

# Behavioural risk factors of non-communicable diseases among adolescents

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## Abstract

**Introduction:** Cardiovascular and other chronic diseases are becoming the major causes of morbidity and mortality in most of the third world countries, including Nepal. Unhealthy diet, physical inactivity and consumption of tobacco, alcohol, drugs etc. are major global determinants of non-communicable diseases and contribute to the excess death and disability among the poor in terms of mortality. This study was done to estimate the prevalence of behavioral risk factors of NCDs among adolescent.

**Methods:** A cross sectional study based on WHO stepwise approach for surveillance of Non-Communicable Diseases (NCDs) risk factors was conducted in Chitwan District to assess the risk factors of NCDs. Information was collected on substance abuse, dietary habits and physical activity through personal interview.

**Results:** About 50% male and 30% female respondents were currently abusing one or other forms of substance. Male (39%) and female (26%) were using tobacco products. It was found that only 14% of respondents were doing satisfactory level of physical activities.

**Conclusions:** Substantially high levels of the various behavioral risk factors among adolescents in Chitwan District suggest an urgent need for awareness raising programmes.

**Key words:** Addiction, Non-communicable Diseases (NCDs), Risk factors.

## Introduction

As correct dose of medicine is essential for treating an illness, similarly there is an equally important role of healthy diet and physical exercise for promotion of good health. Scientific evidence shows that unhealthy diet, physical inactivity and substance use like tobacco, alcohol, drugs etc. are major global determinants of non-communicable diseases (NCDs).<sup>1</sup> The World Health Organisation (WHO) has documented that developing countries are suffering from double burden of diseases. About 90% of the world's total disease burden occurs in developing countries, while only 10% of health expenditures are allocated there.<sup>2</sup> Currently the NCDs affects more poor people and these also contribute to the excess death and disability among the poor in term of mortality.<sup>3</sup>

The NCDs are cardiovascular, renal, nervous, mental diseases, arthritis, chronic non-specific respiratory diseases, permanent results of accidents, senility, blindness, and chronic results of communicable diseases.<sup>4</sup> Most of these NCDs share preventable risk factors such as tobacco use, high alcohol consumption, hypertension, sedentary life style and obesity.<sup>5</sup> Out of all NCDs, cardio-vascular diseases (CVDs) are most significant diseases in respect to mortality and morbidity.<sup>6-9</sup> Most of the behavioural risk factors are potentially modifiable ones.<sup>10</sup>

Among the all risk factors of NCDs, tobacco use remains as an important risk factors. It was estimated that about 5 million premature deaths in the world was attributed to smoking and 4 million of these deaths were in men.<sup>11</sup> It has been reported that regular smoking can increase the risk

not only of NCDs, but also of many other health hazards.<sup>12</sup> High consumption of alcohol and exposure of cigarette smoking may directly causes cirrhosis of the liver, cancer of the mouth, pharynx, pancreas and oesophageal cancer.<sup>13</sup>

Unhealthy diets and physical inactivity are two of the main risk factors for raised blood pressure, raised blood glucose, abnormal blood lipids, overweight/obesity, and for the major NCDs such as cardiovascular diseases, cancer, and diabetes.<sup>14</sup> High calorie diet and less physical exercise play a vital role for increasing the prevalence of obesity. Overall, 1.9 million deaths are attributable to physical inactivity. Physical inactivity has been identified as a leading risk factor in recent “world health reports” of the World Health Organization.<sup>1</sup> In the developing countries, obesity is positively correlated with higher socioeconomic status, while in the developed countries blood pressure with obesity is negatively associated with socioeconomic status.<sup>15</sup>

As NCDs are increasing rapidly in the developing world, the efforts for measuring and controlling the trend of NCDs is found inadequate. To anticipate the epidemic in NCDs, World Health Organization (WHO) has initiated the worldwide surveillance of risk factors using the WHO STEP-wise approach to Surveillance of risk factors for non-communicable diseases.<sup>16</sup> WHO reported that 60% of all deaths in the world are now caused by NCDs and every third death in the world is caused by cardiovascular diseases.<sup>17</sup>

NCDs are known to be increasing at an alarming pace in South-east Asian region (SEAR) where rapid changes in the economic, social and demographic determinants of health as well as embracing of unhealthy lifestyle in large segment of population are the contributing factors for NCDs.<sup>18</sup>

In Nepal, NCD associated morbidity and mortality is not documented in standardized format. It was estimated that the prevalence of CVD is 5.6% in the mountain area, 1.5% in the hills, and 5% in the Terai. It has also been reported that the prevalence of hypertension among adults is 5-20% and diabetes mellitus is 15% in urban and 2% in rural areas in the age group 15 years.<sup>19</sup> However, due to lack of systematic reporting, many cases of morbidity and mortality might have been omitted in the reported figures. The department of health services (FY 2006-2007) registered 81.73% of all hospital visits as cases of NCDs at national and regional health institutions.<sup>20</sup>

## Methods

This is a cross-sectional study conducted on both urban and rural areas of Chitwan District and lasted for six months

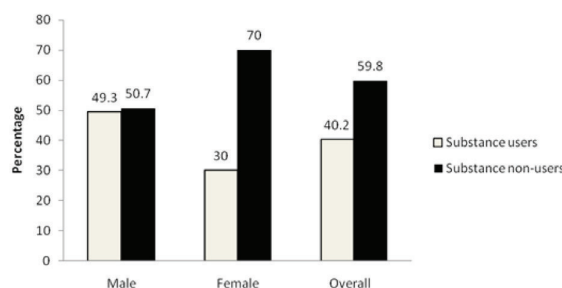
from 15th May to 25th Nov 2009. The Study is based on WHO stepwise approach for surveillance of NCDs risk factors.<sup>16</sup> The sample size was 1650 comprising both sexes aged 15-19 years by using the formula  $n=4pq / d^2$  (where d is the allowed error taken as 0.05,  $p=q=0.5$ ).<sup>21</sup> A multi-stage cluster sampling design was adopted for the study. 712 respondents from the urban areas and 938 from rural setting were selected in the study among them 925 were male and 725 were female. Prior to the interview, consent was obtained from the respondents. The investigators met each of them and collected information on substance abuse, dietary patterns and physical activities by using a pretested set of questionnaire.

Classification of physical exercise was done by following the Global Physical Activity Questionnaire (GPAQ) which was developed by WHO for physical activity surveillance in countries.<sup>22</sup>

## Results

The total number of respondents for the study was 1650 adolescents, 925 boys and 725 girls. The response rate was 95 per cent, excluding the non-residents who were away from their native place. A total of 712 respondents were from urban and 938 respondents were taken from rural areas.

The male respondents was found higher user of any forms of substances than female. Out of total respondents; about 50% male and 30% female were found using one or other forms of substances (Fig.1).

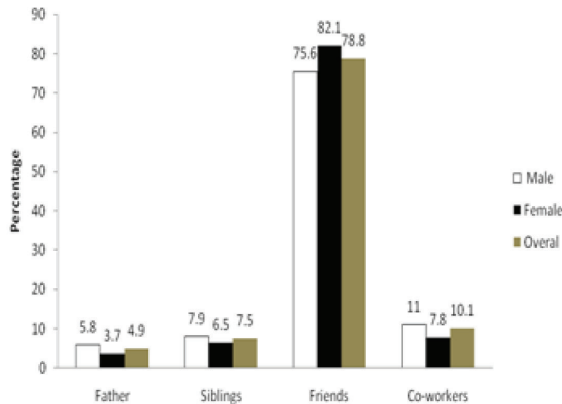


**Fig. 1:** Sex wise distribution of substance use

Nearly 40% of male respondents and 23 per cent of female respondents were using tobacco in one or other forms. The percentages of male and female alcohol user were 26.8 and 18.2 respectively. About 15% of male respondents were using one or other forms of narcotics whereas 8% female respondents were also found using some forms of narcotics. Higher percentage of respondents were found using opium in both sexes (male 9.3% and female 5.4%) followed by

nitrazepam (male 4.5% and female 3.6%) (Table 1).

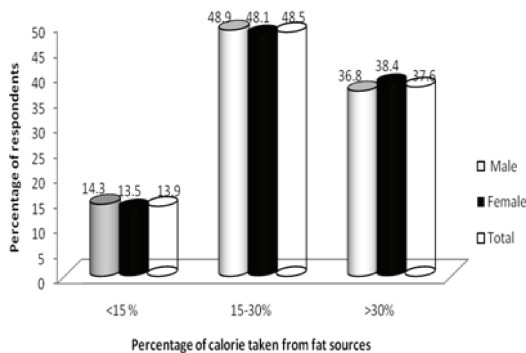
It has been revealed that majority of adolescents were influenced by their friends (78.8%), Co-workers (10.0%) and siblings (7.5%) for substance use (Fig. 2).



**Fig. 2:** Person influencing for substance abuse

It has been found that high percentages of respondents (26.2%) were consuming large amount of salt per day. Comparatively more number of female respondents (32.9%) was found consuming high amount of salt per day than male (20.9%) (Table 2).

Very high proportions of respondents were found consuming more than 30 percentage calories from the dietary fats (37.6%). Fat consumption was found very high among the male respondents (36.8%) than the female (38.4%) (Fig.3).



**Fig. 3:** Respondents taking percentage of calorie from dietary fat

It has been found that very high proportion of respondents (56.5%) male and 67.9% female) were found doing inadequate level of physical activity whereas only 20% male and about 5% female were found spending highly physically active life (Table 3).

**Discussion**

As the aim of the study was to assess the prevalence of behavior risk factors among adolescents which are responsible for several non-communicable diseases, we collected information regarding NCDs risk factors under 3 headings i.e. substance abuse, dietary patterns and physical activity.

It was found that about 50% of male and 30 % of female respondents were using substances. Nearly 40% of male respondents and 23 per cent of female respondents were using tobacco in one or other forms. Similar study conducted on school children of grade 8, 9 and 10 in central region of Nepal has reported over all 16.3% of respondents ever used tobacco product in any form and the rate among boys was significantly higher than that among girls.<sup>23</sup> The increased prevalence of tobacco use in the present study might be due to higher aged respondents. Another study reported the overall smoking prevalence in Nepal for the population aged fifteen or more is 37.4 % and there also higher percentage of males (47%) were tobacco user compared to female counterpart (27.6%).<sup>24</sup>

It was found that overall 26.8% male and 18.2% female respondents were taking one or other type of alcohol. Among the alcoholic substances, beer was the highly used substances (male 25.4% and female 16.1%) followed by wine (male 7.1% and female 2.9%) and jand (male 2.6% and female 1.5%). A similar study conducted in Nepal reported that 48.3% male and 27.7% female are currently using some type of alcohol. This high prevalence comparing to present study may be due to taking respondents wider age range in the study.<sup>25</sup>

About 15% of male respondents were using one or other forms of narcotics whereas 8% female respondents were also found using some forms of narcotics. Among the narcotics, opium was the highly used narcotics by both sexes (male 9.3% and female 5.4%). Nitrazepam, opium and cannabis were other mostly used drugs among the respondents. Surprisingly, some percentages of respondents were found using glue and boot-polish as addiction. A similar study conducted in Nepal in 2001 reported that cannabis (72.2%) Heroin (2.2%), opium (6.7%) and others like glue, boot polish, iodex (7.8%).<sup>25</sup>

Fats are very rich sources of energy. Everybody in the world is having fats in his or her lives. However, consumption of fat is risk for different forms of cancers and heart diseases. It was found from the present study that majority of the respondents were consuming fats more than the WHO recommended level. About 37% male and 14% of female respondents were found getting more than 30% of calorie

from fat sources. The dietary goals recommended by the various expert committees of WHO has suggested that dietary fat should be limited to approximately 15-30 per cent of total daily calorie intake.<sup>26-27</sup>

It has been found that high percentages of respondents (26.24%) were consuming large amount of salt (more than 15 gram) per day. Comparatively more number of female respondents (32.96%) was found consuming high amount of salt per day than male (20.97%). only 42% of respondents were found using normal level of salt per day. WHO recommendation is less than 5-10 grams salt per day. If it increases more than this, there will be risk for developing cancers and different forms of health diseases.<sup>28</sup>

The role of physical activity in the prevention of overweight and obesity is a very important one, and the WHO Global Strategy on Diet, Physical Activity and Health (WHO 2004) states: "Diet and physical activity influence health both together and separately. Although the effects of diet and physical activity on health often interact, particularly in relation to obesity, there are additional health benefits to be gained from physical activity that are independent of nutrition and diet, and there are significant nutritional risks that are unrelated to obesity. Physical activity is a fundamental means of improving the physical and mental health of individuals."<sup>29</sup> It has found that about 62% of respondent (56.54% male and 67.86% female) were found doing inadequate level of physical activity. Only 20% male and about 5% female respondents were found doing sufficiently active physical activity. 'Comparative quantification of health risk' published by WHO, 2004 has defined three level of exposure i.e. "level 1 or inactive" as doing no or very little physical activity at work, at home, for transport or during discretionary time. "level 2 or insufficiently active" as doing some physical activity but less than 150 minutes of moderate-intensity physical activity or 60 minutes of vigorous-intensity physical activity a week. And "level 3 or sufficiently active" is defined as at least 150 minutes of moderate-intensity physical activity or 60 minutes of vigorous-intensity physical activity per week.<sup>30</sup>

## Conclusion

Very high proportions of adolescents of Chitwan district are having various behavioural risk factors. This high prevalence of risk factors necessitates an urgent need for awareness raising programmes for developing healthy life styles like regular physical activities and habit of healthy diet. Strong legal enforcement is needed for discouraging substance abuse of various forms.

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