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Knowledge on Hypertension among Higher Secondary School Students at Biratnagar

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Abstract

Hypertension is a public health burden. The trend of hypertension among school going adolescences is increasing. This study aimed to assess knowledge on hypertension among students of higher secondary school at Biratnagar. A quantitative descriptive cross-sectional study was conducted among 66 students of Adarsha Higher Secondary School. A multistage sampling technique was used to select the setting of the study. Self-administered, semi-structured questionnaire was used for data collection. Descriptive statistics and inferential statistics such as mean, median, standard deviation, frequency percentage and chi-square were used. It was found that nearly three-fourth (74.2%) of the students' age was 17- 19 years; and less than two thirds (62.1%) of the students were male. Similarly, nearly three-fourth (72.7%) of the students had known meaning of hypertension. More than half (53.0%) of the students had poor level of knowledge whereas only 47.0% of students had good level of knowledge. There was no statistical significant association of hypertension and selected demographic variables: age, sex, ethnicity, religion, father's education, and mother's education. It is concluded that less than half the students had good level knowledge on hypertension. However, more than half the students still had poor level knowledge on hypertension. So, appropriate awareness programs are required to enhance knowledge of the students.

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Keywords: Hypertension, Knowledge, Students, Demographic Variables

Background of the Study

The burden of hypertension is shifting to adolescents and young people. A study carried out by Mc Niece et al. (2007) concluded that the prevalence of hypertension among adolescents was 15.7% pre-hypertension, and 3.2% hypertension. Sex, ethnicity, and overweight were the major contributing factors of pre-hypertension. In another study, two-thirds of the students were found to have a sound knowledge about hypertension. However, 39.0% of the students had no knowledge about hypertension. Similarly, less than half of the respondents (48.4%) had a poor knowledge level. Likewise, two-thirds (68.1%) of the respondents had satisfactory knowledge, while the majority from the urban municipality (66.9%) and rural municipality (63.1%) had poor knowledge of hypertension (Sitaula et al., 2022). The students had little knowledge about hypertension and its relationship with salt intake. Another study, Muthulakshmi & Karthick (2020), however observed that more than half the respondents (55%) had inadequate knowledge in the pretest of the study.

As per a quite recent study, the prevalence of hypertension in Nepal was 13.2% among younger people (Huang et al.,2019). Its prevalence among adult, according to Maharjan (2017), was in increasing trends (58.1%). Chinyere et al. (2015) study found more than three-fourth (78.4%) unaware of their hypertensive state. Similarly, less than half the respondents (48.4%) are reported to have a poor knowledge level. As per another study, the majority from the urban municipality (66.9%) and rural municipality (63.1%) had poor knowledge of hypertension (Sitaula et al., 2022). Apparently, these studies reveal differing figures, demanding further inquiries. Grounding on this need, this study has set two objectives: to identify the level of knowledge on hypertension and to measure the association between level of knowledge on hypertension and selected demographic variables among students of higher Secondary School at Biratnagar.

Materials and Methods

Research setting, population and sampling

The setting of the study was Adarsha Higher Secondary School, which is one

among eight governments schools in Biratnagar. Among the total of 28 higher secondary schools, 20 are higher secondary government schools and 8 are government higher Secondary Schools.

All students from the two section of class 11 were included as the study population. The total study population for this study (n) was 66. The sample size for this study was calculated by using the following formula:

$$\frac{z^2pq}{d2}$$

Where z = 1.65 (at 95% confidence level); p = 68% (Sitaula et. al 2022) and q = (1−p) = 0.32. Thus, the sample size, calculated as n = (1.66)2×0.68×0.32/ (0.01)2, was (60+6) =66 girls' and boys' students plus 10% of non-response of total sample. Hence, a total of 66 students were enrolled in the study.

Multistage sampling was used to select the participants. There are eight higher secondary government schools in Biratnagar Metropolitan city. Adarsha Higher Secondary School was selected randomly from the government schools (stage I). Two section of class 11 was selected randomly (stage II). Census technique was used to select the participants (stage III).

Eligibility criteria

The students who were studying in eleven classes (only two sections) of technical stream (Engineering) and willing to participate were included in the study. Students who were in long leave, sick, or absent during time of data collection were not included in the study.

Research instrument

A semi- structured questionnaire for the data collection was developed by extensive review of the related literature. Data were collected using self-administered questionnaire that contained two sections, namely Section A: Personal and socio-demographic characteristics, and Section B: A questionnaire related to knowledge regarding hypertension. Content validity of the tool was established by the experts in the related fields. Based on their suggestions necessary modifications were made. Pre-testing of the tool was done on 10 percent of the sample size i.e. 6 in similar setting.

Ethical consideration

Written permission was taken from Adarsha Higher Secondary School. Written informed consent was also taken from each respondent. Respondents were allowed to participate voluntarily and were granted permission to discontinue at any time without any queries. Privacy, confidentiality and anonymity of the participants were maintained and the data obtained was used only for the research purpose.

Data collection and analysis

Data was collected from 21 June 2023 to 21 July 2023, through semi-structured questionnaire. After the collection, it was checked for completeness. The collected data was organized, coded and entered into Statistical Package for Social Science (SPSS) version 20. Descriptive analysis was used to describe the demographic and other related variables which include frequency, percentage, mean and standard deviation. Inferential statistics was used to measure the association of independent and dependent variable. Independent chi- square test was used to find the association between knowledge and selected variables.

Results

The outcome of the present study to assess knowledge on hypertension among students of higher secondary school is presented through descriptive and inferential statistics.

Table 1 reveals that the age of nearly three-fourth (74.2%) of the participants was 17- 19 years. The mean age and SD were 18.89 ± 1.71 years. Less than two-thirds (62.1%) of the students were male; and the share of the students' fathers completing primary and secondary level education was 24.2%. More than one–third (34.8%) of the students' mother were illiterate. More than one-thirds (34.8%) of the students were Madeshi. Similarly, most of the students were Hindus. Most of the students had not family history of hypertension whereas half (50.0%) of the students stated reported to have known about hypertension from magazines.

Table 1: Socio-demographic variables

Variables	Frequency	Percentage
Age (Years)		
17-19	49	74.2
20-26	17	25.8
Mean ±SD	18.89 ± 1.71	
Sex		
Male	41	62.1
Female	25	37.9
Father's education		
Illiterate	11	16.7
Literate	10	15.2
Primary	16	24.2
Secondary	16	24.2
SLC	6	9.1
Higher education	7	10.6
Mother's education		
Illiterate	23	34.8
Literate	12	18.2
Primary	14	21.2
Secondary	10	15.2
SLC	7	10.6
Higher education		
Ethnicity		
Brahmin/ Chhetri	22	33.3
Madhesi	23	34.8
Dalit	12	18.2
Janajati	7	10.6
Muslim	5	7.6
Religion		
Hindu	54	81.8
Cristian	0	0
Islam	5	7.6
Kirat	5	7.6
Family history of HTN		
Yes	6	9.1
No	60	90.9
Sources of information*		
Magazine	33	50.0

Internet	31	47.0
Radio	47	71.2
Health worker	29	43.9

∗ **indicates that multiple responses and each were 100%**

Table 2 below indicates that nearly three-fourth (72.7%) of the students had known the meaning of hypertension whereas 27.3% of the students gave wrong answer. Likewise, more than half (56.1%) of the students answered wrong about normal range of blood pressure; half (50.0%) of the students answered right. Nearly three-forth (74.2%) of the students knew the risk factors of hypertension. Slightly less than half (48.5%) of the students answered numbness or tingling in hands or feet as the common features of hypertension.

Table 2: Knowledge on risk factors and common features of hypertension

Variables	Frequency(f)	Percentage (%)
What do you mean by hypertension?		
Right answer)	48	72.7
Wrong answer	18	27.3
What is the normal range of blood pressure for an adult?		
Right answer (120/80 mmHg)	29	43.9
Wrong answer	37	56.1
Hypertension is…disease		
Right answer (curable/ controllable)	33	50.0
Wrong answer	33	50.0
What are the risks for hypertension?*		
Excessive salt consumption (more than 5gm/day)	49	74.2
A diet high in saturated fat and trans fats	21	31.8
Consumption of tobacco and alcohol	25	27.9
Low intake of fruits and vegetables	17	25.8
Family history of hypertension	19	28.8
Increasing age over 65 years	28	42.4
Being overweight or obese	20	30.3
Low intake of potassium containing food	15	22.7
Stressful situation	28	42.4
Co- morbidities (e.g. cancer, asthma,	13	19.7

diabetes etc.)		
What common features can be seen during raised blood pressure?*		
Numbness or tingling in hands or feet	32	48.5
Early morning headaches,	12	18.2
Irregular heart rhythms,	29	43.9
Irregular heart beat	13	19.7
buzzing in the ears	13	19.3
Severe headache	23	34.8
Fainting attack	29	43.9
Asymptomatic	9	13.6
Vision changes	9	13.6
Nose bleeding	20	30.3
Dizziness	11	16.7

∗ **indicates that multiple responses and each were 100%**

Table 3 shows that more than half (54.5%) the students answered fatigue /weakness as a severe feature of hypertension where only 48% of the students answered muscle tremor as a severe feature of hypertension. Similarly, nearly three-forth (71.2%) of students stated complete blood test as an appropriate way to investigate hypertension whereas only 36.4% of the students answered renal function test as the required test. In addition, more than half (51.5%) of the students answered reducing salt intake (to less than 5gm/ daily) is done after hypertension, and only 37.9% of the students knew stress reduction is beneficial for hypertension. Half (50.0%) of the students knew that treating high bold pressure can help to control hypertension whereas only 42.4% of students answered that hypertension can be managed taking regular medicine.

Table 3: Knowledge on symptom, investigation, life style and management of hypertension

Variables	Frequency	Percentage
What are the signs and symptoms of severe hypertension?*		
Fatigue /weakness	36	54.5
Nausea, vomiting	16	24.2
Confusion	11	16.7
Worry / anxiety	23	34.8
Chest pain	31	47.0

Muscle tremors	32	48.5
Which basic investigation should be done by hypertensive people?		
Complete blood test	47	71.2
Eye examination	13	19.7
Electro cardio gram	21	31.8
Renal function test	24	36.4
Liver function test	17	25.8
How do you modify the lifestyle of hypertensive people?*		
Limiting the intake of foods high in saturated fats	19	28.8
Being physically active and regular exercise	28	42.4
Reducing salt intake (to less than 5gm/ daily)	34	51.5
Eliminating/Reducing trans fats (process food) in diet	14	21.2
Higher intake of fruits and vegetables	29	43.9
Avoid cold exposure	15	22.7
Weight control	18	27.3
Stress reduction	25	37.9
Quitting cigarette, tobacco & alcohol intake	23	34.8
How can we manage hypertension in a better way?*		
Taking regular medicine	28	42.4
Managing other medical conditions	20	30.3
Regularly checking blood pressure	36	54.5
Treating high blood pressure	33	50.0

∗ **indicates that multiple responses and each were 100**

Table 4 illustrates that half (50.0 %) of the students answered that eating more vegetables and fruits every day is beneficial for hypertension whereas only 28.8% of students answered that eating fish at least twice a week can be beneficial for hypertension. Similarly, less than half (40.9%) the students answered minimizing stress can be a preventive measure of hypertension whereas only 33.3% said being active and exercising daily may be a preventive measure. Less than one-thirds (30.3%) of the students answered that 40 minutes, 3-4 times per week moderate level of physical exercise is good for hypertension. Less than half (48.5%) of the students answered chest pain is a complication of hypertension whereas only 33.3% students knew hypertension can lead to stroke.

Table 4: Knowledge on beneficial food and preventive measures for controlling hypertension

Variables	Frequency (f)	Percentage (%)
Beneficial foods for controlling high blood pressure*		
Eat cereals, preferably whole grains	19	28.8
Eat more vegetables and fruits every day	33	50.0
Unsalted nuts and seeds	28	42.4
Eat fish at least twice a week	19	28.8
Consume skim milk	27	40.9
Drink lots of clean water	22	33.3
Eat clean and safe food	26	39.4
What measures can be adopted to prevent hypertension?*		
Avoiding red meat		
Limiting intake of sugars (sweetened foods and beverages)	27	40.9
Maintaining healthy body weight	19	28.8
Consuming low salt diet (< 5gm or one tea spoon/day)	24	36.4
Limiting intake of fats and oils	22	33.3
Minimizing stress	27	40.9
Being active and exercising daily	22	33.3
Consuming low cholesterol diet	11	16.7
Regular Bp monitoring	9	13.6
How many days and for how much duration moderate intensity physical exercise is needed?		
For 40 minutes, 3-4 times per week	20	30.3
For Less than 20 minutes, once a week	13	19.7
For 30 minutes, 3 times per day	29	43.9
For less than 15 minutes per week	4	6.1
What are the complications of uncontrolled hypertension?		
Chest pain	32	48.5
Heart attack	27	39.4
Heart failure	26	43.9
Kidney problem	29	43.9

Irregular heart beat lead to a sudden death	18	27.3
Hypertension can lead to stroke	22	33.3

∗ indicates that multiple responses and each were 100

Table 5 shows that more than half (53.0%) of the students had poor level of knowledge; only 47.0% of the students had good level of knowledge. The mean score and SD of knowledge was 22.8 ± 10.3.

Table 5: Level of knowledge on hypertension

Level of Knowledge	Frequency (f)	Percentage (%)
Poor knowledge	35	53.0
Good knowledge	31	47.0
Mean score ± Standard Deviation (SD)	**22.8 ± 10.3**	

Good knowledge= above the Mean score ± SD, Poor below the Mean score± SD.

Table 6 presents association between knowledge of hypertension and the selected demographic variable. There is no statistical significant association between knowledge of hypertension and the selected demographic variable: age (p=0.73); sex (p=0.70); ethnicity (p=0.08); religion (p=0.13); father education (p=0.44) and mother education (p=0.25).

Table 6: Association between knowledge level and selected demographical variable

Variable	Level of Knowledge		χ^2 Value P-value
	Good knowledge	Poor knowledge	
Age (Years)			
17-19	22 (71.0%)	26 (76.5%)	0.73
20-26	9 (29.0%)	8 (23.5)	
Sex			
Male	20 (64.5%)	21 (60.0%)	0.70
Female	11 (35.5%)	14 (40%)	
Ethnicity			
Brahmin/Chhetri	7 (22.6%)	15 (42.9%)	0.08

Others*	24 (77.4%)	20 (57.1%)	
Religion			
Hindu	23 (74.2%)	31(86.6%)	0.13
Others**	8 (25.8%)	4(11.6%)	
Father's education			
Illiterate	4 (12.9%)	7 (20.0%)	0.44
Literate***	27 (87.1%)	28 (80.0%)	
Mother's education			
Illiterate	13 (41.9%)	10 (28.6%)	0.25
Literate	18 (58.1%)	25 (71.4%)	

Significant association p value < 0.05, * (Dalit, Madhesi, Janajati & Muslim);(Buddhist, Christian, Islam and Kirat);***(Literate, primary, secondary, SLC and higher education); χ 2 (Chi-square test)**

Discussion

The present study finding revealed that nearly three-fourth (74.2%) of the students' age was 17- 19 years; and less than two-thirds (62.1%) of the students were male. Similar findings are reported on a cross-sectional survey among first year students (Shaikh et al., 2011).

This study found that the urban and rural students received information about hypertension from magazine (50.0%), internet (47.0%), radio (71.2%) and health care workers (43.9%). This finding stands in contrast with the finding of Situala et al. (2022) who reported that 72.3% of urban students and two-thirds (66%) of rural students regarded their school as the main sources of information whereas 43.7% and 26.2% of students stated internet as the sources of information. Similarly, Akter et al. (2014) mentioned that more than four-fifth (82.6%) of the students received information from internet; more than half (59%) received from books/magazines and journals; more than two-thirds (72.5%) from health professionals/talks and seminars, and most (81.2 %) of the students received from friends and family. Such variation might be due to the socio-demographical, cultural and contextual factors of the students.

Nearly three-fourth (72.7%) of the students were found to know meaning of hypertension whereas only 27.3% of the students had a wrong understanding. Contrasting findings have been reported in a study (Sah et al., 2023); this

study has reported more than two thirds (73.4%) of the respondents did not know their blood pressure and two thirds (66.6%) never checked their BP regularly.

This study finding revealed that less than half (42.4%) of the students knew that an increasing age over 65 years may be at the risk of hypertension; less than one-thirds (30.3%) knew that being overweight may be a risk of hypertension; and more than one-fifth (30.3%) knew diet that is high in saturated fat as the risk factor. Contradictory findings are reported by Ellahi et al. (2022); the increased sedentary lifestyle is reported by 85% as the risk factor of hypertension. Other reasons as reported in this study were the lack of exercise (45%) and smoking (15%).

The present study showed that more than half (53.0%) of the students had poor level of knowledge whereas only 47.0% of students had good level of knowledge. Quite contradictory findings are reported by Grad et al. (2015); the study found the majority of the adolescents having good knowledge about the causes of hypertension. In another study, 60% of the respondents are concluded to have good knowledge on the modified risk factors of hypertension (Shikh et al., 2011). Yet, another study (Sitaula et al., 2022) has reported two-thirds (68.1%) of respondents from the metropolitan city having satisfactory knowledge.

Likewise, the present study finding shows that there is no statistically significant association between knowledge on hypertension and the selected demographic variable: age (p=0.73); sex (p=0.70); ethnicity (p=0.08); religion (p=0.13); father's education (p=0.44) and mother's education (p=0.25). Contradictory findings are reported in other studies; it is reported that the people having their education level, SLC and above, and the people above poverty line had significantly good knowledge, attitude and practice regarding prevention of hypertension than those having education below SLC and below, and those being below poverty line (Sah et al., 2023).

Conclusion

The study concludes that nearly three-fourth of the students had known meaning of hypertension More than half of the students identified fatigue /weakness as a sever feature of hypertension where less than half the students

answered muscle tremor as a severe feature of hypertension. More than half the students had poor level of knowledge whereas nearly half the students had good level of knowledge. There is no statistical significant association between hypertension and the selected demographic variables: age, sex, ethnicity, religion, father's education and mother's education. As more than half the students had still poor knowledge, planning awareness program may enhance knowledge of the students on hypertension.

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