



IJSRM

INTERNATIONAL JOURNAL OF SCIENCE AND RESEARCH METHODOLOGY

An Official Publication of Human Journals



Human Journals

Research Article

October 2020 Vol.:16, Issue:4

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Studies on Awareness and Risk Factors Associated with Hypertension among Adolescents



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Submission: 23 September 2020

Accepted: 30 September 2020

Published: 30 October 2020



HUMAN JOURNALS

www.ijsrm.humanjournals.com

Keywords: Hypertension, Stress, cardiovascular diseases, lifestyle

ABSTRACT

Hypertension is a major contributor to the global non-communicable disease burden. In India, the percentage of urban population suffering from hypertension has increased 8% in just 10 years during 2004 to 2014. Taking this into consideration this cross-sectional study of total 369 randomly selected respondents aims to determine the knowledge about hypertension among Adolescents. A specially designed semi-structured tool was used for this research. The tool includes questions on social & demographic issues, knowledge regarding hypertension, habits of the respondents, their lifestyle and physical activities. Also, a few questions were asked on their family history pertaining to hypertension. The analysis suggests around 20.9% of the participants have BMI above normal. 73 percent respondents are having knowledge regarding normal blood pressure, another 79.4% have knowledge regarding hypertension. More than 60% of respondents mention obesity and unhealthy diet as the cause of hypertension, whereas 55% of them reported smoking as one of the cause of hypertension. More than one third of the respondents reported that they had a family history pertaining to hypertension. Two third of the respondents (65.9%) involve themselves in physical exercise and 64.8% respondents mentions that academic pressure is a reason for stress, along with family expectation. Statistical analysis also shows that academic background and gender are significantly associated with respondents reasons for stress. As hypertension is increasing among the adolescent and moreover in urban areas due to unhealthy food consumption and lifestyle, it is high time to understand their knowledge regarding the same.

INTRODUCTION:-

According to the Joint National Committee (JNC) 7, Normal blood pressure (BP) is a systolic BP < 120 mmHg And diastolic BP < 80mmHg^[1]. With the guidelines of (JCN) 8, Blood pressure elevations are associated with an increased risk of cardiovascular (CV) disease in a linear fashion. Prevalence all around the globe^[8] and takes III position In the list of most important risk factors responsible For the burden of disease in South Asia (2010)^[9]. According to National Family Health Survey (NFHS) – 4 data, every 4th individual in India >18 years has raised BP and the Prevalence has increased by 10% from 2010 to 2014^[10]. Also, On a global basis approximately 54% of Stroke and 47% Of Coronary heart disease (CHD) cases were recorded due to hypertension (HTN)^[4], therefore it is one of the major risk factors for cardiovascular mortality Accounting for 20-50% of all deaths^[11]. Starting at a blood pressure of 115/75 mmHg, every increase of 20 mm Hg in systolic blood pressure (SBP) and/or increase of 10 mmHg in diastolic blood pressure (DBP) is associated with a doubling of the risk of death from stroke, heart disease, or other vascular disease. Hypertension is defined as systolic BP level ≥ 140 mmHg and/or diastolic BP level ≥ 90 mmHg ^[1]. It is known as a silent Killer with very rare kind of symptom can be seen in its early stages until it leads to Coronary heart disease (CHD), Stroke, and Other Severe medical disorders. This risk is evident even in childhood; with elevated blood pressure predicting hypertension in adulthood, and adverse effects of elevated blood pressure in childhood on vascular structure and function, specifically left ventricular hypertrophy, and kidney failure are already apparent in youth ^[2]. Increased widespread presence of overweight and obesity among adolescents in recent decades may be leading to a higher young adult hypertension prevalence that will continue into the future ^[3]. Therefore, young generation represents the most important age gap for prior hypertension safeguard and treatment which has the dormant to reduce the temporary and lifelong risk factors of cardiovascular diseases. An increasing problem of hypertension over the world, there is a concern that hypertension in young adults may also be on the hike and that cases are not detected because of insufficient screening in this age group ^[4]. Therefore, knowledge of the susceptible risk factors responsible for the development of hypertension (HTN) is of utmost for the tempering of Lifestyle behaviors so that all may not get affected by cardiovascular diseases and maintains a better health among the young adults. The risk factors for HTN can be divided into two parts namely non-modifiable and modifiable risk factors. Non-modifiable Risk factors include family history, age, gender, race

and chronic kidney infections whereas modifiable risk factors include lack of physical activity, unhealthy diet pattern (especially One high in Sodium), overweight or obese, heavy alcohol drinking, sleep apnea, high cholesterol levels, diabetes, smoking, tobacco use and stress^[1]. There are some blockades to hypertension control, such as physician turn over, non- devoted to a fixed protocol or recommendation, prescribing antihypertensive drugs from one class or choosing two drugs from the same class as beta blockers, the side effects of combining several drugs unsuitable such as bradycardia, the cost of medications, and not having a fixed physician ^[5,6]. Considering its prevalence and problems, it seems that multiple factors and blockades are associated with restraining this disease. The most important blockade in diagnosis and control of this condition is the insufficiency of knowledge and acknowledgement about various features of hypertension ^[7]. Bramlage, P. told that HTN Reports 50% among overweight and obese patients and It increases further with higher grades of obesity. On The other hand, almost 70% of hypertensive patients have been reported to be overweight, more than 30% being obese ^[13] and also with an heavy intake of salt, oil, and unhealthy food patients get in a heavy chance of developing hypertension. Many of the students are migrated from their native places for higher education and may not maintain a healthy lifestyle as most of the way they are exposed to new habits like smoking, consuming alcohol and also not having a proper sleep which they us usually do At their homes. And in such a rapid pace of world growing the young adults of adolescence age (15-30) in consideration of World Health Organization (WHO) guidelines are at a high risk to get exposed to the factors responsible for hypertension. Therefore, measuring and spreading knowledge of the modifiable risk factors at an early age Can be considered as an essential preventive educational approach in reducing the prevalence of HTN worldwide^[1].Strategies to achieve even a slight lowering of the levels Of BP among young adults can lead to important Public health goals ^[12]. The motive of this study was to assess HTN knowledge, awareness, and attitudes in an era of hypertension among adolescents so that the preventable risk factors like personal habits, type of diet and lack of physical activity can be eliminated to the most possible extent. Since a total sample size being taken for study of 369 participants at an age group in between 17-28 years.

Objective:-

The aim of the research study is determination of the knowledge about hypertension as well as assessing few risk factors and enhancing the knowledge about preventive measures associated with hypertension among adolescents.

MATERIALS AND METHODS:-

This is a cross-sectional study performed by the researcher. There are 369 participants which are selected as per the convenience of the researchers. Although the participants are not from the same city or a particular place preferably are from multiple places like Pune, Washim, Aurangabad, Mumbai and Other. A well designed semi-structured questionnaire is prepared for this research. The paraphernalia includes questions on social and demographic features like-gender, age, height and weight of the participant. In addition to understand the knowledge regarding hypertension some questions are placed like causes occurred by hypertension and some other medical issues of hypertension; noted with personal habits of the participants viz as smoking, consumption of alcohol, and quantity of smoke exposure and alcohol consumption among the participants. Some questions are regarding their dietary habits viz type of food, frequency of consuming junk, preserved, oily and salty food content^[1]. The consideration of their physical activity is also taken, including stress reasons in life from the respondents. Some questions are asked on their family history for taking in consideration of hypertension in first blood relation. The participation of the respondents for the study is voluntary.

Inclusion Criteria:-

Adolescents pursuing graduation and post-graduation in various sectors like Medical, Architecture, Engineering, Organizing Event, Pharmacy, Masters in business administration etc, in between the age of 15-30 years.

Exclusion Criteria:-

Students below the age of 15 years and more than the age of 30 years.

Data Entry and Analysis:-

All the data is rechecked before the entry to avoid any kind of error. The secondary editing of data was also carried out. The coding was performed before entering the data. The data was entered to a software namely Statistical Package for Social Science (IBM SPSS) and was analyzed.

RESULTS AND DISCUSSION:-

Analyses are performed to find out the characteristics of the participants. The results for the same are mentioned in the tabular format in table 1.

TABLE NO. 1: CHARACTERISTICS OF THE PARTICIPANTS (N = 369)

Sr. No.	CHARACTERISTICS	NUMBERS & PERCENTAGE
1.	ACADEMIC QUALIFICATION:- Medical	179 (48.5%)
	Non – Medical	190 (51.5%)
2.	GENDER:- Male	221(59.9%)
	Female	148 (40.1%)
3.	AGE:- Teenagers	72 (19.5%)
	20 and above	297 (80.5%)
4.	PLACE OF RESIDENCE:- Pune	293 (79.4%)
	Others	76 (40.6)
5.	ACCOMMODATION (STAY):- Hostel	164 (44.4%)

	Hometown	86 (23.3%)
	Paying guest	119 (32.2%)
6.	BMI:-	
	Below normal	28 (7.6%)
	Normal	77 (20.9%)
	Above normal	264 (71.5%)

Table 1 shows that 48.5 percent of the participants are from medical background and the remaining are from the non-medical background. The percent for the male participants are 59.5 percent and the rest of them are female. In this set of data, 72 numbers of participants are teenagers, whereas the others are in between the age of 20-28 years. Around those 79.4 percent of the participants are from Pune and the others are from different cities. 164 participants are located in hostel whereas 119 participants replied that they use to stay as a paying guest where as the remaining 86 participants are staying in their home town. For the fitness purpose the Body Mass Index (BMI) was calculated with the help of standard formula that is weight in kilograms(KG) divided by height in meter square. In this the normal value is consider in between 20-25. As per study, 7.6 percent participants are found to be below normal BMI whereas 20.9 percent participants are found in normal range of BMI and the remaining numbers of the participants are above the normal range of BMI.

TABLE NO. 2: KNOWLEDGE OF HYPERTENSION BY THE PARTICIPANTS (N = 369)

Sr. No.	CHARACTERISTICS	NUMBERS & PERCENTAGE
1.	DO YOU KNOW WHAT IS THE NORMAL VALUE OF BLOOD PRESSURE?	269 (73%)
2.	WHAT IS HYPERTENSION (HTN)?:-	293 (79.4%)

3.	CAUSES OF HYPERTENSION*:-	
	Obesity	246 (66.7%)
	Smoking	192 (52%)
	Unhealthy Diet	263 (71.3)
4.	EFFECTS OF HYPERTENSION*:-	
	Heart Attack	307 (83.2%)
	Stroke	226 (61.2%)
	Kidney Failure	103 (27.9%)

(*Multiple Responses, addition may not be equal to 100 in percent format and 369 in number format)

Table 2 describes that 73 percent participants are well aware to the normal range of blood pressure (120/80) for male and for female (110/70) as well 293 number of participants are aware what is high blood pressure. Among 369 participants 263 number of respondents selected unhealthy diet and 246 have selected obesity whereas 192 of the participants selected smoking as a cause of hypertension. Heart attack and stroke are the most known complication of hypertension in adolescents. Beside these only 103 adolescents are being familiar about kidney failure as a probable effect occurs after getting affected by hypertension.

TABLE NO. 3: FAMILY HISTORY OF HYPERTENSION BY THE PARTICIPANTS (N = 369)

Sr. No.	CHARACTERISTICS	NUMBERS & PERCENTAGE
1.	FIRST BLOOD RELATION (Mother & Father) WITH FAMILY FOR HYPERTENSION:-	147 (39.8%)

The analysis with a consideration of family history suggested that out of 38.8 percent of the participants have a strong family history of hypertension, in which 39.8 percent have a first

blood relation (mother and father) in the family. According to that analysis, those participants are at a high risk of developing hypertension in upcoming life.

TABLE NO. 4: PERSONAL HABITS OF THE PARTICIPANTS (N = 369)

Sr. No.	CHARACTERISTICS	NUMBERS & PERCENTAGE
1.	DIET:-	
	Vegetarian	154 (41.7%)
	Non – vegetarian	15 (4.1%)
	Eggetarian	29 (7.9%)
	Both vegetarian and non – vegetarian	171 (46.3%)
2.	NON-VEG FOOD:-	
	2 – 3 days in a week	76 (20.6%)
	Weekly	87 (23.6%)
	Daily	15 (4%)
	Not applicable	191 (51.8%)
3.	KIND OF FOOD*:-	
	Junk Food	173 (46.9%)
	Preserved Food	196 (53.1%)
	Oily Food	259 (70.2)
	Salty Food	226 (61.2%)
4.	JUNK & SALTY FOOD:-	
	2 – 3 days in a week	93 (25.2%)
	Weekly	176 (47.7%)
	Daily	21 (5.7%)
	Not applicable	79 (21.4%)

5.	<p>PRESERVED FOOD:-</p> <p>2 – 3 days in a week</p> <p>Weekly</p> <p>Daily</p> <p>Not applicable</p>	<p>118 (32%)</p> <p>144 (39%)</p> <p>35 (9.5%)</p> <p>72 (19.5%)</p>
6.	<p>PHYSICAL EXERCISE:-</p>	<p>243 (65.9%)</p>
7.	<p>KIND OF EXERCISE PERFORMED:-</p> <p>Yoga</p> <p>Heavy Weight</p> <p>Gymnastics</p> <p>Not Applicable</p>	<p>78 (28.1%)</p> <p>217 (58.8%)</p> <p>53 (14.4%)</p> <p>21 (5,7%)</p>
8.	<p>ENGAGE IN PHYSICAL EXERCISE:-</p> <p>Everyday</p> <p>2 – 4 days in a week</p> <p>As in when you feel like</p> <p>Never</p>	<p>129 (35%)</p> <p>63(17.1%)</p> <p>134 (36.3%)</p> <p>43 (11.7%)</p>
9.	<p>DO YOU SMOKE:-</p>	<p>30 (8.1%)</p>
10.	<p>CONSUMPTION OF SMOKE</p> <p>1 box 2-3 days in a week</p> <p>4 to 5 Cigarettes a day</p> <p>2-3 hookahs a day</p>	<p>16 (4.3%)</p> <p>10 (2.4%)</p> <p>4 (1.1%)</p>
11.	<p>EXPOSURE TO KIND OF SMOKE*:-</p> <p>Cigarettes</p> <p>Vehicles</p>	<p>94 (25.5%)</p> <p>197 (53.4%)</p>

	Factories	38 (10.3%)
	Hookahs	30 (8.1%)
12.	FREQUENCY OF SMOKE EXPOSURE:-	
	2 – 3 days in a week	35 (9.5%)
	Weekly	30 (8.1%)
	Daily	143 (38.8%)
	Never	161 (43.6%)
13.	ALCOHOL:-	60 (16.3%)
14.	FREQUENCY OF ALCOHOL CONSUMPTION:-	
	Occasionally	54 (14.6%)
	2 – 3 times in a week	00 (00%)
	Weekly	2 (0.5%)
	Daily	3 (0.8%)
	Never	310 (84.2%)

(*Multiple Responses, addition may not be equal to 100 in percent format and 369 in number format)

Table 4 describes about the personal habits of the participants in which almost 46.3 percent of participants are omnivorous whereas 7.9 percent participants are vegetarian. Among 369 participants 87 of them are use to consume non-vegetarian food on weekly basis and 76 of the participants are consuming non-vegetarian food for 2-3 days in a week. As a per the analysis done from 369 participants 46.9% are having junk food, 53.1 percent participants consuming preserved food, whereas 226 of them are more in consumption of salty food. Among the participants 47.7 percent are consuming junk food on weekly basis. 39.0 percent participants are consuming preserved food on a weekly basis, 9.5 percent found consuming on daily basis and

32.0 percent consumed 2-3 days in a week and remaining never use to consume preserved food at all. Among 369, 243 (65.9%) participants i.e. more than fifty percent use to involve them in physical exercise, from which 129 (35%) use to engage them on a regular basis in exercise whereas the kind of exercise varies between the participants i.e. 78 use to do yoga, 217 engage them in heavyweight and 53 perform gymnastics. Among 369 participants 30 of them use to smoke as it's their personal habit in which 16 consume 1 box of cigarette for 2-3 days in a week, 10 use to do 4-5 cigarettes per day and 4 are consuming hookahs, in terms of getting expose to smoke vehicles are the primary one whereas cigarettes, hukka and factories being a moderate source for this. 143 participants said that they get expose to smoke on a regular basis. As per the analysis it is found that 60 participants consume alcohol occasionally with different amounts of consumption like 1 liter, 700 ml and 500ml.

TABLE NO. 5: REASON OF STRESS IN THE PARTICIPANTS (N = 369)

Sr. No.	CHARACTERISTICS	NUMBERS & PERCENTAGE
1.	<p style="text-align: center;">STRESS:-</p> <p style="text-align: center;">Peer Pressure</p> <p style="text-align: center;">Academics Pressure (Stable Career Building)</p> <p style="text-align: center;">Family expectations</p> <p style="text-align: center;">Relationships</p>	<p style="text-align: center;">109(29.5%)</p> <p style="text-align: center;">239(64.8%)</p> <p style="text-align: center;">159(43.1%)</p> <p style="text-align: center;">115(31.2%)</p>

(*Multiple Responses, addition may not be equal to 100 in percent format and 369 in number format)

In table 5, a trial is carried to take a brief understanding of major reasons for stress among the participants. From the analysis it is observed that main cause of stress for adolescents is academic pressure (Stable Career Building) in consideration of 239 numbers of participants, whereas family expectations, relationship and peer pressure are also appeared out as a reason for stress.

Table No. 6:- Association between Knowledge regarding Reasons of Stress (Academics Pressure) and Background Characteristics of the Respondents

Sr. No.	Characteristics	Numbers	Percentage	p Value
1.	ACADEMIC QUALIFICATION:- Medical	116	70.9%	0.01
	Non – Medical	123	58.9%	
2.	GENDER:- Male	143	59.3%	0.00
	Female	195	73.0%	
3.	AGE:- Teenagers	47	61.1%	0.4
	20 and above	192	65.7%	
4.	PLACE OF RESIDENCE:- Pune	189	67.9%	0.01
	Others	49	52.6%	
5.	ACCOMMODATION (STAY):- Hostel	102	65.9%	0.3
	Hometown	77	68.1%	
	Paying guest	56	58.1%	

*p<0.05

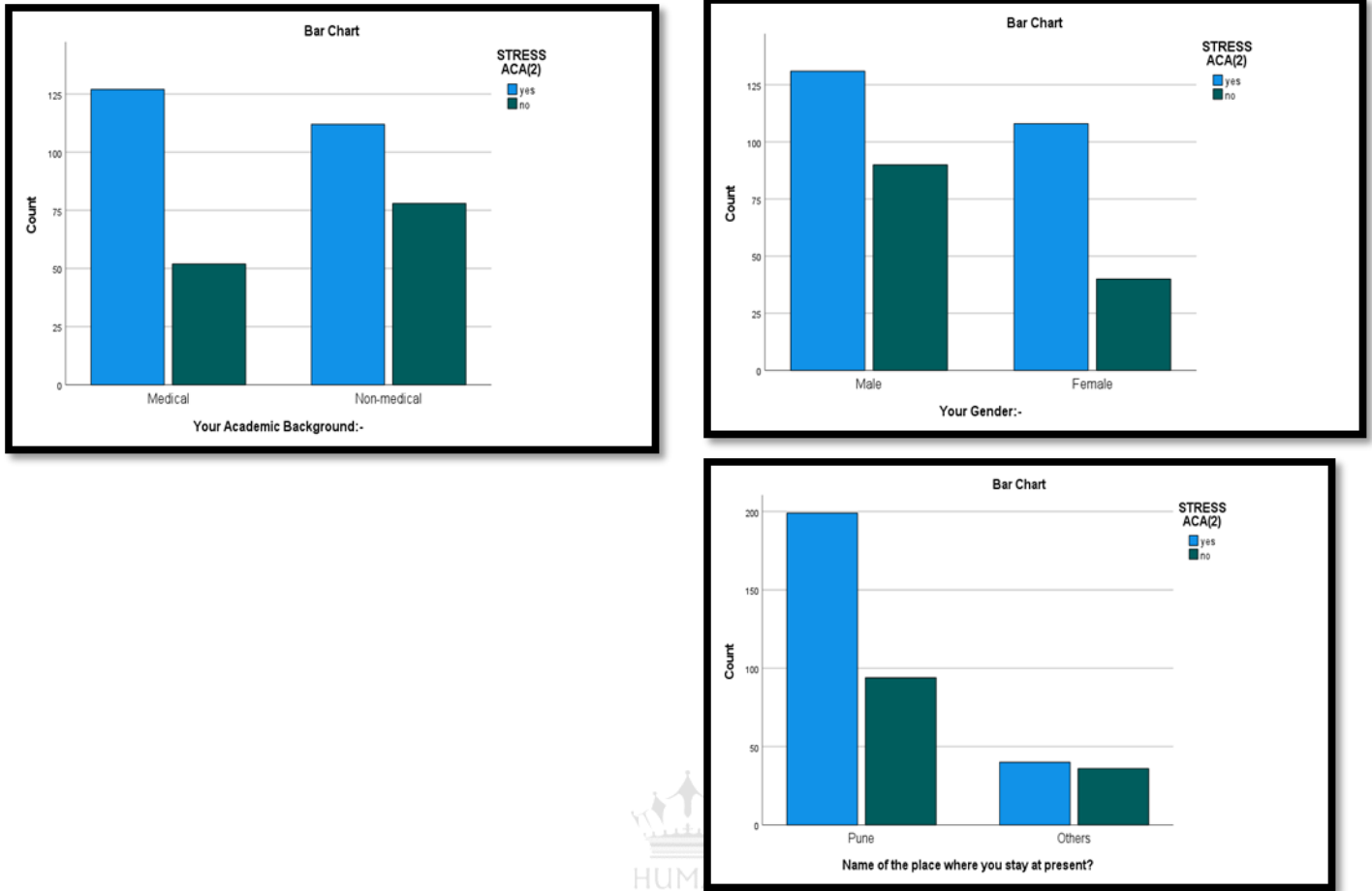


Figure No. 1 (a, b, c):- Association between Knowledge regarding Reasons of Stress (Academics Pressure) and Background Characteristics of the Respondents

An effort is made to find out the association between the knowledge regarding for stress and background features of the participants. A Chi-square test is conducted to understand this association. It is observed from the outcome that academic qualification, gender and accommodation (Stay) are having a statistically significant association with knowledge regarding reason for stress. More distant, an effort is carried out to find out the association between knowledge regarding reason for stress and background features of the participants, for this Chi-square test was applied to understand the association. Statistical analysis showed tha family expectations is significantly associated with accommodation and gender of the participants on the other hand it is not statistically significant for relationships and peer pressure which is also the option for the question for reasons of stress.

CONCLUSION:-

Examinations of the data collected from the participants culminate that less than fifty percent of the participants are not familiar about the value of normal blood pressure. However, more than three-fourth of the participants are aware about elevated blood pressure (Hypertension). At the same time, the participants are well aware about the etiologies and drawbacks of hypertension. Whereas participants are also aware about some measure risk factors like smoking in different ways and also by consuming alcohol. In addition, the participants are aware that if they will not perform a good exercise they may get towards risk of developing hypertension. More than fifty percent of the participants replied that they engage themselves in some kind of physical exercise like yoga, heavyweight and gymnastics. On the situation of current savage and competitive world the participants were found struggling to build their stable career and thus they get expose to stress on a wide scale at such young age. The participants can't understand that stress may lead to a very major risk factor for developing hypertension in upcoming life. It is also observed that academic qualification, gender and accommodation (Stay) are having a statistically significant association with knowledge regarding reason for stress, whereas only accommodation and gender are statistically significant with family expectation in association with academic pressure from the question regarding reasons of stress. Therefore to avoid the risk of developing hypertension everyone needs to perform a timely screening and a satisfactory medical and nutritional checkup. All of this everyone must maintain our habits like avoid smoking and alcohol consumption, should engage ourselves with some physical exercise and also not to get to stressed for any kind of workload.

Limitations:-

The purpose of this recent study in which the samples are selected randomly and the study is limited mainly to Maharashtra state. Hence the outcomes of this study will be limited to only young adult population; and it cannot be generalized to entire population.

Conflict of interest:- The author has nothing to declare.

Scope of Study:-

This study can also be carried out by taking in consideration about the kind of smoking that the population get expose to and also with the type of physical activities performed to reduce hypertension.

Ethical clearance:- Not required

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