

Assessment of Behavioural Risk Factors of Non-Communicable Diseases among Higher Secondary School Teachers of Kathmandu

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ABSTRACT

Background: Behavioural risk factors such as smoking, harmful consumption of alcohol has been long associated with the development of many non-communicable diseases (NCDs). 63% of deaths globally and nearly 80% of death in developing countries like Nepal are caused by these chronic diseases¹. This study was aimed to assess behavioural risk factors of non communicable disease among teachers of higher secondary school. It was a cross-sectional study among teachers of higher secondary colleges of different higher secondary colleges of Kathmandu Valley.

Materials and methodology: Sampling was done by probability proportion to population sampling technique with a sample size of 345 (282 males and 82 females) teachers were selected. Interview regarding socio-demographic and other variables related information was conducted using the WHO NCD STEPS instrument version 2.2.

Results: The prevalence of smoking, consumption of smokeless tobacco, and alcohol consumption was found 7.05%, 33.97%, and 58.97% respectively. This study unveiled that male and female teachers were consuming fewer amounts of fruits than the WHO recommended average consumption, 4.61 and 4.18 servings of fruits in a day respectively.

Among all teachers 44.68% males versus 30.48% females were overweight and 7.44% males versus 7.31% females found obese in this study. Self-reported cases of hypertension (SBP \geq 140mmHg) and/or DBP \geq 90mmHg) were 6.38% male and 9.75% female where as self-reported cases of Diabetes 2.12% male and no female had diabetes. Teachers who consume tobacco are four times more likely to develop NCDs in male and twenty six times more likely to develop NCDs in female teachers. Teacher who were consuming recommended amount of fruits were six times less likely to develop NCDs in male and eleven times less likely to develop NCDs in female.

Conclusion: The prevalence of behavioural risk factors of NCDs are higher even in a high educational status. Thus interventional public health awareness approach are needed.

Key words: Behavioural risk factors, Non-communicable diseases

INTRODUCTION

Of the 57 million global mortality in 2008, 36 million, or 63% were due to non-communicable diseases (NCDs), such as heart and lung disease, CVA, cancer, hypertension and diabetes. ^[1] Non communicable diseases cause 44% of death and nearly 35% of deaths in Nepal are caused by these NCDs. ^[2] The risk of

development of NCDs increase with the presence of behavioural risk factor such as tobacco use, physical inactivity, unhealthy diet, harmful consumption of alcohol and some medical condition such as hypertension and diabetes mellitus. The combined burden of these Because of the huge cost of treatment and human suffering, NCDs are not affordable in developing

country like Nepal. The results of primary prevention of NCD programme using high risk approach demonstrate that they could reduce the incidence of NCD among the high risk individuals even in less than five years. [3]

Teachers are the role model for the student and usually the behavior of the teacher are well observed and imitate by students. If the teachers are free from these behavioural risk factors, then only good role modeling may be transmitted to their pupil. Thus this study aims to assess the behavioural risk factors of Non-communicable diseases among higher secondary school teachers.

MATERIALS AND METHODOLOGY

Sample size

The sampling was done purposively using probability proportionate to population sampling technique required number 354 samples were selected using formula:

$$\frac{Z^2 pq}{e^2}$$

where,

Total population= 6854 (4)

Here , by assuming

p= 0.5

q= 1-0.5

Z= 95%, 1.96

e= 0.05

Here we have formula

$$\frac{Z^2 pq}{e^2}$$

$$= \frac{1.96^2 \times 0.5 \times 0.5}{0.05^2}$$

$$= 384$$

$$= 384$$

Total target population is 6854 so for this study sample size is

$$n = \frac{384}{1 + \frac{384}{6854}}$$

$$= 364$$

$$= 364$$

$$= 364$$

Study period

From December 2015 to May 2016.

Study Area

The study was conducted in Higher Secondary Schools of Kathmandu Valley.

Study Population

Total 282 male and 82 female teachers from higher secondary schools of Kathmandu valley.

Data Collection

Different higher secondary schools of Kathmandu valley were selected by lottery method for sample size of 364. From Kathmandu five private Higher Secondary Schools namely Capital College and research Center, Balkumari, Kamana International School, Sanobharyang, Jubilant Higher Secondary School, Kalimati, Bijeswori Gyan Mandir Sainik Mahavidhyalaya, Bijeswori, Bijeswori Higher Secondary School, Bijeswori, Sitaram Higher Secondary School Ramkot and Viswo Niketan Higher Secondary School, Tripurewor were approached and total 225 teacher (49 from public colleges and 176 from private colleges) teachers taken as respondent for interview.

From Bhaktapur, one public and one private colleges were selected namely Kwopa Higher Secondary School, Changunarayan Road, Nicholson College, Sallaghari Bhaktapur respectively. Total 58 teachers (22 from public and 37 from private) were selected for interview.

From Lalitpur, total 80 teachers (34 from public and 46 from private) were selected from Namuna Machindra Campus, Lagankhel and Little Angels Higher Secondary School, Lalitpur.

Ethical consideration was maintained by taking written administrative permission for the study from the authorized institutions. Informed consent was obtained prior to information collection, after explaining about the purpose of the study to all the participants. Only interested participants were included in the study. Anonymity and confidentiality of the study was maintained with keeping code number in the questionnaire. Data was collected by protecting participants from physical, emotional and mental harm. Obtained information was used only for the purpose of the study. The participants were explained the purpose of the study and informed consent was obtained from the

participants before conducting the interview. On an average 4-5 teachers were interviewed per day and the average time required for an interview was 10- 15 minutes. All interview forms were reviewed daily for completeness and were checked for the correctness and accuracy by the researcher. Forms were updated daily on data based.

Study Tool

Interview regarding socio-demographic and other variables related information was conducted using the WHO NCD STEPS instrument version 2.2. On the basis of extensive literature review, consultation with peers and subject specialist structured questionnaires of total 20 items to assess socio-demographic information and 49 questions to assess behavioral risk factors were developed by the researcher and software engineers as a form of pretested ODK collection application with the help of personal assistant device (PDA). The instrument was only used after the validated by the research committee of NAIHS. Data transferred in excel sheet and analysis was done by using SPSS software version 20.

RESULT

Socio-demographic Information of Study Participants

58.51% of participants were among 25-39 years age group. More than two thirds (77.47%) of the participant were male and less than one thirds (22.53%) were female. The mean age of male and female was 39.55 years and 38.85 years, respectively.

Risk factors of NCDs

Out of 282 male teachers, prevalence of smoking, smokeless tobacco use, and consumption of alcohol were 11 (7.05%), 53

(33.97%), and 92 (58.97%), respectively (Table 1). The prevalence of smoking and alcohol consumption was higher in the age group of 25-39 years than another age group. Users of smokeless tobacco were higher among the age group of 40-54 years than other group. All the 82 female teachers were lifetime abstainer for smoking tobacco but 4 (2.56%) and 22 (14.20%) were user of smokeless tobacco and alcohol respectively. Among the users 49 (31.41%) male teachers were smokeless tobacco users and 70 (44.83%) male teachers consume alcohol (Table 2).

Table 1 : Participants' Age and Gender n=364

Age Groups (in year)	n (%)		
	Male	Female	Both
25-39	161(44.23)	52(14.28)	213 (58.51)
40-54	114 (31.32)	29 (7.97)	143 (39.29)
55-69	7 (1.92)	1 (0.28)	8 (2.2)
Total	282(77.47)	82 (22.53)	364(100)

The mean number of servings and standard deviation of fruit was 4.61 and ± 1.85 respectively for male teachers and 4.18 ± 1.88 respectively for female teachers. Regarding vegetable it was 6.96 ± 0.39 for male teachers and 6.99 ± 0.11 for female faculty members. Physical activity which includes work related, travel related and recreational related activity had two categories. 4.2% of male were engaged in vigorous intensity work related activities for at least 10 minutes continuously and 58.2% male were engaged in moderately- intensity work related activities for at least 10 minutes continuously whereas no females teachers had habit of vigorous intensity work related activities for at least 10 minutes continuously, 20% females teachers were engaged in moderately- intensity work related activities for at least 10 minutes continuously.

Table 2 : Age and Sex Distribution of Tobacco and Consumer of Alcohol

Age Groups (in years)	n (%)						
	Smoker		Smokeless tobacco users		Alcohol consumption		Total
	Male	Female	Male	Female	Male	Female	
25-39	8 (10.39)	0	15 (19.47)	2 (2.60)	42 (54.54)	10 (13.00)	77 (100)
40-54	3 (4.26)	0	28 (40.00)	1 (1.44)	27 (38.58)	11 (15.72)	70 (100)
55-69	0	0	6 (75.00)	1 (12.50)	1 (12.50)	0	8 (100)
Total	11 (7.05)	0	49 (31.41)	4 (2.56)	70 (44.87)	22 (14.20)	156 (100)

Characteristic	n (%)	
	Male (n=282)	Female (n=82)
Fruits consumption		
Mean (SD) number of serving of fruits consumed	4.61 (1.85)	4.18 (1.88)
Vegetable consumption		
Mean (SD) number of serving of vegetable consumed	6.96 (0.39)	6.99 (0.11)
Physical activity detail		
Percentage of respondent involve in physical activities 150 moderate and vigorous minutes per week (≥ 600 MET adjusted minutes)	74.82	79.26
Work related		
Percentage Vigorous- intensity at least 10 mins continuously	4.2	0
Percentage Moderate-intensity at least 10 mins continuously	58.2	20
Travel related		
Percentage Physical activity travel related	48.4	17
Recreational related		
Percentage Vigorous- intensity at least 10 mins continuously	8.5	10.7
Percentage Moderate-intensity at least 10 mins continuously	7.7	1.1
Physical Measurement		
Percentage who are overweight (BMI ≥ 25 kg/m ²)	44.68	30.48
Percentage who are obese (BMI ≥ 30 kg/m ²)	7.44	7.31
Percentage of cases of hypertension (self-reported SBP ≥ 140 mmHg) and/or DBP ≥ 90 mmHg)	6.38	9.75
Percentage of cases of Diabetes - self-reported	2.12	0

Medical Conditions	Male (n=282)(%)	Female (n=82)(%)	Both (%)
Self reported cases of Hypertension	18 (72)	8 (88.89)	26 (76.47)
Self reported cases of Diabetes	6 (24)	0	6 (17.65)
Self reported cases of cancer	1 (4)	1 (11.11)	2 (5.88)
Total cases of NCDs	25 (100)	9 (100)	34 (100)

Variables	Male			Female		
	Odds of NCDs+nt/-nt	P value	95% CI	Odds of NCDs+nt/-nt	P value	95% CI
Tobacco use Yes/No	3.55	0.004	1.41-8.89	25.83	0.00001	4.47-149.02
Fruits serving (< 5 serving / ≥ 5 serving)	6.25	0.002	1.71-22.76	10.66	0.009	1.26-89.86
Vegetable serving (< 5 serving / ≥ 5 serving)	1.21	0.7	0.45-3.25	0.82	0.188	0.73-0.91
Physical Activity- MET/Week (<600MET/week/ ≥ 600 MET/week)	0.96	0.95	0.21-4.47	0.89	0.326	0.81-0.97
Overweight and obese Yes/No	1.85	0.19	0.73-4.71	0.86	0.853	0.19-3.93

Among all 282 male faculty members 211 (74.82%) and 65 (79.26%) were physically active as they involved in various work related, travel related and recreational related activities for 150 min/week or week (≥ 600 MET adjusted minutes). Regarding travel related physical activities 48.4% of male and 17% of female teachers travel more than 10 minutes continuously. 8.5% of male were engaged in vigorous intensity recreational related activities for at least 10 minutes continuously whereas 10.7% females teachers had habit of vigorous intensity work related activities for at least 10 minutes continuously, and 7.7% male were

engaged in moderately- intensity work related activities for at least 10 minutes continuously 1.1% females teachers were engaged in moderately- intensity work related activities for at least 10 minutes continuously. Male teachers were more overweight and obese (44.68% and 7.44%, respectively) in comparison with female (30.48% and 7.31%, respectively) (Table 3).

The result showed that total self-reported cases of hypertension was 6.38% in male and 9.75% in female and total self-reported cases of diabetes was found to be 2.12% in male where as no female had reported diabetes. 25 out of 282 (8.86%) males and 9 out of 82 (10.97%) females

were reported NCDs where majority of them were having hypertension (Table 4).

The odds ratio of having NCDs development among male teachers who were tobacco users was 3.55 times more ($P=0.004$, OR 3.55, and 95% CI 1.41- 8.89) whereas among female teachers who consumed tobacco was 25.83 times more ($P=0.00001$, OR 25.83, and 95% CI 4.47-149.02). Significant association found between intake of fruit less than or equal to five servings and NCDs development in which male teachers were 6.25 times more likely to develop NCDs ($P=0.002$, OR 6.25, and 95% CI 1.71- 22.76) whereas female teachers were 10.66 times more likely to develop NCDs who had habit of less than five serving of fruit intake (Table 5).

DISCUSSION

The present study was designed as descriptive study to assess various behavioral risk factors of non-communicable disease in respondents of higher secondary school. A total of 364 (282 male and 82 female) respondent were selected. 337 (82.5%) were currently married and 27 (7.5%) were never married. Teacher's ages ranged from 25 to 65 years with mean age of male were 39.55 ± 7.6 years and that of a female was 38.85 ± 6.65 years. Ibrahim et al., also had similar findings in demographic profile in which males were of 52.8% and females were 47.2% of total population and teacher's age were of 22 to 60 years group with a mean of 36.52 ± 7.62 and among them majority (83.7%) were married.

The Prevalence of smoking and smokeless tobacco, found 3.6% and 11.4% respectively, in our study. This finding is quite lower than the same found in Ahmedabad city with the prevalence of smoking and use of smokeless tobacco found 5.21% and 12.15% respectively. [5] WHO/FAO recommended intake of green leafy vegetables and fruits consumption daily for the prevention of NCDs is of a five servings or 400g. [6] Our study revealed that men and women were consuming quite adequate amounts of fruit and vegetables

than the recommend average consumption, more than 4 servings of fruits in a day and more than 6 serving of vegetable in a day which was higher with comparison with average consumption, for male; 2.80 servings of vegetables and 1.95 servings of fruits in a day and for female; 2.63 servings of vegetables, and 2.47 servings of fruits in a day. [5]

Both male 25.2% and 21.7% females were physically active which is similar to Basu and Biswas (2013) (physical inactivity found 38.6% in females and 38.4% in males). [7] Awareness of risk factors may be responsible for higher adequate activity among participants. 34.6% males versus 6.9% females and 5.8% males versus 1.6% females overweight and obese, respectively, in our study which was fewer compared with teachers or Western Saudi Arabia, Serious concern should be taken as overweight and obese is a sign of physical inactive.

According to this study, female teachers had more self reported hypertension 9.75% where as 6.38% of male teachers were self-reported hypertensive which is contrast with the report of men 28.7%, women 18.5% Non Communicable Diseases Risk Factors: STEPS Survey Nepal 2013. [8] The prevalence of diabetes found 24% of male and no female had diabetes. The findings of Chhaya et al, 2008, is similar with our findings with 11.11% of male had diabetes and no female reported it. [5]

CONCLUSION

In light of the results obtained, the high prevalence of modifiable risk factors of NCDs was present even in the high socio-economical background. Hidden cases of hypertension revealed that lack of health seeking behavior among faculty members. The risk factors such as physical inactivity, tobacco use, overweight and obesity need sound public health education.

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