Indian Journal of Public Health Research and Development
Volume 14 No. 1, January-March 2023

Prevalence and Awareness of Risk Factors for Hypertension among Urban and Rural High School Children in the Field Practice areas Rajarajeswari Medical College, Bengaluru: A Cross Sectional Comparitive Study

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How to cite this article: Naveen Kumar P, Vidya G S, A C Shyam. Prevalence and Awareness of Risk Factors for Hypertension among Urban and Rural High School Children in the Field Practice areas Rajarajeswari Medical College, Bengaluru: A Cross Sectional Comparitive Study. Indian Journal of Public Health Research and Development 2023;14(1).

Abstract

It is the era of non-communicable diseases (NCDs), non-communicable diseases are the leading global cause of death, causing more deaths than all others causes combined, and they strike hardest at the world's low and middle income populations. This was a school based cross-sectional study carried out with the objective of finding the prevalence and awareness of risk factors for selected Non-Communicable diseases(Hypertension, IHD and diabetes) among the urban and rural government high school students, with a sample size of 510 (255 urban and 255 rural) drawn by simple random sampling method. This study was conducted using a pre-tested, semi-structured questionnaire based on the study done by Diwakaran et al.,With modifications made to cater the need of the study. Awareness of Hypertension was 39.8%and 30.6% (statistically significant, p = < 0.001) among the rural and urban study subjects respectively. In our study, 20.1% of rural and 28.2% of urban children were consuming fast foods daily. 64.5% of rural and 60.8% of urban children were consuming Fruits and vegetables daily. There was significant difference in Fruits and Vegetable consumption pattern was observed between two groups. Similarly14.3% of rural and 27.1% of urban children were consuming Soft Drinks daily. 20.1% of rural and 20.8% of urban children thought that re-use of cooking oil is good for health, which was statistically not significant. Awareness of risk factors like Alcohol, Tobacco, Stress / anxiety, Obesity, passive smoking as risk factors for Hypertension, was significantly higher in rural areas than in urban areas as a risk factor for HTN. Were as in urban area Awareness of Fast food consumption, reuseof cooking oil was significantly higher in urban areas.

Key words: Awareness, Prevalence, Non-Communicable diseases, Hypertension.

Introduction

It is the era of non-communicable diseases (NCDs), non-communicable diseases are the leading global cause of death, causing more deaths than all others causes combined, and they strike hardest at the world's low and middle income populations[1].

It has been assessed that prevalence of non-communicable diseases are increasing rapidly and is believed to cause almost three quarters as many deaths as communicable; maternal; nutritional and

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perinatal diseases by 2020 and could also be the most common cause of death by 2030[2] .

Among the death caused by non-communicable diseases, the major cause was due to

1. cardiovascular diseases (25% of non-communicable diseases deaths).
2. Diabetes also contributing with 5%of deaths due to non-communicable diseases[3].

About 80% of the coronary heart disease and cerebrovascular diseases are due to lack of physical activity, tobacco use, unhealthy diet[4].

Childhood obesity and overweight has become a global epidemic. In one of the most extreme examples from 1976-1980 to 1999-2000, the prevalence of overweight among children ages 6-11 years doubled, from approximately 6.5% to 15.3% in the United States. During the same time period, the prevalence among adolescents aged 12-19 years also increased more than three-fold from approximately 5% to 15.5%. Overweight children often become overweight adolescents and adults and overweight in adulthood is a serious health risk. However the global problem of childhood overweight increasingly extends into the developing world[5] .

Objectives

1. To assess the prevalence and awareness of risk factors for Hypertension among government urban and rural high school children in the field practice area of Rajarajeswari Medical College and Hospital, Bengaluru.
2. To compare the prevalence and awareness of risk factors for Hypertension among government urban and rural high school children in the field practice area of Rajarajeswari Medical College and Hospital, Bengaluru.

Methods

A school based cross sectional study was done among 514 government high school students, Sample size was calculated to be n = 510, with 255 urban students in Kengeri Upanagara and 259 rural students in Bidadi. which was calculated using Open Epi, using the formula:-

Sample size n = [DEFF*Np(1-p)]/ [(d2/Z21-α/2*(N-1)+p*(1-p)]

After obtaining Ethical clearance from the Institutional ethical committee, permissions from the concerned Board Education Officers (BEO of Ramanagara district for rural Government high schools, and BEO of Bangalore south for urban Government high schools), Principal/head master of concerned government high school was obtained and students assent was taken before starting the study.

By using simple random technique schools were selected and children of Government high schools who are present on the day of study were considered for the study. Information regarding socio-demographic details, awareness of selected NCDs and their risk factors were elicited using a pre-tested, semi structured questionnaire. Anthropometric measurements like height, weight, and waist hip ratio were recorded. Blood pressures were recorded using mercury sphygmomanometer. GRBS was measured using standardized glucometer (Accu Checkbrand).

Data was entered into Microsoft excel sheet and was analysed using SPSS 22 version software and expressed as percentages, proportions and graphs. Chi-square was used to find out the association between variables. Statistical significance was considered at p value <0.05.

Results

Data was entered into Microsoft excel data sheet and was analyzed using SPSS 22 version software. Categorical data was represented in the form of Frequencies and proportions. Chi-square was used as test of significance. Continuous data was represented as mean and standard deviation. Independent t test was used as test of significance to identify the mean difference between two groups. p value <0.05 was considered as statistically significant.

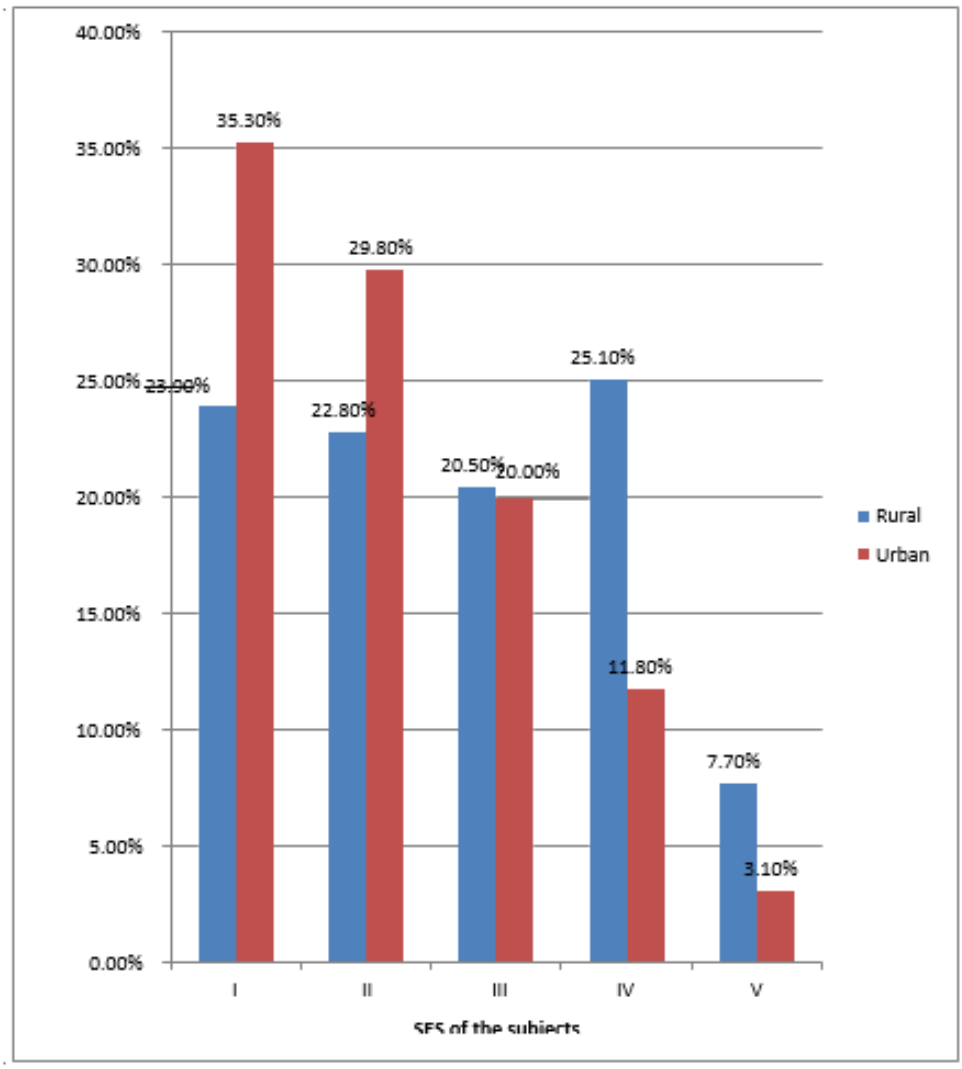
Table 1: Distribution of the study subjects according to their age.

Agein years	Address			
	Rural		Urban	
	Count	%	Count	%
13	132	51.0	147	57.6
14	90	34.7	78	30.6
15	37	14.3	30	11.8
Total	259	100	255	100

Table 2 : Distribution of the study subjects according to their gender.

Gender	Address			
	Rural		Urban	
	Count	%	Count	%
Male	116	44.8	102	40.0
Female	143	55.2	153	60.0
Total	259	100	255	100

In the study, both groups majority of students were in the age group 13 years i.e. 132(51%) in rural and 147 (57.6%). In our study, majority of subjects in both the groups were females i.e. 143(55.2%) in rural and 153(60%) in urban study subjects.



Graph 1: Bar diagram showing SES wise distribution of subjects

Table 3: Distribution of the study subjects according to their awareness on Hypertension.

		Address				p value
		Rural(n=259)		Urban(n=255)		
		Count	%	Count	%	
Aware of HTN	Yes	103	39.8	78	30.6	0.029
	No	156	60.2	177	69.4	
	No	94	36.3	108	42.4	

In the study, 103(39.8%) of rural students and 78(30.6%) of urban children were aware of HTN.

Similarly 165(63.7%) and 165(63.7%) of rural, 119(46.7%) and 147(57.6%) of urban children had awareness regarding IHD and DM respectively. Interestingly awareness regarding HTN and IHD was significantly higher in rural students than in urban areas.

Table 4: Distribution of the study subjects according to their Mean Values of Anthropometric, Blood pressure and Glucose levels.

	Address				p value
	Rural(n=259)		Urban(n=255)		
	Mean	SD	Mean	SD	
Height(mts)	1.47	0.07	1.45	0.06	0.016
Weight(Kgs)	39.88	8.87	40.2	8.7	0.684
BMI	27.01	5.44	27.51	5.25	0.289
WaistHip Ratio	0.881	0.03	0.86	0.05	<0.001
SBP	109.68	10.68	108.42	10.491	0.178
DBP	69.7	9.92	71.08	8.71	0.096
GRBS(mg/dl)	97.6	13.1	94.8	13.3	0.016

Table 5: Distribution of the study subjects according to their awareness of Risk Factors for HTN

		Address				p value
		Rural(n=259)		Urban (n=255)		
		Count	%	Count	%	
Alcohol	Present	123	47.5	62	24.3	<0.001
	Absent	136	52.5	193	75.7	
Tobacco	Present	155	59.8	89	34.9	<0.001
	Absent	104	40.2	166	65.1	
Excess salt intake	Present	127	49.0	137	53.7	0.287
	Absent	132	51.0	118	46.3	
Excess stress/anxiety	Present	118	45.6	101	39.6	0.172
	Absent	141	54.4	154	60.4	
Junk food	Present	51	19.7	62	24.3	0.206
	Absent	208	80.3	193	75.7	
Fast foods	Present	57	22.0	81	31.8	0.013
	Absent	202	78.0	174	68.2	
Lack of exercise	Present	80	30.9	95	37.3	0.128
	Absent	179	69.1	160	62.7	

		Address				p value
		Rural(n=259)		Urban (n=255)		
		Count	%	Count	%	
Obesity	Present	90	34.7	67	26.3	0.037
	Absent	169	65.3	188	73.7	
Passive smoking	Present	94	36.3	59	23.1	<0.001
	Absent	165	63.7	196	76.9	
Reuse of cooking oil	Present	59	22.8	87	34.1	0.004
	Absent	200	77.2	168	65.9	
Use of soft drinks	Present	56	21.6	67	26.3	0.216
	Absent	203	78.4	188	73.7	

In the study awareness of Risk factors like Alcohol, Tobacco, Stress/anxiety, Obesity, passive smoking as risk factors for Hypertension, was significantly higher in rural areas than in urban areas. Whereas in urban area Awareness of Fast-food consumption, reuse of cooking oil was significantly higher in urban areas.

Discussion

Detecting the risk factors of NCDs prevalent in the population is of utmost importance to achieve a healthy population. This study was undertaken to estimate the prevalence of various risk factors prevailing among high school students and also to identify their social correlates.

The study population comprised of 116(44.8%) and 102(40%) males from rural and urban areas respectively, and 143(55.2%) and 153(60%) females from rural and urban areas respectively. Majority were in the age group of 13 years i.e. 51%(132) in rural and 57.6%(147) in urban areas. This was in accordance with the participants in the studies conducted by Kowsalya T et al., where 1088 and 810 were belonging to urban and rural area respectively. In the urban area, 797 were boys, and 291 were girls, and in a rural area, 596wereboys, and214were girls[6].

In our study,majority of subjects in urban area were belonging to SES of 1(35.3%) and 2(29.8%). Were as in rural area majority of them were belonging to SES of 4(25.1%). This difference in SES was statistically significant, these results were very similar in the study conducted by Ekta G et al., in an urban area in Assam, where majority of the study subjects belonged to the SES of 2 (33.7% and 43.6% in boys and girls respectively)[7], Similarly in a study done by Bukelo et al., in a rural area of Karnataka it was noted that majority of the study subjects belonged to the SES of 5(73.7%)[8].

In the study, 39.8% of rural students and 30.6% of urban children had awareness regarding HTN. Interestingly awareness regarding HTN was significantly higher in rural students than in urban areas. Whereas in a study conducted by Anju Ade et al.,in a rural setting it was noted that awareness regarding Diabetes and Cardiovascular diseases was 54.4% and 53.2%respectively[9]. In the study by Chaudhari Al et al., in an urban setting reveled that awareness of Hypertension was 27.6% , Diabetes was 22.4% and Heart attack was43.1%[10].

In the present study, 47.5%, of rural students and 74.5%, of urban children said that HTN, is preventable . In accordance with the study done by Anju Ade et al., majority of them (62.6%) had no knowledge about the prevention of NCDs. Only 127(37.4%) students felt NCDs are preventable. Knowledge regarding communicability of these lifestyle diseases was good among students, about 65.6%students knew that they are noncommunicable.34.4% students had no idea that the NCDs were communicable in nature[9].In the study done Divakaran B et al., A majority(47.5%) felt that among the 3 NCDs, DM could be prevented. Some students had the misconception that the NCDs were communicable in nature[11].

In the present study, it was noted that mean height of the study subjects was 1.47±0.07 in rural and 1.45±0.06 meters in urban study subjects, weight was 39.88±8.87 kgs in rural and 40.2±8.7 kgs in urban study subjects, BMI was 27.01±5.44 in rural and 27.51±5.25 in urban study subjects, and waist hip

ratio was 0.881±0.03 in rural and 0.86±0.05 in urban study subjects respectively. Very similar results were found in the study done by Kowsalya T et al.,[6]

In the present study, 0.8% rural children had SBP > 95th Percentile. There was no significant difference in SBP between two groups. Majority of the study subjects had SBP<90th percentile. 3.1% rural children and 0.8% of urban children had DBP between 90th to 95th percentiles. There was no significant difference in DBP between two groups.

This was in accordance with the study done by Mahajan A et al., where the prevalenceof hypertension in females was more i. e., 13.1% in comparison to males 9.5%.However, the prevalence of pre-hypertension was nearly equal (11.0% in females and11.3% in males) [12]. In the study done by Ekta G et al., in an urban setting in Assam among high school boys and girls; an interesting result was noted, which showed prevalence of hypertension was21.2% and prehypertension was 24.4%[7].

In the study, awareness of risk factors like Alcohol, Tobacco, Stress/anxiety, Obesity, passive smoking as risk factors for Hypertension, was significantly higher in rural areas than in urban areas as a risk factor for HTN. Were as in urban area Awareness of Fast food consumption, reuse of cooking oil was significantly higher in urban areas. This was in accordance with the study done by Shivalli S etal., among rural school children of Varanasi it was found that tobacco use, obesity and alcohol were the risk factors for Hypertension according to 54.1%, 47.4% and 46.9% of the students respectively[13].

In the study done by Anju Ade et al., it was noted that awareness of risk factors of non-communicable diseases and knowledge regarding prevention aspects of NCDs was also low among rural school children[9].

Data on the awareness of risk factors for Hypertension among Indian school children are limited.

In the present study, awareness of risk factors like Alcohol, Tobacco, stress/anxiety and passive smoking were significantly higher in rural areas than in urban areas as a risk factor for DM. Where as in urban area Fast food consumption as risk factor for DM was significantly higher in urban areas as a risk factor for DM. This was in accordance with the study done by Shivalli S et al., where only one tenth of the students considered that alcohol and sedentary life style as risk factors for diabetes[13].

Conclusions

Prevalence of risk factors for Hypertension like overweight, pre-hypertension, Waist Hip ratio and family history for these diseases were more among rural study subjects compared to that of urban study subjects. Whereas physical activity was more in rural than urban study subjects.

Awareness of risk factors like Alcohol, Tobacco, Stress / anxiety, Obesity, passive smoking as risk factors for Hypertension, was significantly higher in rural areas than in urban areas as a risk factor for HTN. Whereas; in urban area awareness of Fast food consumption, reuse of cooking oil was significantly higher in urban areas.

Recommendations: This current study shows non-Communicable diseases like Hypertension, will start in childhood itself, and the awareness of these risk factors among the government high school students in both rural and urban areas is unsatisfactory.

Students should have a curriculum based education regarding these risk factors for non-communicable diseases to increase the awareness about these risk factors and non-communicable diseases; there by emphasizing the primordial prevention.

Ethical clearance: taken from Instutional Ethical Committee (Rajarajeswari Medical College & Hospital).

Source of Funding: Self.

Conflict of interest: none

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