

# Health promoting behavior and associated factors among school going adolescents residing Bharatpur Metropolitan City of Chitwan District

Ram Bahadur Shrestha<sup>1&2</sup>

<sup>1</sup>PU College of Medical and Allied Science

<sup>2</sup>National Institute for Development and Research

Email: ramshrestha30@gmail.com, Tel.: 977-9845360146



\*Author

Ram Bahadur Shrestha

<sup>1</sup>PU College of Medical and Allied Science

<sup>2</sup>National Institute for Development and Research

\*Author Email:  
ramshrestha30@gmail.com, Tel.:  
977-9845360146

## Abstract

World Health Organization pointed out, 60 percent of the quality of health of an individual health and the life depends on his/her behavior and lifestyle. The aim of the study was to assess the health promoting behavior and associated factors among school going adolescents residing Bharatpur Metropolitan City of Chitwan District. A descriptive cross-sectional study design was conducted on 370 respondents and self-administered questionnaire used as data collection tool. Epi-data version 3.1 and SPSS version IBM 22 was used for data entry and analysis software respectively. Studies showed that the majority (84.3%) of adolescent were physically inactive. 26.4% of participants had poor levels of food eating habit and 47.2% had average level. Regarding the smoke and smokeless tobacco product using behaviors, 75.9% of adolescents had never smoke tobacco product i.e. good level of smoke tobacco product. The study also demonstrated that the majority of them (87.3%) had never consumed chewing tobacco i.e. a good level of using smokeless tobacco product. Furthermore, study showed that 5.4% and 1.9% of adolescents were identified as poor level of using smoke and smokeless tobacco product. Likewise, 45.9% of respondents have practice of alcohol consumption and (65.1%) of respondents have poor levels of regular health checkup behavior. With comparing five health promoting behaviors (i.e. Physical activity, healthy food habit, smoke and smokeless tobacco use, alcohol consumption and regular health checkup) study showed that three fifth of adolescents had an average level of health promoting behavior whereas, 20.3% of them had a good level of health promoting behavior and remaining 19.7% had poor level. Regarding to association between different demographic variables, gender-sex and educational qualification of mother were found to be statistically significant with health promoting behavior. Lifelong healthy and unhealthy lifestyle habits are established during adolescence period, developing behavior modification intervention, effective health promotion and disease prevention strategies for adolescents seems crucial.

**Key words:** Physical Activity, healthy food, tobacco use, alcohol consumption, regular health check up

## Introduction

Health promotion is a core and the most cost-effective and efficient strategy to improve health, health literacy, health empowerment, quality of life, social justice and reduce health inequality and poverty (WHO, 2009). Health is not the objective of living, health is a resource's for everyone's life and health promotion goes beyond healthy lifestyle of living to well-being (WHO, 1986). Health behaviors are attributes (such as belief, expectation, motives, value and perception); activities and efforts that individuals undertake to stay healthy to promote health and prevent potential diseases and live happy and fulfilled life (Masina, et al., 2017).

World Health Organization (WHO) pointed out, almost 60 percent of the quality of health of an individual health and the life depends on his/her behavior and lifestyle (Wang, Chen & Duan, 2009). Health demoting behavior like tobacco use, harmful alcohol consumption, unhealthy diet and physical inactivity are behavioral risk factor for the deterioration of the health and also one of the major risk factors of non-communicable disease. Due to poor lifestyle and behavior, global are facing the problem of non-communicable diseases (NCDs). Globally non-communicable diseases (NCDs) kill 40 million people each year which is equivalent to 70 percent of all deaths (WHO, 2017). The majority of such deaths were caused by the four main NCDs i.e., cardiovascular disease, cancer, respiratory disease and diabetes. Nearly 80 percent of these NCDs deaths occurred in low and middle- income countries (WHO, 2010). In Nepal, WHO and World Bank estimates showed that NCDs accounted for 39 percent of the total country's disease burden (Government of Nepal and WHO, 2014).

Good health-promoting behaviors depend on the living habits adopted during early years i.e. adolescent period. Adolescent is a transition from dependent childhood to independent and responsible adulthood. Out of population 26.5 million in Nepal 24.2 percent are adolescent according to census 2011. Health- promoting behavior in early stages of life influences the disease risks related to lifestyle in later periods of life as this is a critical period that influences both qualities of lifestyle (Evangeline, et al., 2014).

The WHO STEP wise Approach to NCD Risk Factor Surveillance (STEPS) survey Nepal in 2003, 2008 and 2013 have conducted to study on behavioral risk factor associated with non-communicable diseases (NCDs). STEPS survey Nepal in 2013 report indicates that around 2.3% of respondents were found not to be meeting the WHO recommendation for physical activity for health. By comparing minimum recommended intake of vegetable and fruit, 98.9% of respondents in the STEPS survey did not consume an adequate amount of fruit and vegetables on an average day. The STEPs survey, 2013 showed that the prevalence of smoking among respondent was 18.5%, average age of respondents started to smoke was 18.2 years. The Prevalence of smokeless tobacco use was 17.8%. Age of 15-69 years (48.1%) nearly one in every two men were found to be using either form of tobacco but women proportion was much less at 14.1%. The prevalence

of alcohol consumption was 17.4% i.e. 28.0% men and 7.1% women (current drinkers i.e. drank in the past 30 days). Although national level studies have been conducted in NCDs risk factors in general population which is related with health promoting behavior, still there is lack of studies in health promoting behavior in adolescents. The purpose of the study was to assess the health promoting behavior and associated factors among school going adolescents residing Bharatpur Metropolitan City of Chitwan District.

## Methods

### Study area and Population

The study was conducted in the Bharatpur Metropolitan City located in Chitwan district of Nepal with school going adolescents (15-19 year of old). The duration of the study was 6 month and data collection was conducted from July 4 to August 3, 2018.

### Study Design, Sample Size and Sampling Technique

The descriptive cross-sectional study design was used to capture 370 adolescents sample size of Bharatpur Metropolitan City. The sample size was calculated by using proportional based a statistical formula i.e.  $n = [(Z\alpha^2 P Q) / (d^2)]$  (where d is the allowed error taken as 0.05;  $Z\alpha = 1.96$ , for 95% confidence level;  $P = 0.3225$  (baseline level of indicators i.e. a study to assess the prevalence of behavioral risk factors for lifestyle diseases among late adolescents was conducted in Chennai, Tamil Nadu was used as the reference population) &  $Q = 0.6775 (1-P)$  (Evangeline, et al., 2014).

A cluster random sampling technique was adopted for the study. In Bharatpur Metropolitan City, there are 51 Secondary level Community/Government Schools and 32 Secondary level private Schools (which were registered in Lankhu Resource Centre). Almost 20% (i.e. 17) of secondary level school were covered (randomly) from the entire education institution running in Bharatpur Metropolitan. The government and private school were listed separately. The require number of school (government-10 and private schools-7) were selected using cluster random sampling technique on the proportionate base. From the selected schools the respondents were selected using simple random sampling technique.

### Data Collection Tools

Self-administered structured questionnaire used as tool to collect the data. The first part of the questionnaire included informed consent form and general information of the respondent. The second part of the questionnaire was included socio-demographic information such as age, sex, educational status of respondent and his/her parents, religion, family type, relationship with family and friends, family occupation, source of information and health program conducted by health institution and school services. The third part of the questionnaire included health promoting

behavior information, i.e. physical activity, healthy food habit, tobacco use, alcohol consumption and regular health check-up. A pre-test was conducted with 37 students (10% of the total sample) in Goathgau, Morang district before the data collection in order to improve the questionnaire and check for the reliability and validity of the questionnaire. Questionnaires was translated into local language i.e. Nepali. Again, Nepali language questionnaires were retranslated into English language.

### **Data analysis procedure and statistical analysis**

After the collection of data, all the data were checked and rechecked for its completeness and missing items. Epi-data version 3.1 and SPSS version 16 was used for data entry and analysis software respectively. Appropriate statistical tools like descriptive (frequency, percentage, mean, standard deviation) and inferential statistics (Chi-square) was applied for the data analysis. The level of significance was measured in value of  $p < 0.05$ .

Mean score was calculated from physical activity, healthy food habit, smoke and smokeless tobacco use, alcohol consumption and regular health check up to determine the level of health promoting behavior of the respondents [Good: Those adolescent who were value is above Mean + SD; Average: Between Mean  $\pm$  SD and Poor: Below Average (below Mean - SD)]. Details analysis was given below;

**Physical activity:** To calculate level of physical activity, overall physical activity is calculated from morning exercise, cycling/walking, work and playing sports

*Overall physical activity = (Vigorous morning exercise \* time duration \* 7) + (Moderate exercise \* time duration \* 7) + (Cycling \* time duration \* day duration per week) + (Work \* time duration \* day duration per week) + (Sports \* time duration \* day duration per week)*

- Good physical activity: Overall physical activity  $\geq$  420 minute per week

**Smoke and smokeless tobacco product:** The level of using smoke and smokeless tobacco product categories as good, average and poor according to the following criteria's;

- Good: Those adolescent who were not using tobacco product-smoke throughout their life period
- Average (Those adolescent who were not using current tobacco product-smoke; who were using tobacco product-smoke occasionally)
- **Poor:** Those adolescent who meeting the mentioned criteria
  - Those adolescent who were regularly using tobacco product-smoke

- Those adolescent who were using tobacco product-smoke with in every seven day
- Those adolescent who were using tobacco product-smoke with in fortnightly basis
- Those adolescent who were using tobacco product-smoke within once a month

### **Alcohol consumption**

- Good: Those adolescent who were not consuming alcohol throughout their life period
- Average: Those adolescent who consuming occasionally alcohol
- Poor: Those adolescent who meeting the mentioned criteria
  - Those adolescent who were regularly consuming alcohol
  - Those adolescent who were consuming alcohol with in every seven day
  - Those adolescent who were consuming alcohol with in fortnightly basis
  - Those adolescent who were consuming alcohol within once a month

**Regular health check-up:** Score is calculated from type of service used during regular health check-up visit

- Good: Those adolescent whose value is equal or above the mean (mean is calculated from score)
- Average: Those adolescent whose value is below the mean
- Poor: Those adolescent who does not visit regular health check-up

### **Ethical Consideration**

The study was conducted after taking approval (Reg. no. 359/2018) from the ethical review board of the Nepal Health Research Council (NHRC) under National Ethical Guideline for Health Research in Nepal, Standard Operating Procedures Section 'C' point no. 6,3. Informed consent with parents/primary caregivers and teachers and assent was taken from individual respondents for age whose age was below 18 year old before conducting the interview. Likewise, informed consent was taken from individual respondents whose age was above 18 year old before conducting the interview. As per the data protection Act 2015 of Nepal, all the collected data was made confidential and used only for the purpose of this survey. For the confidentiality of the personal information, name of the respondents were not included and given unique id in each questions before collecting the data.

### **Selection criteria**

All the selected secondary school students whose age of 15-19 year and who were ready (provided assent) to give

information and also their parents/teachers gave approval (consent) were the selection criterial of the study.

## Results

The socio-demographic characteristics of adolescents included age, gender, marital status, educational status, religion, family types and qualification and occupation of their parents. In the study, a maximum number of

respondents (28.2%) were 15 years old and the least were from 19 years old (12.2%). Slightly above half of the respondents (53.2%) were female population and all most all (98.6%) were single. Most of the students followed Hindu religion (86.5%) and two-third were from nuclear families (68.6%). Likewise, regarding the educational level of the respondents, the respondents from nine classes were 10.8 percent, ten class 39.5 percent and twelve class 49.7 percent.

**Table 1:** Socio-demographic distribution of the study participants

| Socio-Demographic Characteristic (370) | Frequency | Percent |
|--|-----------|---------|
| <b>1. Age (Year)</b>                   |           |         |
| 15                                     | 105       | 28.4    |
| 16                                     | 83        | 22.4    |
| 17                                     | 74        | 20.0    |
| 18                                     | 63        | 17.0    |
| 19                                     | 45        | 12.2    |
| <b>2. Gender</b>                       |           |         |
| Male                                   | 173       | 46.8    |
| Female                                 | 197       | 53.2    |
| <b>3. Marital status</b>               |           |         |
| Single                                 | 365       | 98.6    |
| Married                                | 5         | 1.4     |
| <b>5. Educational qualification</b>    |           |         |
| 9                                      | 40        | 10.8    |
| 10                                     | 146       | 39.5    |
| 12                                     | 184       | 49.7    |
| <b>6. Religion</b>                     |           |         |
| Hindu                                  | 320       | 86.5    |
| Buddhist                               | 33        | 8.9     |
| Others                                 | 17        | 4.6     |
| <b>7. Family type</b>                  |           |         |
| Single parent family                   | 29        | 7.8     |
| Nuclear family                         | 254       | 68.6    |
| Joint family                           | 87        | 23.5    |

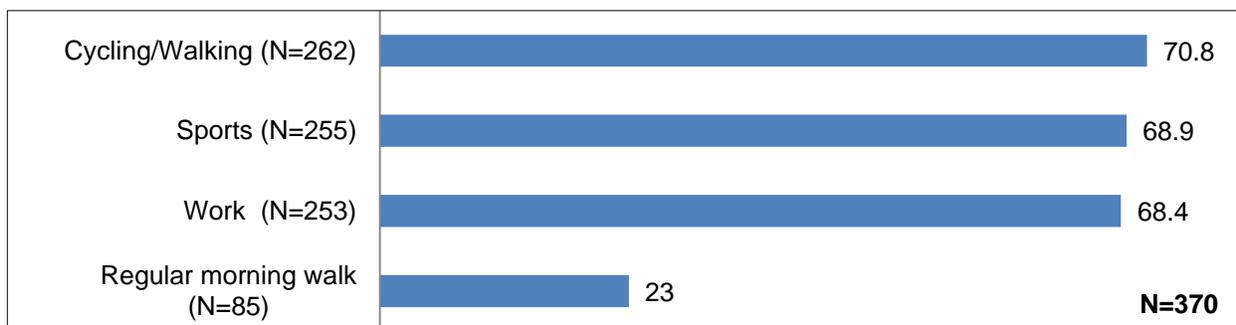
**Table 2:** Parents educational and occupational status

| Parent's Status                  | Father (N=344) | Mother (N=367) |
|----------------------------------|----------------|----------------|
| <b>Educational Qualification</b> |                |                |
| Illiterate                       | 6.7            | 13.5           |
| Primary                          | 23.8           | 24.3           |
| Secondary                        | 49.1           | 53.0           |
| Bachelor and above               | 20.3           | 8.4            |
| <b>Occupational Status</b>       |                |                |
| Agriculture/Farming              | 18.3           | 20.5           |
| Business                         | 26.2           | 19.5           |
| Labor/Daily wages                | 11             | 3.5            |
| Foreign employee                 | 22.4           | 2.7            |
| Teacher                          | 7.0            | 4.3            |
| Government employee              | 11.3           | 46.2           |
| Others                           | 3.8            | 2.4            |

In the study, majority of the adolescent were from literate family and high social status and economically stable family. Regarding to qualification of parents' majority of them had secondary level of educational qualification (Father-49.1% and Mother-53.0%). Furthermore, slightly above one fourth of the respondent's fathers were engaged in business (26.2%) profession and 22.4% were foreign employee but majority of the respondent's mother were housewives (46.2%).

### Physical activity

The physical activity of the survey population was assessed by measuring the level and duration of time and day of activities undertaken during regular morning exercise, travel in cycling/walking, work, and playing games.



**Figure 1:** Physical activity of the respondents

In the survey, nearly one-fourth of the adolescents were found to have regular morning walk behavior. Among the respondent who goes to regular morning walk, three-fourth of them go to moderate type of morning walk. The mean duration of vigorous morning walk among the respondent was 30.31 minutes per day and a moderate morning walk was 28.48 minutes per day.

Likewise, 70.8 percent of them use cycling or walking in day and mean duration of cycling or walking either place among the respondent was 28.88 minutes per day and mean day per week was 4.87 days. Additionally, 68.4 percent of respondents found doing work-related activities.

The mean duration of work-related activity among the respondent was 52.59 minutes per day and the mean day per week was 4.89 days.

Similarly, 68.9 percent of the respondents were found of involving in sports. The mean duration of participating in sports among the respondent was 48.07 minutes per day and the mean day per week was 4.6 days.

## Healthy food eating habit

**Table 3:** Healthy food eating habit of the respondents

| Eating habit       | Fruits |      | Vegetable |      |
|--------------------|--------|------|-----------|------|
|                    | N      | %    | N         | %    |
| <b>Consumption</b> | 330    | 89.2 | 344       | 93   |
| <b>Frequency</b>   |        |      |           |      |
| Regular            | 92     | 27.9 | 72        | 20.9 |
| Once a week        | 25     | 7.6  | 105       | 30.5 |
| Twice a week       | 44     | 13.3 | 84        | 24.4 |
| Three to four day  | 67     | 20.3 | 83        | 24.1 |
| Five to six day    | 102    | 30.9 | 102       | 30.9 |
| <b>Type</b>        |        |      |           |      |
| One type           | 58     | 17.6 | 105       | 30.5 |
| Two type           | 174    | 52.7 | 142       | 41.3 |
| Three type         | 68     | 20.6 | 54        | 15.7 |
| Above three type   | 30     | 9.1  | 43        | 12.5 |

The majority of the respondents (89.2%) eat fresh fruits. Among them 30.9 percent eat five to six-day per week and followed by once a week (30.5%). Similarly, all most all of

the respondents ate the vegetable. Among them 20.9 percent ate regularly and 30.5 percentage once a week.

## Tobacco use-smoke

**Table 4:** Tobacco use-smoke (Smoking) habit of the respondents

| Habit                     | Smoking |      | Smokeless Tobacco Production |      |
|---------------------------|---------|------|------------------------------|------|
|                           | N       | %    | N                            | %    |
| Ever smoke                | 89      | 24.1 | 47                           | 12.7 |
| Currently smoking         | 37      | 41.6 | 12                           | 25.5 |
| <b>Frequency of using</b> |         |      |                              |      |
| Regular                   | 9       | 24.3 | 2                            | 16.7 |
| Weakly                    | 3       | 8.1  | 2                            | 16.7 |
| Fortnightly/ Monthly      | 8       | 21.6 | 3                            | 25.0 |
| Occasionally              | 17      | 45.9 | 5                            | 41.7 |

Nearly one-fourth of the respondents (24.1%) revealed that they had ever used smoking throughout their life period. Among ever users, two-fourth of the respondents (41.6%) revealed that they were still using (the current user) smoking. Furthermore, nearly half of the respondents (45.9%) among current smoker found occasional users.

Regarding the smokeless tobacco use, only 12.7 percent of respondents had ever used chewing tobacco product. Among ever users, one-fourth of the respondents (25.5%) were the current user.

## Alcohol Consumption

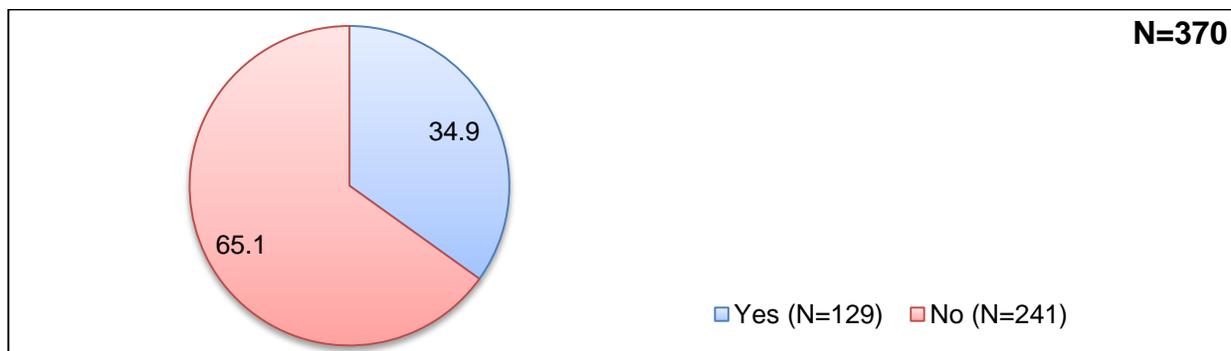
**Table 5:** Alcohol consumption habit of the respondents

| Alcohol consumption              | Number | Percent |
|----------------------------------|--------|---------|
| Yes                              | 170    | 45.9    |
| No                               | 200    | 54.1    |
| Frequency of alcohol consumption |        |         |
| Regular                          | 3      | 1.8     |
| Weakly                           | 6      | 3.5     |
| Fortnightly                      | 5      | 2.9     |
| Monthly                          | 6      | 3.5     |
| Occasionally                     | 150    | 88.2    |

Nearly half of the respondents (45.9%) in the study reported that they had consumed alcohol. Out of them, more than four-fifth (88.2%) used to consume alcohol occasionally and

3.5 percent of respondents reported that they consume weekly.

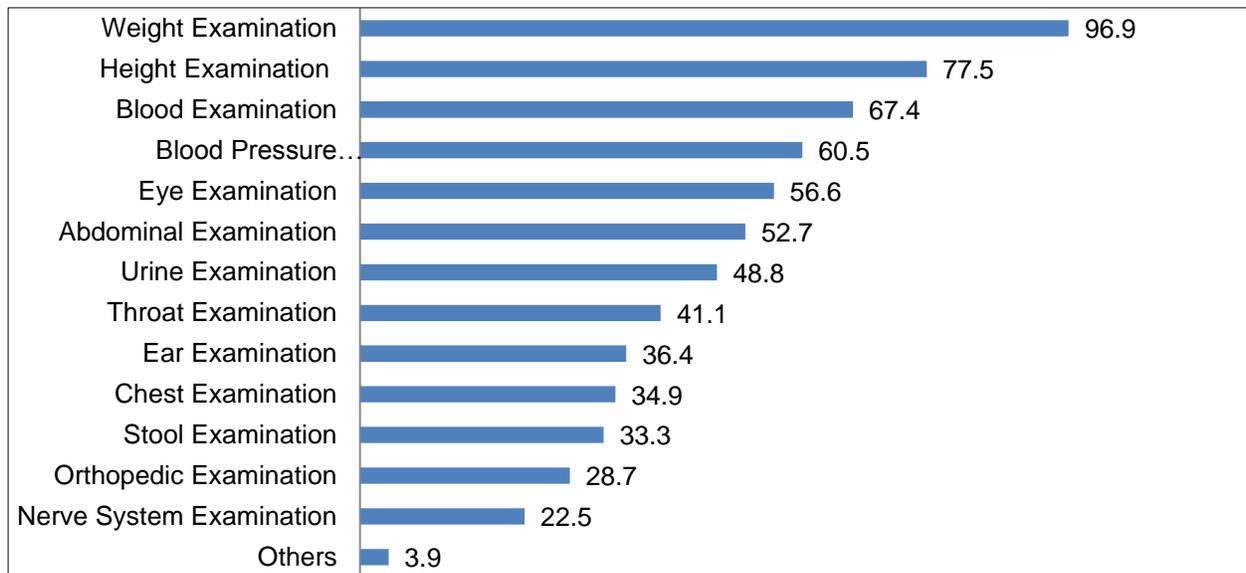
### Regular Health Check-up



**Figure 2:** Regular health check-up practice of the respondents

Regarding to regular health check-up habits, only 34.9 percent in the study revealed that they have habit. Out of them, majority of them have used services like weight

examination (96.9%), followed by height examination (77.5%), blood pressure examination (60.5%) and eye examination (56.6%) in health institution.



**Figure 3:** Type of health check-up

## Health promoting behavior adolescent

**Table 6:** Health promoting behaviors of the respondents

| Level                            | Male      |         | Female    |         | Total     |         |
|----------------------------------|-----------|---------|-----------|---------|-----------|---------|
|                                  | Frequency | Percent | Frequency | Percent | Frequency | Percent |
| <b>Physical activity</b>         |           |         |           |         |           |         |
| Good                             | 39        | 22.5    | 19        | 9.6     | 58        | 15.7    |
| Poor                             | 134       | 77.5    | 178       | 90.4    | 312       | 84.3    |
| <b>Tobacco product: Smoke</b>    |           |         |           |         |           |         |
| Good                             | 106       | 61.3    | 175       | 88.8    | 281       | 75.9    |
| Average                          | 49        | 28.3    | 20        | 10.2    | 69        | 18.6    |
| Poor                             | 18        | 10.4    | 2         | 1.0     | 20        | 5.4     |
| <b>Smokeless tobacco product</b> |           |         |           |         |           |         |
| Good                             | 137       | 79.2    | 186       | 94.4    | 323       | 87.3    |
| Average                          | 31        | 17.9    | 9         | 4.6     | 40        | 10.8    |
| Poor                             | 5         | 2.9     | 2         | 1.0     | 7         | 1.9     |
| <b>Alcohol consumption</b>       |           |         |           |         |           |         |
| Good                             | 72        | 41.6    | 128       | 65.0    | 200       | 54.1    |
| Average                          | 86        | 49.7    | 64        | 32.5    | 150       | 40.5    |
| Poor                             | 15        | 8.7     | 5         | 2.5     | 20        | 5.4     |
| <b>Regular health checkup</b>    |           |         |           |         |           |         |
| Good                             | 34        | 19.7    | 23        | 11.7    | 57        | 15.4    |
| Average                          | 32        | 18.5    | 40        | 20.3    | 72        | 19.5    |
| Poor                             | 107       | 61.8    | 134       | 68.0    | 241       | 65.1    |

Out of the total study population, slightly more than four-fifth of the respondents (84.3%) were found to have a poor level of physical activity and 15.7 percent of them were found to have a good level of physical activity. Furthermore, the majority of female respondents (90.4%) were found to be physically inactive than male respondents (77.5%).

Similarly, slightly above one-fourth of the respondents (26.4%: male 28.7% and female 44.9%) had a poor level of eating food habit and 31.8 percent (male 16.9% and female 51.3%) had an average level of eating food habit.

Among respondents, 5.4 percent (male 10.4% and female 1%) had a poor level of using tobacco product-smoke

and 75.9 percent (male 61.3% and female 88.8%) had a high level of using tobacco product-smoke. Likewise, only 1.9 percent (male 2.9% and female 1%) had a lower level of using tobacco product-smokeless and 87.3 percent (male 79.2% and female 94.4%) had a good level.

Regarding alcohol consumption, only 5.4 percent (male 8.7% and female 8.7%) had a lower level of consuming alcohol and 54.1 percent (male 41.6% and female 65%) had a higher level. Likewise, two-third of the respondents (65.1%: male 61.8% and female 68%) had a poor level of regular health check-up and 15.4 percent (male 19.7% and female 11.7%) had a good level this habit.

## Level of health- promoting behavior

**Table 7:** Level of health-promoting behavior of the respondents

| Health promoting behavior (370) | Male       |              | Female     |              | Total      |              |
|---------------------------------|------------|--------------|------------|--------------|------------|--------------|
|                                 | Frequency  | Percent      | Frequency  | Percent      | Frequency  | Percent      |
| Good                            | 41         | 23.7         | 34         | 17.3         | 75         | 20.3         |
| Average                         | 86         | 49.7         | 136        | 69.0         | 222        | 60.0         |
| Poor                            | 46         | 26.6         | 27         | 13.7         | 73         | 19.7         |
| <b>Total</b>                    | <b>173</b> | <b>100.0</b> | <b>197</b> | <b>100.0</b> | <b>370</b> | <b>100.0</b> |

By comparing five health-promoting behavior (physical activity, health food habit, smoke, and smokeless tobacco use, alcohol consumption and regular health check-up) level of health promoting behavior of adolescents were identified. Out of the total respondents, one fifth of the respondent

(20.3%: male 23.7% and female 17.3%) had good health promoting behavior and near to one fifth of the respondent (19.7%: male 26.6% and female 13.7%) had poor health promoting behavior and two- third of the respondents (60%:

male 49.7% and 69%) had average level of health promoting behavior.

## Factors Affecting Health Promoting Behavior

**Table 8:** Factor affecting health promoting behavior of the respondents

| Factor                                     | Health Promoting behavior |      |         |      |      |      | $\chi^2$ | df | P-Value |
|--|---------------------------|------|---------|------|------|------|----------|----|---------|
|  | Poor                      |      | Average |      | Good |      |          |    |         |
|  | N                         | %    | N       | %    | N    | %    |          |    |         |
| <b>Gender (Sex)</b>                        |                           |      |         |      |      |      |          |    |         |
| <b>Male</b>                                | 46                        | 26.6 | 86      | 49.7 | 41   | 23.7 | 15.368   | 2  | 0.000   |
| <b>Female</b>                              | 27                        | 13.7 | 136     | 69.0 | 34   | 17.3 |          |    |         |
| <b>Educational qualification of mother</b> |                           |      |         |      |      |      |          |    |         |
| <b>Illiterate</b>                          | 8                         | 16.0 | 39      | 78.0 | 3    | 6.0  | 18.902   | 6  | 0.004   |
| <b>Primary</b>                             | 22                        | 24.4 | 42      | 46.7 | 26   | 28.9 |          |    |         |
| <b>Secondary</b>                           | 40                        | 20.4 | 116     | 59.2 | 40   | 20.4 |          |    |         |
| <b>Bachelor and above</b>                  | 2                         | 6.5  | 23      | 74.2 | 6    | 19.4 |          |    |         |

Comparing with different variables, the chi-square value demonstrated a highly statistically significant association between sex of respondent and level of health-promoting behavior ( $\chi^2=15.368$ ,  $df=2$ , and  $p$ -value-0.000). This means male adolescent have better health promoting behavior than female which recommend that while preparing the health promoting intervention two different strategy focusing the genders. Likewise, the chi-square value also demonstrated a statistically significant association between the educational qualification of mother and level of health promoting behavior ( $\chi^2 =18.902$ ,  $df=6$ , and  $p$ -value-0.004) which means higher the qualification of the mother higher the number of health promoting behavior which also recommends that to promote the health of the adolescent initially the parents should be aware about the benefit of health promoting behaviors.

## Discussion

As the aim of the study was to assess the health promoting behavior and associated factors among school going adolescents, we collected information regarding health promoting behavior under heading i.e. physical activity, healthy food habit, smoke and smokeless tobacco use, alcohol consumption, and regular health check-up.

The study showed that the majority (84.3%) of adolescents were physically inactive. Comparing the both the sex, it was found that female (90.4%) were more inactive than male respondents (77.5%). The study also showed that 26.4 % (male 28.7% and female 44.9%) had a poor level of eating food habit. Likewise, 24.1% of the respondents (male 38.7% and female 11.2%) had ever smoked a tobacco product and 12.7 % of them (male 20.8% and female 5.6%) had ever chewed tobacco products. Similarly, the study showed that 45.9% of the respondents (male 58.4% and female 35.0%) had drink alcohol consumption. The study further identified that 65.1% of the respondents (male 61.8%

and female 68%) had poor levels of regular health check-up behavior.

In the study, it was found that 20.3% of the respondent (23.7% male and 17.3% female) had good health promoting behavior, whereas 19.7% of the respondents (26.6% of male and 13.7% of female) had poor health promoting and remaining 60% of them (49.7 of male and 69% of female) had average level of health promoting behaviors. Health promoting behaviors ad non-communicable are directly related to each other. WHO projected that NCDs will be increased by 15-20% by 2030 in Nepal. This result also indicates that NCDs will be increased in huge number because only few number of the adolescent have good health promoting behavior (physically active, not using alcohol, smoke and smokeless tobacco and regularly health check-up).

Similar study conducted by Adhikari and Adak (2013) showed that very high proportions of adolescents having behavioral risk factors were found. It has found that about 62% of respondent (56.54% male and 67.86% female) were found doing inadequate level of 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. It was found that overall 26.8% male and 18.2% female respondents were taking one or other type of alcohol. 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. Likewise, another study in Chitwan District at Ratnanagar Municipality was conducted which found that high proportions of adolescents were found in the high-risk category and exposed to the risk of NCDs in the future (Jain & Adhikari, 2014).

Another cross-sectional study on health promoting behavior among adolescents conducted with 424 students of the first semester of public and private high school found

that female and older students are at higher risk of developing unhealthy lifestyle. (Musavian et al., 2014) A study conducted among late adolescents in Chennai, Tamil Nadu to assess the prevalence of behavioral risk factor for lifestyle diseases with 17-20 years participants where diet habit, physical activity, smoking habits, alcohol consumption habit, sleep habit and BIM index taken as a preventable risk factor which reflects the poor lifestyle of all college-age individuals i.e. 78 percent which was similar to the study finding. (Evangeline, et al., 2014).

## Conclusion

When comparing five health promoting behaviors (i.e. physical activity, healthy food habit, smoke and smokeless tobacco use, alcohol consumption, and regular health check-up), three fourth of the adolescent have an average level of health-promoting behavior. Likewise, one-fifth of adolescents have a good level of health promoting behavior and remaining one fifth have a poor level. Furthermore, the study also concludes that female adolescent's health promoting behaviors were found better than male adolescents. Regarding the association between different variables, sex and educational qualification of the mother were found to be statistically significant with the level of health promoting behavior. Lifelong healthy and unhealthy lifestyle habits are established during adolescence period, the study concludes that there is necessity to intervene behavior modification intervention, developing effective health promotion and disease prevention strategies for adolescents seems crucial.

## Author contribution

Author substantially contributed by developing the conceptual framework, design of the study, acquisition and analysis of the data and manuscript writing.

## Conflict of interest

The author declare that there is no any conflict of interest.

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