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Lifestyle related health risk factors regarding non-communicable diseases among adults in Morang District

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Abstract

Introduction: Non-communicable diseases are the leading causes of disease burden worldwide. According to World Health Organization estimates, NCDs are responsible for 74% of all deaths globally, with around 77% of premature deaths from NCDs occurring in low- and middle-income countries. This study aims to assess the lifestyle related health risk factors of non-communicable diseases among adults in Nepal, in which two- third of annual deaths are attributable to non-communicable diseases.

Methods: A cross sectional study was conducted among adults in Morang district, Nepal. Data collection involved the assessment of the risk factors of obesity, smoking, alcohol consumption, inadequate fruits and vegetable consumption, inadequate physical activity, are raising blood pressure. Ethnical approval was obtained.

Results: Two hundred forty participants participated in the study, of which the most prevalent risk factor was obesity (58.3%). Out of total participants, 41.6% had consumed tobacco, 31.2% had consumed alcohol, 41.6% had consumed inadequate fruits and vegetables, 30.4% had inadequate physical activity, and 29.1% had raised blood pressure. Similarly, education is statistically associated with lifestyle risk factors. Male participants of age above 40 years were found to be statistically associated with current tobacco and alcohol consumption.

Conclusion: Health related risk factors are causes of non-communicable disease. Most of the participants had two or more risk factors for non-communicable disease. Education is significantly associated with all the risk factors among the participants.

Keywords: Lifestyle; Risk factors; Non-communicable disease; Adults

1. Introduction

Non-communicable diseases (NCDs) are diseases of long duration with slow progression. Being the leading cause of adult mortality and morbidity worldwide, cardiovascular diseases (including heart disease and stroke), diabetes, cancers, and chronic respiratory diseases (including chronic obstructive pulmonary disease (COPD) and asthma) dominate the NCD mortality and morbidity (World Health Organization 2011a).

WHO global health observatory data (2015) reflected that out of 56.4 million global deaths, 70% were due to non-communicable diseases. Above three-quarters NCD deaths occurred in low- and middle-income (LAMI) countries, with about 48% of deaths occurring before the age of 70. Majority (45% of all NCD deaths) deaths in that year were due to cardiovascular disease¹.

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It is well established that non-communicable diseases (NCDs) are the leading cause of adult mortality and morbidity worldwide, including the Southeast Asia region (SEAR) [1]. Four main NCDs, namely cardiovascular diseases (CVDs), diabetes, cancers, and chronic respiratory diseases, are mainly responsible for this high mortality and morbidity. Of the estimated 14.5 million total deaths in 2008 in SEAR, more than half (55%) of them were due to NCDs, mainly cardiovascular disease (25%)².

NCDs already impose the largest health burden in Nepal in terms of lives lost due to ill health, disability, and early death (DALYS). Furthermore, future aging in Nepal will increase the burden of NCDs since the proportion 65 and older will rise from 4.2% in 2000 to 5.8% in 2025³. Older populations are more likely to get NCDs. Thus, the health burden from NCDs will rise in parallel with aging⁴.

NCDs pose an unacceptable health and economic burden for countries in the Southeast Asia (SEA) region. NCDs and their risk factors are escalating unchecked in most member countries⁵. A study suggested that if urgent and specific focus on preventing, treating, and controlling NCDs is targeted, the burden of NCDs will soon be unbearable to a poor nation like Nepal⁶.

Facing the epidemiological transition like many LMICs, Nepal is also experiencing a double burden of communicable and non-communicable diseases. CVDs are the most common cause of NCD admissions in Nepal (38%), according to a 2010 hospital-based study¹². It is well known that up to 80% of heart disease, stroke, and type 2 diabetes and over a third of cancers could be prevented by eliminating common risk factors, mainly tobacco use, unhealthy diet, physical inactivity, and the harmful use of alcohol¹³. These unhealthy behaviors lead to metabolic changes such as raised blood pressure, obesity, raised blood sugar, and lipids. Moreover, coexistence of modifiable behavioral and metabolic risk factors in the same person increases the individual's total risk of developing acute vascular events such as heart attacks and strokes³.

In one study conducted in Nepal the risk factors of NCDs were found to be high levels of tobacco use (51.9 %), current alcohol intake (17.4%), overweight (32.9 %), low physical activity (3.5 %), and low vegetable and fruit consumption (98.9%)¹⁰. These factors are common modifiable factors in a person's daily life and are determined by social structures, economic disparities, and market forces that make buying and consuming unhealthy products such as ultra-processed foods and drinks¹¹.

The Ministry of Health and Population (MoHP) in 2010 introduced the Package of Essential Non-communicable Diseases (PEN) to screen, diagnose, treat, and refer cardiovascular diseases, COPD, cancer, diabetes, and mental health at health posts, primary health care centers, and district hospitals for early detection and management of chronic diseases within the community. In Nepal, it is being run in eight districts, and the government had plan to extend the program to 20 more districts in fiscal year 074/075 selected districts¹².

National Steps survey: A step-wise approach to non-communicable (chronic) disease risk factor surveillance, beginning with the STEPS survey in 2003, is essential. Raising awareness for NCD prevention and control through health promotion activities is crucial component of this effort¹³.

2. Methods

The cross-sectional study was conducted between May 2021 and April 2022 at the outpatient department of the Purbanchal University Teaching Hospital. The sample size of 240 was calculated using Cochran's formula to estimate the prevalence of health risk factors among adults residing in Morang district. We assumed a prevalence of 28.8% based on a previous study in Nepal, a desired confidence interval (CI) of 95%, and an acceptable margin of error of 5%. The final sample size included 240 participants¹⁴.

Non-probability purposive sampling was employed to recruit adults age above 18 years. A semi-structured questionnaire was used to collect information on health risk behaviors, physical activity questionnaires. Anthropometric measurements, and past medical history through interviews. The questionnaire's validity was ensured through literature review and consultation with experts. Preliminary testing of the questionnaire was conducted on 10% of the samples at Sunsari district.

Following informed consent, a detailed health behavior history was recorded, and a blood pressure and BMI were checked for that patient with inclusion criteria for study purposes. WHO STEPS survey was used to assess the health risk behaviors where consumption of alcohol, tobacco, dietary habit, obesity, physical activity, and hypertension were assessed.

Adults with an age of more than 18 years to 60 years residing in Morang district of Belbari, Sundarharaicha municipality, and Kanepokhari rural municipality were selected for the study. Participants who were unavailable, had serious illness, and couldn't communicate were excluded from the study.

Data were entered into Microsoft Excel and analyzed using SPSS v.17. Descriptive and analytic statistics were employed, including frequencies, percentages, means, and standard deviations for demographic and clinical data. Chi-square tests were used to assess associations between categorical variables. Statistical significance was set at a p value ≤ 0.05 .

This study received approval from the Institutional Review Committee of Purbanchal University School of Health Sciences and different municipalities of Morang district.

3. Results

The average age of respondents was 55.2 ± 11.3 years, with 37.5% aged 41-50yrs. More than half (55%) were female, and 75% were married. In terms of ethnicity, 35.41% belonged to the advanced Janjati group, and 25% had formal education. About 28.75% were homemakers, and 62.5% had a family income sufficient for 6-12 months. (Table 1)

Table 1 Characteristics of the respondents

Variables	Number	Percent (%)
Age		
20-40 years	70	29.16
41-50 years	90	37.5
51-60 years	80	33.33
Mean \pm SD: 55.2 ± 11.3		
Sex		
Male	108	45
Female	132	55
Ethnicity		
Dalit	5	.208
Disadvantaged Janjati	15	6.25
Disadvantaged non Dalit (Terai Caste)	20	8.3
Religious minorities	35	14.58
Advantaged Janjati	85	35.41
Upper Caste group	80	33.33
Marital status		
Married	180	75
Single	50	20.8
Unmarried	10	4.1
Education		
Illiterate	40	16.66
Formal Education	60	25
Primary	40	16.66
Secondary	42	17.5

Higher secondary completed	35	14.58
Bachelor degree and above	23	9.58
Occupation		
Government	32	13.33
Non-government	35	14.58
Self-employed/Business	65	27.08
Homemaker	69	28.75
Retired	39	16.25
Family Income		
Income sufficient for less than 6 month	57	23.75
Income sufficient for 6-12 month	150	62.5
Income sufficient for more than 12 month and surplus	33	13.75

Table 2 shows that 74.4% of males use tobacco, and 70.66% consume alcohol. 60% of females have inadequate fruit and vegetable intake. Inadequate physical activity is seen in 72.6% of males, and 50% of both males and females are overweight.

Table 2 Risk Factors of Respondents

Risk Factors	Male n=108	Female n=132	Total n=240
	Number (%)	Number (%)	Number (%)
Current Tobacco consumption	80 (74.07)	20 (15.15)	100 (41.66)
Current Alcohol Consumption	53 (70.66)	22 (29.33)	75 (31.25)
Inadequate fruits and vegetables consumption	40 (40)	60 (60%)	100 (41.66)
Inadequate physical activity	53 (72.6)	20 (27.39)	73 (30.41)
Obesity	70 (50)	70 (50)	140 (58.3)
Hypertension	50 (20.83%)	20 (8.3%)	70 (29.1)

Likewise, tobacco consumption was higher among men (APR: 16, 95%CI: 8.4-30.3) , with age group more than 40 yrs.(APR: 2.44, 95%CI 1.3-4.3), illiterate people(APR 3.61, 95%CI 1.75-7.4) and married people (APR: 1.6, 95%CI 0.86-2.95)

Alcohol consumption was higher prevalent among men (APR: 4.8, 95%CI 2.6-8.7), age group > 40yrs (APR: 1.33, 95%CI 0.73-2.4) And illiterate people (APR: 2.7, 95%CI 1.3-5.6).

Insufficient intake of fruits and vegetables was significantly less prevalent among male participants (APR: 0.7, 95%CI 0.41-1.18), and married people (APR: 0.25, 95%CI 0.13-0.46). A higher prevalence was observed among participants older than 40 years (APR: 1.07, 95% CI 0.6-1.88), illiterate participants (APR: 2.7, 95% CI 1.3-5.6). Similarly, low physical activity was significantly lower among participants of male (APR: 0.18, 95% CI: 0.10–0.34), age > 40 years (APR: 0.85, 95% CI 0.46-1.54) and higher among richest participants (APR: 2.74, 95% CI: 1.42–5.27) (Table 3).

Being overweight was significantly higher among participants aged >40 years (APR: 1.46, 95% CI: 1.18–1.80) compared to those aged 18 to 39 years. A higher prevalence was observed among married participants of (APR: 1.6, 95% CI: 0.86–2.95). Similarly, raised BP among males (APR 4.82, 95% CI 2.6-8.8), illiterate people (APR: 5.7, 95% CI 2.7-11.8) and married people (APR: 5.7, 95% CI 2.79-11.8) (Table 3).

Table 3 Multivariate analysis of Risk factors with selected Sociodemographic

	Smoking (APR with CI)	Alcohol consumption (APR with 95%CI)	Insufficient fruit and vegetable intake (APR with 95%)	Physical inactivity (APR with 95%)	Obesity (APR with 95%)	Raised BP (APR with 95%)
Age						
18-40yrs	Ref	Ref	Ref	Ref	Ref	Ref
>40yrs	2.44(1.3-4.3)	1.33(0.73-2.4)*	1.07(0.6-1.88)*	0.85(0.46-1.54)	0.93(0.53-1.63)	0.17(0.08-0.33)
Female	Ref	Ref	Ref	Ref	Ref	Ref
Male	16(8.4-30.3)	4.8(2.6-8.7)	0.7(0.41-1.18)	0.18(0.1-0.34)	1(0.59-1.67)	4.82(2.6-8.8)*
Education status						
Literate	Ref	Ref	Ref	Ref	Ref	Ref
Illiterate	3.6(1.75-7.4)*	10(4.6-22.7)*	2.7(1.3-5.6)*	0.09(0.04-0.2)	0.17(0.08-0.38)	5.7(2.7-11.8)
Marital Status						
Single	Ref	Ref	Ref	Ref	Ref	Ref
Married	1.6(0.86-2.95)	0.53(0.29-0.98)	0.25(0.13-0.46)	8.9(4.6-17.1)	1.6(0.86-2.95)	5.7(2.79-11.8)

4. Discussion

4.1. Tobacco Consumption

The study reports a high prevalence of tobacco consumption among males (29%) compared to females over 40, similar to a survey in central Nepal where 42.1% of males and 18.4% of females used tobacco. The highest usage was observed in the 55-64 age groups.

4.2. Alcohol Consumption

In regard to Nepal, a cross-sectional study on factors associated with problematic alcohol consumption was 6.9 times higher in males than females which are similar to this study (22.08%), whereas this study is in contrast to the finding that married people consume the alcohol more in comparison to single living.

4.3. Fruits and vegetable consumption

The study shows a marginal improvement in fruit and vegetable intake compared to the previous STEPS survey. No significant association was found with meeting recommended intake levels. However, educated participants were more likely to consume fruits and vegetables, consistent with the 2019 STEPS survey findings, where higher education levels were linked to better intake. Educated participants were more likely to consume adequate levels of fruits and vegetables.

4.4. Physical

The current study reports a low prevalence of physical inactivity (30.41%), which is similar to a study conducted in Jukhel, Duwakot Kathmandu, in 2014, where 43.3% had a prevalence of low physical activity. Multivariate analysis found a significant association between marital status and education level, which is in contrast to the study conducted in.

4.5. Obesity

With regard to Nepal, a nationwide survey in Nepal shows that overweight and obesity were observed among 57% of respondents, which is similar to the findings of this study, and this study shows no significant association between obesity and sex, which is in contrast to the findings of the STEP survey 2019.

4.6. Raised BP

Within the present study, one quarter 29.1 % of Nepalese had raised BP, which is consistent with the STEP Survey in Nepal in 2019.

5. Conclusion

The study shows that Nepalese adults, on average, have two NCD risk factors, with higher numbers in males and older individuals, indicating that risk factors cluster with age. Limited access, affordability, and social perceptions about fruits and vegetables contribute to their insufficient intake in Nepal.

Recommendation

NCD prevention policies in Nepal should be tailored to the country's socio-demographic diversity. The new multi-sectoral action plan must consider Nepal's federal structure and evolving risk factor trends for effective control and prevention of NCDs.

Compliance with ethical standards

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Disclosure of conflict of interest

The author declares no conflict of interest.

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Statement of informed consent

Written and informed consent was obtained from all individual participants included in the study.

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