



Original Research Article

## Prevalence of Risk Factors for Non Communicable Disease in Sarangkot, Kaski, Nepal

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Received: 19/01/2015

Revised: 20/03/2015

Accepted: 06/05/2015

### ABSTRACT

**Background:** Non communicable diseases have been the leading cause of morbidity and mortality in almost all countries. Many of the NCDs are associated with lifestyle related factors and by adopting good lifestyle and simple change in behavior, 80% of the NCDs can be prevented.

**Methods:** A cross sectional study was conducted among 330 25-64 years respondents to determine the prevalence of risk factors and the factors associated with NCDs in Sarangkot, Nepal. Face to face interview and physical measurement was applied to assess behavioral and physiological risk factors.

**Results:** The mean age of the respondents was 43.28 ( $\pm 12.3$ ). Among them 34.8% respondents were current tobacco users, using daily. The average age of started use of tobacco products was 19.5 ( $\pm 8.3$ ) years. An average year of smoking was found 28.5 ( $\pm 13.7$ ). About one-fourth (26.1%) of respondents were found current alcohol consumers. Majority (99%) of the respondents have  $< 5$  servings of fruit and vegetables. Only 18.5% of respondents had low physical activity ( $< 600$  met) whereas majority 45.8% of the respondents had high physical activity ( $\geq 3000$  met). Most of the females (70.5%) had habit of low physical activity whereas 42.4% of male had high physical activity. Average resting time was found 3.6 hours. Mean BMI observed was 23.4 kg/m<sup>2</sup>. Prevalence of the overweight/obesity (BMI  $\geq 25$  kg/m<sup>2</sup>) was found 31.5%. The result also revealed that 34.2% respondents had raised BP (SBP  $\geq 140$  and/or DBP  $\geq 90$ ).

**Conclusion:** High prevalence of the risk factors of NCDs among the study population was found.

**Keywords:** NCDs, Risk factors, BMI.

### INTRODUCTION

Non Communicable diseases (NCDs) are the major causes of death in almost all countries. Approximately 58 million deaths were expected to occur in 2005. Out of this, around 60% (35 million) was contributed by the NCDs. Over 60% of global deaths are the result of NCDs. The

burden of NCDs is one of the major public health challenges that all countries are facing, regardless of their economic status. NCDs have threatened economic and social development of every country and, are predicted to increase in the coming decade without specialized efforts at country level. (1)

Now-a-days NCD related deaths are increasing among the low and middle income countries. <sup>(2)</sup> Around 80% of NCDs deaths occur in low and middle-income countries and these deaths occur in equal numbers among men and women. <sup>(3)</sup>

Easily modifiable risk factors underlie most of the NCDs and explain the vast majority of deaths at all ages relating to NCD among men and women in all parts of the world. They include tobacco use, excessive alcohol consumption, physical inactivity and low intake of fruits and vegetables. <sup>(4)</sup>

This study aims to determine the prevalence of risk factors of the non communicable disease and the factors associated with it among the peoples of Sarangkot Village Development Committee (VDC) of Kaski District, Nepal.

## MATERIALS AND METHODS

A community based cross sectional survey was conducted in between September 2013 to February 2014 in Sarangkot VDC, Kaski using the WHO <sup>(3)</sup> Stepwise approach. A total of 330 individuals were participated in the study from all the nine wards of the VDC. One step proportionate cluster random sampling method was used to collect the samples. Nine wards of the VDC were considered as clusters and the numbers of respondents to be included in the study were determined proportionately based on the total number of person between 25-64 years in each cluster. The information related to the risk factor has been collected using the step1 and step 2 tools of the WHO <sup>(3)</sup> stepwise approach as a reference. Data was collected through the face to face interview with the help of structured questionnaire among the persons age between 25-64 years age selected randomly. Physical activity was assessed using Global Physical Activity Questionnaire (GPAQ) and fruits and vegetables intake was measured using

standard serving size. Physical measurement of the respondents was done using standard scientific instruments. Approval to conduct the research was obtained from Public Health Programme of Pokhara University as well as VDC office. Informed consent was taken from each respondent before the interview and privacy and confidentiality was maintained as per ethical guideline for conducting research on human subjects. SPSS version 16 was used for data processing. Data was analyzed in terms of different aspect of statistics as to full the study objectives.

## RESULTS

**Baseline information of respondents:** The studies showed that majority of the respondents (28.8%) were between the ages 25-34 years. The mean age of the respondents was 43.8( $\pm$ 12.3). Females were outnumbered (60.9%) than males. Most of the respondents (91.2%) were married and represent the nuclear family (55.8%). Majority of the respondents were Aryan (69.7%). Among the respondents, 78.5 % were literate and 21.5% were illiterate.

**Distribution of risk factors for NCDs:** Table 1 describes the distribution of risk factors of NCDs with gender. Among 330 respondents, 34.8% were current tobacco users, who used tobacco products daily. The result showed that the prevalence of use of tobacco product was high among male respondents 69.6% in compare to the female 30.4%. The average age of started use of tobacco products was 19.5( $\pm$ 8.3) years. Based on date of data collection average years of smoking was found to be 28.5( $\pm$ 13.7). Among 330 respondents, 26.1% of them were found as current alcohol consumers. Prevalence of alcohol consumption was found high in male 82.6% as compare to female 17.4%. Average number of standard drink of consumed alcohol was 2.8 standard drinks. Almost

99% of the respondents have <5 servings of fruit and vegetables. It was found that mean number of servings of fruit and vegetables consumed was 2.1. The study also showed that male used to have high intake of fruits and vegetables 2.3 than female 1.9 (p=0.001). The study showed that only 18.5% of respondents had low physical activity (<600 met) whereas majority (45.8%) of the respondents had high physical activity ( $\geq 3000$  met). Most of the females (70.5%) had habit of low physical activity whereas 42.4% of male had high physical activity. Average resting time was found to be 3.6 hours.

During the survey, to calculate the physiological risk factors, physical measurements were done using the standard scientific instruments. Body Mass Index (BMI), blood pressure, hip circumference,

body fat percentage of the respondents were observed. Mean BMI observed was 23.4 kg/m<sup>2</sup>. Prevalence of the overweight/obesity (BMI  $\geq 25$  kg/m<sup>2</sup>) was found 33.9%. Female were found to be more obese 68.3% than males 31.7%. The study revealed that average hip circumference of the respondents was 35.7 inch including 35.6 inch of male and 35.8 inch of female. Data also showed that average body fat percentage of the respondents was 28.9%. Females were seen to have high fat percentage 32.6% than the male 23.2 %.

The result also revealed that 34.2% respondents had raised BP (SBP $\geq 140$  and/or DBP $\geq 90$ ), among them male (50.4%) were found at high risk of hypertension than females (23.9%). By sex, male were at high risk in compared to female. (Table 1)

**Table 1: Distribution of risk factors of NCDs with gender (n=330)**

Characteristics	Both sexes	Males	Females
<b>Tobacco use</b>			
% who currently smoke/chew tobacco daily	34.8	69.6	30.4
<b>For current smokers only</b>			
Average age started smoking (years)	19.5	20.5	17.3
Average years of smoking	27.5	25.9	31.2
<b>Alcohol consumption</b>			
% who consume alcohol daily	26.1	82.6	17.4
Average no. of standard drinks of alcohol consumed	2.8	3.0	1.9
<b>Fruits and vegetables consumed</b>			
Mean number of serving of fruit consumed per day	1.2	1.3	1.1
Mean number of serving of vegetable consumed per day	1.2	1.4	1.1
Mean number of total serving of fruits & vegetables consumed per day (P=0.001)	2.1	2.3	1.9**
<b>Physical activity</b>			
% with low levels of activity (defined as <600 met min/week)	18.5	29.5	70.5
% with high levels of activity (defined as $\geq 3000$ met min/week)	45.8	42.4	57.6
Average resting time (hour)	3.6	3.5	3.7
<b>Physical measurements</b>			
Mean body mass index –BMI (kg/m <sup>2</sup> )	23.4	22.8	23.7
% who are overweight or obese (BMI $\geq 25$ kg/m <sup>2</sup> )	33.9	31.7	68.3
% who are obese (BMI $\geq 30$ kg/m <sup>2</sup> )	7.6	1.8	5.8
Average hip circumference (inch)	35.7	35.6	35.8
Average body fat percentage	28.9	23.2	32.6
Mean systolic blood pressure (SBP) (mmHg), excluding those currently on medication for raised BP	127.4	132.8	123.8
Mean diastolic blood pressure (DBP) (mmHg), excluding those currently on medication for raised BP	84.2	88.1	81.6
% with raised BP (SBP $\geq 140$ and/or DBP $\geq 90$ )	34.2	50.4	23.9
% with raised BP (SBP $\geq 160$ and/or DBP $\geq 100$ )	12.7	17.8	9.5

(\*\*= highly significant at value 0.001)

The study showed that the respondents of age group 55-64 years were at high risk of NCDs as high prevalence of

risk factors was observed i.e. smoking 45.2%, alcohol consumption 31%, raised BP 45.2% whereas prevalence of obesity was

high among the respondents of age group 35-44 years (48.8%). (Table 2)

**Table 2: Distribution of Risk factor for NCDs by age composition**

Variables	Smoking	Alcohol consumption	Raised BP	Obesity
Age in years				
25-34	19 (20.0)	19 (20.0)	20 (21.1)	29 (30.5)
35-44	27 (32.9)	21 (25.6)	30 (36.6)	40 (48.8)
45-54	31 (44.9)	20 (29.0)	25 (36.2)	26 (37.7)
55-64	38 (45.2)	26 (31.0)	38 (45.2)	17 (20.2)
Total	115 (34.8)	86(26.1)	113 (34.2)	112 (33.9)

Figures showed in parenthesis indicate percentage

**Associations of risk factors for NCDs with selected variables:** It was found that the increased consumption of tobacco products along with the increased age. Respondents of age group 55-64 years were more than three times likely to consume tobacco (p=0.001, OR 3.30, 95% CI 1.7-6.4) in compare to age group 25-34. Males were

about eight times likely to consume tobacco (p=0.001 OR 7.74 95% CI 4.65-12.89) in compare to female. No association was found between age and alcohol consumption (p=0.366). Whereas data showed that males were fifteen times likely (p=0.001 OR 15.17 95% CI 8.08-28.51) to consume alcohol then females.

**Table 3: Associations of risk factors for NCDs and their strength with selected variables**

Variables	Use of tobacco		Alcohol consumption		High blood pressure		Obesity	
	p	OR 95% CI	p	OR 95% CI	p	OR 95% CI	p	OR 95% CI
Age								
55-64/	.001	3.30(1.7-6.4)	.366	-	.036	3.49(1.3-9.4)	.001	0.50(0.2-1.0)
45-54/		3.26 (1.6-6.5)				3.12 (1.1-8.7)		1.52 (1.1-2.9)
35-44/		1.96 (1.1-3.9)				1.60 (.53-4.8)		2.07 (1.1-3.8)
25-34		1				1		1
Sex M/F	.001	7.74 (4.6-12.8)	.001	15.17 (8.0-28.5)	.026	2.08 (1.1-3.9)	.063	-
		1		1		1		
Consume alcohol Y/N	-	-	-	-	.001	3.05 (1.5-5.9)	.960	-
						1		
Physical activity L/M/H	-	-	-	-	.935	-	.012	2.4(1.3-4.5)
								1.7(1.2-2.9)
								1
Smoking Y/N	-	-	-	-	.009	3.31 (1.3-8.5)	.001	2.3 (1.4-3.8)
						1		1

M-Male, F-Female, H-High, M-Medium, L-Low, Y-Yes, N-No

No association was found between physical activity and hypertension (p=0.200) but significant association was found among hypertension and age, sex, alcohol consumption and smoking. Respondents of age group 55-64 years were about three and half times likely to have high blood pressure (p=0.036, OR 3.49, 95% CI 1.3-9.4) in compare to age group 25-34. Males were about two times likely to have high blood pressure (p=0.026, OR 2.08, 95% CI 1.1-3.9) in compare to female. Respondents who consume alcohol were about three times likely to have high blood pressure (p=0.001,

OR 3.05, 95% CI 1.5-5.9) than respondents who do not consume. Respondents who had habit of smoking were more than three times likely to have high blood pressure (p=0.009, OR 3.31, 95% CI 1.3-8.5) than respondents who do not had habit of smoking.

Similarly significant association was found between the obesity and the factors associated with it such as age (p=0.001), physical activity (p=0.012) and smoking (p=0.001) where no association was observed between obesity by alcohol consumption (0.960) and sex (0.063). Respondents of 35-44 years were about two

times likely to have obese in comparison to age group 25-34. Respondents with moderate physical activity were about two times and with low physical activity were about two and half times greater risk of obesity.

## DISCUSSION

This study showed that 34.8% of total respondents were current smokers and the average age started smoking was 19.5 years where according to the study of SOLID Nepal <sup>(5)</sup> 2007/8, 23.8% of respondents were current smokers and the average age of initiating smoking was 21.6 years. This result may be due to the study area which was semi urban where there is easy access to the tobacco products. According to the study conducted in western cities of Nepal <sup>(6)</sup> in 2008, prevalence among boys was higher than the girls (20.5% and 2.9% respectively) which is similar to the findings of this research that reveals males smoke 7.74 times more in compare to female.

The respondents of the age group 55-64 were found to be at risk of NCDs as they have high prevalence of risk factors such as smoking (45.2%), alcohol consumption (31%), where as high prevalence of obesity was seen among the respondents of age group 35-44 i.e. 48.8% whereas similar findings was observed in the study conducted by SOLID Nepal <sup>(7)</sup> in 2007/8 that the populations of age group 55-64 have high prevalence of risk factor for NCDs such as smoking (57%) and high prevalence of obesity among respondents of 35-44 years 45.7% but contradictory findings were shown by the study of Gautam R <sup>(7)</sup> on 2012 that the prevalence of hypertension was 27.8% whereas this study showed that hypertension prevalence as 45%. This may be due to the small sample size of this study.

Findings of this study showed that males are at high risk of NCDs in compare

to the female as high prevalence of risk factors are seen in male respondents i.e. smoking 62%, alcohol consumption 55%, hypertension 50.4% but females are found to be more obese in compare to male 37.8%. According to the survey of SOLID Nepal <sup>[8]</sup> conducted in 2003 female were more obese than male. The study is supported by the survey conducted in three districts by SOLID Nepal<sup>5</sup> in 2007/8, as the study shows high prevalence of risk factors in male and obesity in females. The cross sectional study conducted in 2009 to determine the magnitude of NCDs and their risk factors on participants aged 25–64 years in Malawi <sup>[9]</sup> reveals the prevalence of tobacco smoking and alcohol consumption were high in males where overweight and physical inactivity were more common in females.

According to the findings of report of SOLID Nepal <sup>[8]</sup> 2003 and SOLID Nepal 2007/8, <sup>[5]</sup> 20% male and 17% female and 24.5% of men and 18.2% of women were found hypertensive respectively. These findings support the finding of this study that showed males are at high risk of hypertension as the prevalence of high blood pressure in male was 50.4% and female was 23.9%. Male are 3.09 times at risk of hypertension in compare to female. This study showed that mean number of total serving of fruits and vegetables consumed per day was 2.3 for male compared with 1.9 for female. Similar findings was shown in the study conducted in urban slums of Faridabad, India <sup>[10]</sup> that, mean number of servings per day of fruits and vegetables were 2.7 for men compared with 2.2 for women.

## CONCLUSION

Risk factors for NCDs were found high among the study population. By sex, male were at high risk in compared to female. The respondents of age group 55-64 years were at high risk of NCDs as high

prevalence of risk factors (smoking, alcohol consumption, raised BP) were observed and also respondents of age group 35-44 years as high prevalence of obesity observed. The entire selected risk factors showed statistical association with most of selected variables. It is recommended to conduct awareness campaigns for cassation of risk factors for NCDs.

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How to cite this article: Koirala B, Sharma I, Kaphle HP et. al. Prevalence of risk factors for non communicable disease in Sarangkot, Kaski, Nepal. Int J Health Sci Res. 2015; 5(6):456-461.

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