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Original Research Article

Assessment of knowledge of hypertension and its risk factors among urban school children of Belagavi: a cross sectional study

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ABSTRACT

Background: Hypertension has not just remained the disease of adults, but the prevalence is also increasing in children and adolescents. Knowledge of the predisposing risk factors of hypertension is an important step in the modification of lifestyle behaviours to prevent further morbidity and mortality.
Methods: This cross sectional study was conducted among 270 students of 10th standard, belonging to 3 urban schools of Belagavi in 2016 using a structured questionnaire with an intention to assess their knowledge regarding hypertension and its risk factors.
Results: Majority students (69.26%) belonged to class II and III of B.G Prasad socio-economic status and 70.37% came from nuclear family. While headache (80%) was the most answered symptom, heart diseases (67%) was the commonly answered complication. Most students had good knowledge regarding prevention and risk factors like unhealthy diet, physical inactivity etc. Majority had fair knowledge about general factors (54.81%), symptoms (41.11%) and complications (34.11%). Knowledge about stress factors (46.67%) and preventive measures (62.22%) was very good. All these differences were statistically significant ($p<0.001$).
Conclusions: The overall knowledge about hypertension and its risk factors among the school students was good (68.52%) and there was significant association between the overall knowledge levels with the mothers education and family history of chronic diseases.

Keywords: Adolescent hypertension, Non-communicable disease, Risk factors, School children, Stress

INTRODUCTION

India is undergoing an epidemiological transition where non-communicable diseases (NCDs) and especially cardiovascular diseases (CVDs) are increasing at a rapid rate. The growing burden of morbidity and mortality of CVDs is being contributed largely by a multitude of risk factors with hypertension being one of them.[1]

NCDs are responsible for 74% of all deaths worldwide.[2] According to World Health Organization (WHO) Hypertension has affected 1.28 billion adults of the world living in low and middle income countries.[2] Hypertension has not just remained the disease of adults, but the prevalence is also increasing in children and adolescents. Population based epidemiological studies have shown that primary hypertension is becoming common among apparently healthy children with prevalence rates of 1-5% in high-income countries and 0.46% - 21.5% amongst children of India.[3-6] Studies have shown that hypertension and high normal pressure seen in children can progress into adulthood thus contributing to adult cardiovascular morbidity and mortality.[7,8] It is a lifestyle related disease and is occurring prematurely in fast growing countries

especially among adolescents as a number of environmental, genetic and the lifestyle risk factors associated with high BP such as age, sex, body size, obesity, family history of hypertension, faulty dietary habits and physical activity, increased stress, race, ethnicity and high socio-economic status are becoming more prevalent in this group.[9,10] Children are adopting a progressively unhealthy life style with increased sedentary entertainment such as watching television, computerization, video gaming etc. resulting in physical inactivity and also unhealthy food habits like high fat, high salt and low fiber diets, increased consumption of fast foods have especially sped up the risk of hypertension and other non-communicable diseases.[11]

Although adolescent hypertension is increasing across the world yet it remains an underestimated problem in developing countries because of lack of health services towards identification of these risk factors, screening of pre-hypertension or hypertension in this age group. Knowledge of the predisposing risk factors is an important step in the modification of lifestyle behaviours conducive to optimal health. School being a priority setting to target adolescents, offers substantial opportunities for such purposes. Hence the study was undertaken.

Objective of the study was to assess the knowledge about hypertension and its risk factors among urban school children.

METHODS

This was a descriptive cross-sectional study conducted among high school children of 10th standard selected from three urban schools in Belagavi, North Karnataka over a period of five months from June to October 2016.Sample size was calculated using the formula 4pq/d2 (p = prevalence, q=100-p, d=5%). Considering the prevalence of hypertension among adolescents as 21.5% from a study4, Sample size of 270 was obtained. Three schools were selected randomly from each zone (north, middle and south) of the Belagavi city by using simple random technique. All the students of 10th standard who were present on the day of data collection and willing to participate were included in the study. Permission was obtained from the respective school authorities and written informed consent was taken from the students and their parents. The ethical clearance for the study was obtained from the Institutional ethical committee.

Data was collected from the students after explaining the study in detail by self-administered, Predesigned, semi-structured questionnaire which included Socio-demographic details and knowledge assessment questions about hypertension and its risk factors. The feedbacks were studied and conclusions drawn. The results were compared using SPSS software version 22. Relevant statistical tests of significance like chi square test, fisher's exact test etc. were used. The students' knowledge was scored using a scoring system. Each correct knowledge answer was awarded one point while an incorrect answer or no response was awarded zero point. The total scores were graded as poor, fair, good and very good. Questions considered for knowledge on hypertension and its risk factors scoring consisted general facts of hypertension, dietary factors, physical activity, stress, high risk groups, symptoms, complications and preventive measures. The overall knowledge grading was:

Table 1: Knowledge grading.

Score	0-20	21-40	41-60	61-80
Interpretation	Poor	Fair	Good	Very good

RESULTS

This study was done among 270 urban school children to assess the knowledge of hypertension and its risk factors. The following were the findings of the study:

Knowledge of students on hypertension in general

In this study, 123 (45.55%) had heard about the most common non-communicable diseases (obesity, diabetes mellitus, ischemic heart diseases and hypertension). About 168 (62.22%) had heard about hypertension and 114 (53.33%) thought that hypertension could be detected at early stages. Although 148 (40.74) students said hypertension could occur among children, 26 (9.63%) denied it. About 155 (57.41%) students said that hypertension could be detected only when symptoms are present whereas 102 (37.77%) said that hypertension could occur without any manifestations. When asked about various factors contributing towards hypertension; majority 185 (68.52%) students knew about Mental stress, followed by Family history of hypertension 57 (21.11%). Only a few answered decreased physical activity 40 (14.81%),unhealthy dietary habits 34 (12.59%) and personal history of Health problems 35 (12.96%) as risk factors. Most of them 169 (62.59%) recognized sphygmomanometer as a device used to measure blood pressure and about 57 (21.11%) correctly answered the normal adult range blood pressure to be 100/60 mmHg-140/90 mmHg. Almost 233 (86.3%) students showed positive attitude towards gaining knowledge on hypertension and its risk factors.

Knowledge of students about symptoms and complications of high BP (Hypertension) and measures of prevention

Headache 217 (80.37%), Giddiness 171 (63.33%), breathlessness 159 (58.88%), chest pain 147 (54.44%) and palpitations 139 (51.48%) were the commonly recognized symptoms. Some students also identified visual problems 97(35.93%), Nose bleeds 74(27.41%) and haematuria 57 (21.11%) as symptoms.

Table 2: Distribution of students according to their socio-demographic factors.

Variables	Number	Percentage
School:		
School 1	90	33.33
School 2	114	42.22
School 3	66	24.44
Age:		
15 years	134	49.63
16 years	136	50.37
Sex:		
Male	148	54.81
Female	122	45.19
Religion:		
Hindu	249	92.22
Jain	15	5.55
Muslim	6	2.22
Type of family:		
Nuclear	190	70.37
Joint	80	29.63
Socio-economic status:		
Class 1	49	18.15
Class 2	95	35.19
Class 3	92	34.07
Class 4	30	11.11
Class 5	4	1.48

Table 3: Distribution of students according to their knowledge about different risk group (more prone) people for developing hypertension.

Persons at risk	Correct Answer	%	Wrong Answer	%
Alcoholics/smokers	239	88.5	31	11.4
Elderly people	216	80	54	20
Pregnant women	100	37	170	62.9
Children with Hypertensive parents	161	59.6	109	40.4
Overweight/Obese children	157	58.2	113	41.8
People with systemic chronic diseases	153	56.6	117	43.3
Over competitive personality (type A)	95	35.2	175	64.8
People in stressful jobs/sleep deprived	171	63.3	99	36.6

Cardiac failure 181 (67.04%), stroke/Haemorrhage 123 (45.55%) and vascular diseases 118 (43.7) were the commonly recognized complications. About 107 (39.63%) and 98 (36.3) students identified that hypertension could be a part of metabolic syndrome and could complicate pregnancy respectively. Microvascular complications like renal impairment 102(37.78%) and visual impairment 92 (34.07) were also recognized by a few.

Table 4: Distribution of students according to their knowledge on dietary risk factors, physical activity and stress factors for hypertension.

Risk Factors	Correct Answer	%	Wrong Answer	%
Overeating	081	30.0	189	70.0
Fatty / fried foods	164	60.7	106	39.2
Drinking alcohol	183	67.7	087	32.2
Excess caffeinated beverages	070	25.9	200	74.0
More salt/pickle/Papad	196	72.6	074	27.4
Excessive sweets	148	54.8	122	45.1
Fast/junk foods, bakery items	193	71.5	077	28.5
Physical Activities				
Playing mobile & videogames	157	58.1	113	41.8
Using motorcycle for short distances	136	50.4	134	49.6
Using lifts / escalators	135	50.0	135	50.0
Not involving in school sports	143	52.9	127	47.0
Spending more time with computers/TV	188	69.6	082	30.3
Stress Factors				
Excess anxiety, worry ,guilt, nervousness	200	74.1	070	25.9
Excess anger, frustration	231	85.6	039	14.4
Depression, mood swings	157	58.2	113	41.8
Insomnia/poor sleeping	147	54.4	123	45.5
Feeling burdened	202	74.8	068	25.2
Confusion, restlessness	185	68.5	085	31.5
Overreacting to petty annoyances	145	53.7	125	46.3
Strain at work, school, family problems	182	67.4	088	32.6

Majority knew about the methods of preventing the development of high blood pressure which included regular exercises 238 (88.15%); low salt, low fat ,high fibre diet 239 (88.52%), taking medications on time to prevent complications 227 (84.07%), by getting Blood

pressure checked regularly 224 (82.96%) and by avoiding stress 218 (80.74%).

Table 5: Distribution of students according to their overall knowledge on hypertension.

Interpretation	Score	Number	%
Poor	0-20	0	0
Fair	21-40	61	22.59
Good	41-60	185	68.52
Very good	61-80	24	8.89

Average = 47.722; S.D=17.442; X^2=158.02; p<0.001; Significant

On assessing the association between the knowledge levels on hypertension and its risk factors with the demographic variables, there was statistically significant association between the mothers education and knowledge levels (Fisher's Exact test = 18.84, p = 0.008) Such that with increase in mother's educational status there was increase in knowledge. Very Good knowledge was more among children of professionally educated 57.1% mothers followed by intermediate education 9% and graduates 7.5% compared to those who were high schooled 00.7%. There was also a statistically significant association between family history of chronic diseases and overall knowledge levels (Chi-sq test=12.83, p = 0.002) such that children having positive history showed better knowledge (91.7%) as compared to those without any family history (72.3%).

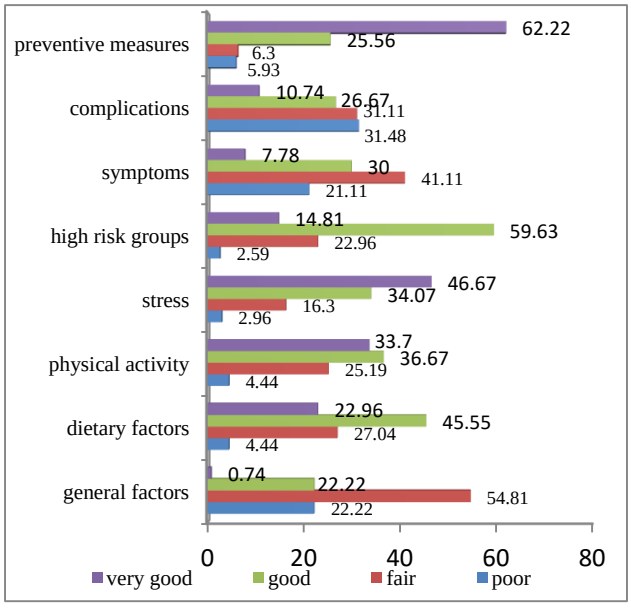

Figure 1: Distribution of students according to their knowledge levels on different aspects of hypertension and its risk factors.

DISCUSSION

The present study was conducted among the 270 students of urban schools of Belagavi. In this study 54.81% were males, 45.19% were females belonging to the age group of 15-16 years. Almost equal distribution of boys (53.2%, 40.9%, 66%, 48.6%, and 63.8%) and girls (46.8%, 59.1%, 34%, 51.4%, 36.25%) was also seen in studies done at Kathmandu, Kerala, Delhi, Assam and Jaipur respectively.[1,5,6,12,13] Uniform age distribution was seen in our study as it was conducted only among class 10th standard students. In our study 92.22% of children belonged to Hindu religion which was in concurrence with a study done at Jaipur (97%).[6] Children belonging to nuclear family formed the majority i.e. 70.37% and 29.63% belonged to joint family which was same as a study conducted at Ghaziabad where 61.64% came from nuclear family and 38.36% from joint family.14 Socio-economic status in this study was classified using modified B.G Prasad classification, in which about 35.19% students belonged to class II and 34.07% to class III. A study from Assam12 also showed similar results with maximum students belonging to class II (38.8%), III (27.9%) and IV (26.8%) socio-economic class as compared to class I (5.6%) and Class V (0.9%) (Table 2).

In this study 50.74% of student's father had intermediate level of education, 20.74% were graduates, 15.93% had completed high school, 9.63% were professionals and 2.96% postgraduates which was similar to the Assam study where 8.3% were Professionals or post-graduates, 26.7% were Graduates, 10.3% had Intermediate education, 27.3% were High schooled, 13.2% were Middle schooled, 9.1% were Primary schooled and 5.1% were Illiterates. Also 57.41% of students' mothers had intermediate level of education, 19.63% were graduates, 19.26% had completed high school, 02.59% were professionals and 01.11% were postgraduates. Assam study reported similar findings such that 5.8% mothers were Professionals or post-graduates, 19.9% were Graduates, 13.1% had Intermediate education, 32.5% were high schooled, 12% were Middle schooled, 7.9% were Primary schooled and 8.8% were Illiterates.[12]

Our study reveals that 49.26% of student's father did business, 17.04% of them did clerical jobs, 13.33% were professionals, 10.37% did skilled work, 7.41% were semi-professionals, 01.48% had retired and 1.11% did semi-skilled work. Similar occupational status was seen among student's father in an Assam study such that 5.6% were Professionals, 14.6% were Semi-professionals, 53.6% did Clerical/skilled work, 9.4% did Semi-skilled work, 15.6% did unskilled work and 1.2% were Unemployed.[12]

About 94.44% of student's mothers were housewives which resembled the Assam study where 79.9% of mothers were homemakers. Among the 16.66% of mothers who were working; 8.51% were semi-professionals, 3.7% of them did clerical jobs, 3.33% were professionals and 1.11% of them did skilled work. Study by Ekta et.al in Assam revealed 2.3 % of mothers were Professionals, 7% were Semi-professionals, 5.5% did Clerical/skilled work, 4.5% did Semi-skilled work and 0.8% did unskilled work.[12] Family history of hypertension

was seen among 38.89% and that of chronic diseases among 26.67% students which was lower than the study done at Poland where 54% had hypertension in family and 49.2% had chronic disease in family but higher than that of Ghaziabad study where 32.91% had family history of hypertension.[14,15]

The present study showed that 68.52% of the students had good knowledge about hypertension and its risk factors, 22.59% students had fair knowledge and only 8.89% had very good knowledge and the difference of which was highly significant ($p<0.001$). None of the students had poor knowledge (Table 5). Whereas a study done in Tamil-Nadu revealed that knowledge was suboptimal as only 28.25% students had some awareness about hypertension.[4] A similar study done at Poland found that almost half of the adolescents (49.2%) had a low level of global knowledge about hypertension, Nearly 38% of them had medium knowledge and only 13% had good knowledge which was also significant. ($p \leq 0.05$).[15]

On scoring the knowledge levels in individual category for hypertension and its risk factors; majority had fair knowledge about general factors (54.81%), symptoms (41.11%) and complications (34.11%). Good knowledge among students was present for dietary factors (45.55%), physical activity 36.67%) and about high risk groups (59.63%).Knowledge about stress factors (46.67%) and preventive measures (62.22%) among students was very good. This difference was found to be statistically significant ($p<0.001$) (Figure 1) whereas study at Poland found that majority of the students had weak knowledge regarding epidemiology (57.6%), symptoms (72.4%), treatment (40%) and preventive measures (42%). Medium knowledge was present for complications (51%) and most of them had good knowledge only about causes of hypertension and this difference was also statistically significant.[15]

There was a significant association between knowledge of hypertension with mother's education and family history of chronic diseases. Study done at Poland found significant association between family history of hypertension ($p=0.01$) but not with family history of chronic diseases. Both studies showed that Gender didn't have any significant role on knowledge of hypertension.[15]

Limitations

The study was done only among the grade 10 students and hence could not asses the knowledge among different age groups regarding hypertension and its risk factors. There was no provision for intervention in terms of providing knowledge and recording the post intervention responses.

CONCLUSION

The study concluded that the overall knowledge about hypertension and its risk factors among urban school children was good. The knowledge on stress factors and preventive measures was better than physical activity and dietary factors. This study stresses on the importance of the health education and its promotion at early phase of life as it can be considered as the best intervention for early diagnosis of hypertension along with its risk factors so as to prevent the complications at an early stage.

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