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Cardiovascular Risk Behavior among Adolescents of Higher Secondary School in central part of Nepal

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ABSTRACT

Background: Cardiovascular diseases (CVDs) are the leading cause of death globally. However, most cardiovascular diseases can be prevented by addressing behavioral risk factors. The study on Cardiovascular Risk Behavior among adolescents of Higher Secondary School of Butwal Sub-Metropolitan City aimed to identify cardiovascular health risk behaviors among adolescents.

Methods: A descriptive Cross-sectional study design was used among 128 students aged 17 to 19 years and studying in class 12. A self-administered structured questionnaire was used for data collection. The collected data were entered and analyzed on SPSS version 22, and descriptive and inferential statistics were applied.

Results: The mean age of respondents was 17.22±0.77 years. The cardiovascular risk behaviors was smoking 5(3.9%), tobacco use 4(3.1%), and alcohol consumption 16(12.5%) found among respondents. Furthermore, consumption of junk food 24 (18.8%), and screen time of more than two hours was found. The study found a significant association between alcohol consumption and ethnicity of respondents (0.002) and type of family (0.013). Similarly, the history of tobacco use was significantly associated with sex (p=0.041), and junk food consumption was associated (p=0.02) with the sex of respondents..

Conclusion: Cardiovascular health risk behaviors such as smoking, tobacco use, alcohol intake, consumption of junk food, and long screen time were found, which indicates an alarming increase in the rate of mortality and morbidity. Therefore, it is needed to promote awareness about the importance of a healthy diet and the avoidance of risk behaviors.

Keywords: adolescents; cardiovascular; health; risk behavior.

INTRODUCTION

Heart and blood vessels illness are collectively referred to as cardiovascular diseases (CVDs). Worldwide an estimated 17.9 million deaths worldwide were attributed to CVDs, accounting for 32% of all fatalities.[1] Adolescents establish new health-related behaviors that will affect their health and morbidity for the rest of their lives. Activities that contribute to the main causes of death, sickness, disability and social issues in both adults and children are considered health-risk behaviors.[2,3] The World Health Organization (WHO) reports that CVDs are the leading cause of death globally due to risk factors for the development of CVDs which are not exclusive to adults, but rather start in childhood and adolescence.[4] Early detection of harmful behavior helps in prompt intervention, lowering long-term CVDs.[5] One in six people on the planet are adolescents. Despite being healthy, this group is more likely to have negative health risk factors, such as sedentary lifestyles, and behavioral and eating issues, tobacco and alcohol use is linked to both parental alcohol consumption and smokeless tobacco.[6,7] Improving modifiable risk factors in adolescence is necessary to stop the development of CVD later in life.[5,8,9] This study aimed to assess the cardidovascular risk behaviour among adolescent of higher secondary school.

METHODS

A descriptive cross-sectional study was used to find out cardiovascular risk behavior among adolescents of Higher Secondary School of Butwal Sub Metropolitan City, Rupandehi, Nepal. A total of 128 students of aged group of 17 to 19 years studying in class 12

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willing to participate were enrolled in the study. Semi-structured self-administered questionnaire was developed and used for data collection, which was validated by thoroughly reviewing the literature and consulting with subject experts. The reliability of the instrument was maintained by pretesting among 10% of the total sample. The study tool was revised and finalized on the basis of results obtained from the pretest as needed. Ethical norms were maintained throughout the study period. The study was conducted following approval from the Institutional Review Committee of Bharatpur Hospital, ensuring ethical compliance (Ref: 080/81-026). Formal approval was taken from the college administration where the study was conducted. Data were entered and analyzed using SPSS version 16 and presented in frequencies and percentages for descriptive purposes. Pearson's chi-square test was applied to determine the relationship between dependent and independent variables. The result assumes statistically significant associations of variables at $p<0.05$ with the chi-square analysis.

RESULTS

The research was conducted among 128 respondents. The result shows that almost half (46.9%) of the respondents were 17 years, 56.3% were male, and remaining 43.8% were female. More than half (53.1%) were Brahmin, most (89.8%) of from Hindu, 67.2% were from a nuclear family, whereas 32.8% lived in joint family. Cent percent of them were unmarried. Majority (89.1%) of had not participated in any awareness programs related to cardiovascular diseases (Table 1).

Regarding socioeconomic information of respondents, 43% of father and 37.5% of mother had secondary level education. (36.7%) of father were engaged in business and 75% of mother were involved in farming (75%). the maximum of respondents are of high class (78.1%), earning more than 40 thousand (Table 2).

Cardiovascular risk behaviors related to food consumption pattern (59.4%) of respondent consumes fruits daily, (87.5%) consume vegetables daily, (45.3%) consumes 1 teaspoon salt in a day (42.2%) consumes junk food less than three days in a week, (88.3%) are non vegetarian, among them (93.8%) prefer chicken meat, (11.7%) were vegetarian, (60.9%) consume fried food less than 3 days in a week (Table 3).

Maximum (83.6%) of respondents involved in physical activity among them (35.9%) got engaged daily and (41.4%) for 30 minutes, more than half (78.1%) and (71.9%) got engaged in screen more than 2 hours, while (52.3%) slept 6 hours in 24 hours (Table 4).

Cardiovascular risk behavior, three-quarters (96.1%) of respondents were not involved in smoking, and the least of them (3.9%) used currently, 93% had not ever used tobacco products, and l3.9% had used in the past. Maximum (5.5%) of them started tobacco use from a year ago, 96.1% had not used smokeless tobacco products and 3.9% were using them currently, 2.3% started since a year ago, 87.5% do not consume alcohol and while 12.5% started from the age of 16 years were 5.5% of them and (10.9%) of drinking sometimes and 1.6% daily.

The study found a significant association between alcohol consumption with ethnicity of respondents (0.002) and the types of family (0.013). Similarly, the history of tobacco use was significantly associated with sex (p=0.041) and participation in the awareness campaign (p=0.026), and junk food consumption was associated (p=0.02) with the sex of respondents (Table 6).

DISCUSSION

Regarding socio-demographic information, this study shows that out of total 120 study sample, Majority of the respondents (46.9%) were from 17years. The mean age of respondents was Mean± SD (17.22±0.77) which is similar to the study conducted in Tulsipur Submetropolitan city, Nepal where participant's mean SD age was 17.5±0.92 years.[7] The respondents comprised 56.3% were male and 43.8% were female, cent percent were unmarried, follow Hindu religion (89.8%) whereas majority were 53.1% Brahmin/ Chhetri ethnic group and (67.2%) of were from

Table 1. Socio demographic information of respondents. (n=128)	
Variables	**Frequency (%)**
Age (completed in years)	
16 yrs	22(17.2)
17 yrs	60(46.9)
18 yrs	41(32.0)
19 yrs	5(3.9)
Mean age 17.22 ± 0.77 Max.=19 Min.=16	
Sex	
Male	72(56.3)
Female	56(43.8)
Ethnicity	
Brahmin/Chhetri	68(53.1)
Dalit	6(4.7)
Janajati	31(24.2)
Madhesi	23(18.0)
Religion	
Hindu	115(89.8)
Buddhist	10(7.8)
Muslim	1(0.8)
Christian	2(1.6)
Family type of respondent	
Nuclear	86
Joint	42
Participation in awareness program	
Yes	14
No	114

nuclear family. Similar findings were compared with research done in Kathmandu, Nepal reveled that (76.8 %) follow Hindu religion more than half (55.2%) were from nuclear family.[2] More then one quarter 43% of respondent's fathers and mothers (37.5%) had studied up to secondary level. Majority of the respondent's father (36.7%) were engaged in business and maximum respondent's mother (75%) were involved in agriculture which is contrast with the findings of the study done in Tulsipur sub-metropolitan city, Nepal found that about 10.5% of the respondent's father and 24% of the respondent's mother did not have any formal education. While majority (29%) of respondents' fathers worked in business, 63% of respondents' mothers were homemakers.[7] These differences can be attributed to variations in sociocultural practices and also due to variation in sample size.

Table 2. Socio-economic characteristics of respondents' parents. (n=128)	
Variables	**Frequency (%)**
Father's education	
Illiterate	1(0.8)
Primary	28(21.9)
Secondary	55(43.0)
Higher secondary	44(34.4)
Mother's education	
Illiterate	13(10.2)
Primary	41(32.0)
Secondary	48(37.5)
Higher secondary	26(20.3)
Mother occupation	
Farming	96(75.0)
Service holder	13(10.2)
Foreign employee	5(3.9)
Business	14(10.9)
Father occupation	
Farming	20(15.6)
Service Holder	36(28.1)
Foreign Employee	25(19.5)
Business	47(36.7)
Monthly family income (Rs.)	
<20000	9(7.0)
20000-30000	19(14.8)
40000+	100(78.1)

Discussion on Cardiovascular Risk Behavior

The study found cardiovascular risk behavior of respondents, among them majority (59.4%) consumes adequate fruits and majority (87.5%) of respondents consumes vegetables on daily basis. These findings were compared with study conducted in Pokhara, Nepal showed that daily fruits consumption (31.8%) and daily vegetables consumption among (70.5%). [10] Regarding physical activity, it is found that maximum (83.6%) were involved in physical activity daily, maximum (35.9%) get engaged daily for 30 minutes (41.4%) and (22.7%) of them performed for at least 60 minutes per day. The WHO recommendation of physical activity for adolescents i.e; at least 60 minutes per day.[12] This finding is compared with study reported that physical activity was practiced by (62%) of the participants[11],(42.5%) reported at least 60 minutes daily[5], (39.5%) participated in the daily

Table 3. Cardiovascular risk behaviors related to food consumption. (n=128)	
Variables	**Frequency (%)**
Fruits Consumption	
Daily	76(59.4)
≥ 3 days in a week	40(31.3)
< 3 days in a week	10(7.8)
Did not have at all	2(1.6)
Vegetables consumption	
Daily	112(87.5)
≥ 3 days in a week	13(10.2)
< 3 day in a week	2(1.6)
Did not have at all	1(0.8)
Salt consumption per day	
1 tsp	58(45.3)
2 tsp	50(39.1)
3 tsp	15(11.7)
4 tsp	5(3.9)
Junk food consumption	
Daily	24(18.8)
≥ 3 days in a week	34(26.6)
<3 days in a week	54(42.2)
Did not have at all	16(12.5)
Food preference	
Vegetarian	15(11.7)
Non-vegetarian	113(88.3)
Type of meat prefer (n=113 *)	
Chicken	106(93.8)
Mutton	70(61.9)
Buff	40(35.4)
Fish	66(58.4)
Fried food consumption	
Daily	14(10.9)
≥ 3 days in a week	23(18.0)
<3 days in a week	78(60.9)
Did not have at all	13(10.2)

**Multiple response*

workouts.[6] Furthermore the study found maximum (78.1%) of respondents used screen time for more than 2 hours in 24 hours which is compared with a study showed that (76.9%) of respondents spent more than two hours[6,10] these findings were contrast with the findings of this study it could be due to variation in sample size and due to pandemics of COVID-19 at the time of study in which virtual classes had to be attended.

Regarding cardiovascular risk behavior of smoking,

Table 4. Physical activity patterns of respondents. (n=128)	
Variables	**Frequency (%)**
Physical activity	
Yes	107(83.6)
No	21(16.4)
If yes, Frequency (n=107)	
Very rarely	21(16.4)
At least 2 days in a week	21(16.4)
At least 3 days and more in a week.	19(14.8)
Daily	46(35.9)
Duration (n=107)	
At least 30 minutes	53(41.4)
At least 60 minutes	29(22.7)
> 60 minutes	26(20.3)
Not at all	2(1.6)
Screen time in 24 hours	
< 2 hour	28(21.9)
> 2 hour	100(78.1)
Sleeping hours in 24 hour	
4 hours	2(1.6)
6 hours	67(52.3)
8 hours	46(35.9)
10 hours	13(10.2)

Table 6. Association between behavior of alcohol consumption, history of tobacco use, and junk food consumption with socio-demographic variables. (n=128)			
Variables	**Yes**	**No**	**p-value**
	n (%)	**n (%)**	
	Alcohol consumption		
Ethnicity			
Brahmin/Chhetri	5(7.4)	63(92.6)	0.002*
Dalit	1(16.7)	5(83.3)	
Janajati	10(32.3)	21(67.7)	
Madhesi	0(0.0)	23(100)	
Types of family			
Nuclear	67(77.9)	19(22.1)	0.013*
Joint	40(95.2)	2(4.8)	
	History of tobacco use		
Sex			
Male	8(11.1)	64(88.9)	0.041*
Female	1(1.8)	55(98.2)	
Participation in an awareness campaign			
Yes	3(21.4)	11(78.6)	0.026*
No	6(5.3)	108(94.7)	
	Junk food consumption		
Sex of respondents			
Male	58(80.55)	14(19.4)	0.02*
Female	53(94.64)	2(3.6)	

**Fisher's exact test used, level of significance at <0.05*

Table 5. Behavior of tobacco, smoking, and alcohol use. (n=128)	
Variables	**Frequency (%)**
Current tobacco use	
Yes	5(3.9)
Past history	
Yes	9(7.0)
Started age(n=9)	
6 months ago	2(1.6)
1 year ago	7(5.5)
Current use of smokeless tobacco products	
Yes	4(3.1)
No	124(96.9)
Past history	
Yes	5(3.9)
No	123(96.1)
How long ago(n=5)	
3 months ago	1(0.8)
6 months ago	1(0.8)
1 year ago	3(2.3)
Alcohol consumption	
Yes	16(12.5)
No	112(87.5)
Starting age(n=16)	
14	3(2.3)
15	3(2.3)
16	7(5.5)
17	2(2.6)
18	1(0.8)
Frequency of alcohol drinking habit (n=16)	
Daily	2(1.6)
Sometimes	14(10.9)

associated with sex of respondents (p=0.02), fruits consumption with family type (p=0.02), vegetables consumption with ethnicity (p=0.003), religion (p=0.001) and with gender of respondents (p=0.01). This study is in contrast with study conducted in Tulsipur sub metropolitan city, Nepal shows no any association with socio demographic variables on such behaviors.[7]

CONCLUSIONS

The study concludes that cardiovascular health risk behaviors such as smoking, tobacco use, and alcohol intake were more among male students. Ethnicity of respondents was also found to be associated with alcohol consumption. Screen time of more than two hours was reported among more than half of the students in this study.

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