic random sampling and one member of higher age between 20–40 years was taken from each household.

For collecting the required data, WHO STEPS instrument version 2.2 was used which was translated into Nepali by NHRC during the steps survey 2013. We used weighing scales, stature meters and aneroid sphygmomanometer for measuring weight, height and blood pressure respectively and calculated BMI regarding their height (centimeter) and weight (kilogram). The height and weight were measured in centimeters and kilograms respectively. We measured blood pressure three times with an interval of 5 minutes and recorded measurements and average measurement was used for assessing their blood pressure and BMI.

We used Epi-data and SPSS 20 to enter and analyze the data respectively. We calculated frequency, percent, mean and standard deviation for assessing the prevalence of risk factors of NCDs. We applied the  $\chi^2$  test to associate demographic, socioeconomic and behavioral factors with the prevalence of risk factors of NCDs.

The research proposal was reviewed and approved by the Institutional Review Committee of Pokhara University Research Center. We took written permission from Shuklagandaki Municipality of Tanahun district. Informed consent was taken from each participant. We maintained confidentiality throughout the study and used the collected information only for study purposes. We requested all

respondents for their voluntary participation. In case of an abnormal range of blood pressure and BMI, we counseled respondents regarding healthy diets and physical exercise and suggested visiting near health facilities for further information.

## 3. Results

### 3.1. Demographic characteristics

Among 336 respondents, the majority of respondents were female i.e. 67.3%. Most of the respondents (90%) were of age groups 25–29 with a mean age of 29.43(SD-5.929) with 20 and 40 minimum and maximum respectively. Nearly half (41.7%) of the respondents were from the advantaged groups whereas a minimum (0.6%) was from disadvantaged and marginalized groups. Most of the respondents (86.6%) reported that they follow the Hind religion. Only a few (2.4%) respondents were Christian. Moreover, the majority (75.3%) of the respondents were married and only 0.3% of respondents were refused. More than half of the respondents (55.4%) were from nuclear families.

### 3.2. Socio-economic characteristics of participants

Among 336 respondents, nearly half (46.1%) of respondents completed secondary-level education. More than one-fourth (33.6%) of respondents were involved in Business and only 3% were involved in foreign service. Out of 294 respondents, 80.6% of the respondent's monthly family income falls under NRS. 5000–54999.

### 3.3. Prevalence of risk factors of NCDs

Out of 336 respondents, the majority of respondents (43.50%) had a history of hypertension. More than one-third (38.40%) were physically inactive and only 9.50% had a history of hypertension (Figure 1).

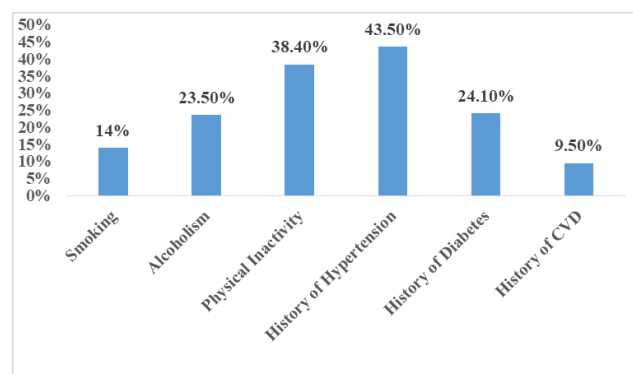
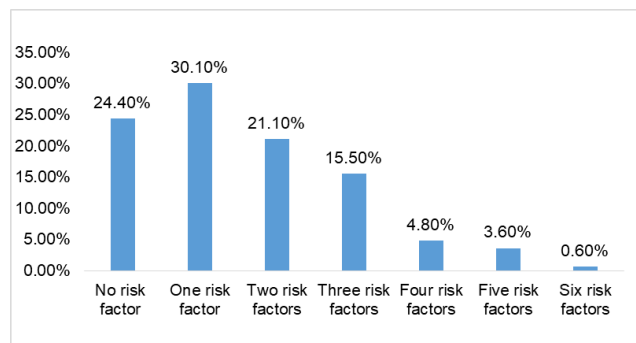


Fig. 1: Prevalence of risk factors of NCDs

### 3.4. Distribution of risk factors of NCDs

The majority (30.1%) had one risk factor and only 0.6% had six risk factors (Figure 2).



**Fig. 2:** Distribution of the number of risk factors of NCDs

### 3.5. Consumption of fruits and vegetables in a week

Out of 336 respondents, one-third (34.8%) respondents consume fruits  $\leq 2$  days in a week with a mean of  $4.04 \pm 2.318$ , a median of 3, a minimum of 0 and a maximum of 7 and 75.3% of respondents consume vegetables  $\geq 6$  days in a week with mean  $6.20 \pm 1.471$ , median seven, minimum zero and maximum seven (Table 1).

Association of demographic and socioeconomic characteristics with smoking, alcohol and physical inactivity.

We found that the sex and marital status of respondents were found to be significantly associated with smoking. Sex was significantly associated with alcohol use. Similarly, sex, marital status and education were found to be significantly associated with physical inactivity.

### 3.6. Association of behavioral risk factors with major NCDs

Smoking and sitting time during the day were significantly associated with hypertension (Table 3).

## 4. Discussion

The prevalence of recent smokers was 14% which was lower as compared to WHO STEPS Survey 2013 (18.5%),<sup>9</sup> Biratnagar (18.5%),<sup>10</sup> Lalitpur (17.2%)<sup>6</sup> and Bangladesh (35.7%).<sup>11</sup> Dissimilarity in the study population may be the cause for the low rate of smoking in this study. This study showed that 23.5% of respondents were alcohol users which are higher compared to the study conducted in Tamil Nadu (17.3%)<sup>12</sup> and Lalitpur district (14.4%).<sup>6</sup> The prevalence of alcohol use was lower in China as 6.3% of older Chinese people were heavy drinkers compared to 0.2% of older Indian People.<sup>13</sup> The prevalence of alcohol consumption was high in this study which could be due to the trend of

parties and programs celebrating soft drinks and liquors. This study has revealed the prevalence of hypertension was 5.7% which was lower as compared to the study conducted in India (29.1%).<sup>14</sup> The reason might be due to dissimilarity in the study population as disease prevalence is higher among the elderly population as compared to young adults. The prevalence of diabetes was 6% which was consistent with the study conducted in Biratnagar.<sup>10</sup>

The study shows smoking was statistically significant with sex and marital status. The current study shows that the prevalence of smoking was high in males than in females. Similar results were seen in the study conducted in Bosna and Herzegovina,<sup>15</sup> Africa,<sup>16</sup> Bangladesh,<sup>17</sup> Uganda,<sup>18</sup> China, Ghana, Mexico, India, and Russia. Likewise, a similar study in the Kaski district shows that the rate of smoking was 6.1% which was higher in males (11.9%) than females (0.6%) and was found to be associated with age and sex.<sup>19</sup> Another study in India, also shows the statistical significance between sex and smoking.<sup>14</sup> The current study shows alcohol consumption was seen more among males than females which was constant with the study performed in China, Ghana, Mexico, India, Russia and South Africa.<sup>13</sup> This study shows physical inactivity was significantly associated with sex which was consistent with the study performed in Bangladesh.<sup>20</sup>

This study revealed that two factors smoking and a history of hypertension were found to be statistically significant with hypertension. A similar study in Biratnagar shows that Smoking and alcohol use was found to be statistically associated with hypertension.<sup>10</sup> Similarly smoking and alcohol use were significantly associated with hypertension in the study conducted in Tamil Nadu.<sup>12</sup> Another study in the Kaski district showed that ethnicity was found statistically significant with hypertension.<sup>19</sup> This study disclosed that there was no association between diabetes and behavior characteristics but alcohol use was strongly associated with the presence of diabetes in the study conducted in Tamil Nadu.<sup>14</sup> Likewise the study conducted in Biratnagar shows that smoking, alcohol consumption and medium-level exercise were found to be significantly associated with diabetes.<sup>10</sup> The current study shows that there was no association of risk factors with CVD. Similar findings were found in the study conducted in Biratnagar.<sup>10</sup>

This study identified the prevalence of smoking, alcohol consumption and physical inactivity. So, it helps the policy-maker and public health experts to develop different intervention programs which inhibit unhealthy practices. We used standardized tools to collect the essential information. However, this study enclosed only quantitative evidence. Most evidences were generated considering the reported data. Human behavior itself is a complex phenomenon. It may need empirical information for the particular assessment of the existence of risk factors of

**Table 1:** Fruits and vegetable consumption in a week

Items	Number (n)	Percentage (%)	Mean	SD	Median
Fruits					
≤ 2 days	117	34.8	4.04	±2.318	3
3-5 days	112	33.3			
≥ 6 days	107	31.8			
Minimum=0, Maximum=7					
Vegetables					
≤ 2 days	12	3.6	6.20	±1.471	7
3-5 days	71	21.1			
≥ 6 days	253	75.3			
Minimum=0, Maximum=7					

**Table 2:** Association of demographic and socio-economic characteristics with smoking, alcohol and physical inactivity

Items	Smoking (p-value)	Alcoholism (p-value)	Physical Inactivity (p-value)
Sex	0.001*	0.001*	0.001*
Age	0.068	0.846	1.40
Ethnicity	0.410	0.209	0.334
Religion	0.289	0.697	0.082
Marital status	0.001*	0.967	0.001*
Type of family	0.204	0.915	0.720
Level of education	0.82	0.143	0.004*
Work status	0.350	0.242	0.422
International wealth Index	0.130	0.533	0.242

**Table 3:** Association of behavioral risk factors with major NCDs

Items	Hypertension P-value	Diabetes P-value	CVD P-value
Smoking	0.023*	Fisher exact test=0.02	Fisher exact test=0.251
Alcoholism	0.226	Fisher exact test=0.10	Fisher exact test=0.85
Hard-exercise	0.231	Fisher exact test=0.128	Fisher exact test=1.000
Medium-exercise Physical inactivity	Fisher exact test=0.488 0.994	Fisher exact test=1.00 Fisher exact test=0.710	Fisher exact test=1.000 Fisher exact test=0.394
Daily sitting time	0.010*	Fisher exact test=0.002	Fisher exact test=0.399

NCDs amongst young adults in Shuklagandaki municipality of Tanahun district.

## 5. Conclusion

The prevalence of smoking was 14% which was higher in males (30%) than in females (6.2%). Alcohol consumption practice among young adults was 23.5%. Physical inactivity was seen among 38.4%. The prevalence of hypertension, diabetes and CVD were 5.7%, 6% and 7% respectively. To reduce the risk associated with NCDs, much emphasis should be given to the prevention of exposure to risk factors of NCDs. Furthermore, community-based health education and health promotion programs should be conducted for quitting harmful habits (smoking use and alcohol consumption) and encouraging them to adopt healthy behaviors such as healthy diet consumption and physical fitness.

## 6. Ethical Approval

The study proposal was reviewed and proved by the Institutional Review Committee of Pokhara University, Nepal.

## 7. Source of Funding

None.

## 8. Conflict of Interests

There are no conflicts of interest.

## 9. Availability of Data


All data and other required documents will be provided on request.

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