

Prevalence of Hypertension among Youth in Helwan University

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Abstract: Background Hypertension is a common worldwide problem, its prevalence estimates, may be as many as one billion individuals, and approximately 7.1 million deaths per year may be attributable to hypertension. **Aims of the study were to:** estimate the prevalence of hypertension among youth in Helwan University campus and help its prevention through providing self-learning package. **Methods:** This cross sectional study was carried out at Helwan University in Helwan district. Subjects were the youth in the campus of Helwan University, whose ages ranged from 17 to 25 years old, males and females, and their total number was 1040. The researchers utilized an self-administer interview questioners' included the following: socio-demographic characteristics, medical and family history, and measuring their blood pressure (BP) and body mass index (BMI). **Results:** About twenty percents of the studied sample had high blood pressure; their number was 204 subjects out of 1040. The study revealed that there were highly statistically significant relations as regards' age, history of chronic disease and BMI among hypertensive subjects. **Recommendation:** Great emphasis should be placed on the need for a community health program for the detection, prevention, and control of hypertension, including other risk factors, as well as for the modification of nutritional and life habits, specifically in individuals who are most likely to be at risk of hypertension.

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1. Introduction

Hypertension is one of the most common worldwide disease affecting humans. Because of the associated morbidity and mortality and the cost to society, hypertension is an important public health challenge. Over the past several decades, extensive research, widespread patient education, and a concerted effort on the part of health professionals have led to decreased mortality and morbidity rates from the multiple organ damage arising from years of untreated hypertension (Riaz, & Batuman, 2012).

Mijinyawa, et al., (2008) stated that youth is a vulnerable group for developing almost all life-style related diseases. Hypertension has been reported among young people worldwide. It is known to track from youth to adulthood, which makes it a useful predictor of essential hypertension in adulthood. Consequently, detection and management of elevated blood pressure at an early age may be an important means for limiting the disease burden due to hypertension (Abolfotouh, et al., 2011). Therefore health care professional must not only identify and treat patients with hypertension but also promote a healthy care lifestyle and preventive strategies to decrease the prevalence of hypertension in the general population (Sarafidis, et al., 2004).

Hypertension remains a leading cause of preventable death despite the availability of evidence-based treatments. Even small reductions in high blood pressure have major impacts in clinical outcomes and health care spending: a 2 mm Hg decrease in systolic blood pressure (SBP) or diastolic blood pressure (DBP) significantly reduces risk of stroke, coronary heart disease, and mortality from vascular causes (Walsh, et al., 2006).

The prevalence of high blood pressure (HBP) among children in several recently conducted studies in Western countries ranged from 7 to 19% (Genovesi, et al., 2005) However, few studies have been conducted in adolescents in developing countries. Many studies have shown that blood pressure is associated with being overweight among youth of Western countries also several risk factors are well-recognized

worldwide as contributors to the increase in blood pressure. They are a smoking habit and have family history of hypertension (Kalkners, 2010).

Most of the studies done in Egypt examined the prevalence of hypertension in adults. Hence, little is known about the prevalence of hypertension among youth. In addition, it is well-known that of hypertension is an asymptomatic disease that is revealed only when there are complications. So, it is very important to diagnose elevated blood pressure at an early age. The present survey was undertaken to estimate the prevalence of hypertension among youth in Helwan University campus and help its prevention through providing self learning package.

Community health nurse plays an important role in promoting youth health. Traditionally, the focus of health promotion by nurses has been on disease prevention and changing the behavior of individuals with respect to their health. Nurses strategies for health promotion included giving information to youth students and providing health education (Kemppainen, et.al., 2012)

Finally, community health nurse has unique position and responsibility for pioneering the universal acceptance and adoption of health promoting practice. University is a good position to help youth to change health related activities related to health hazards controls.

Self-learning method is an individualized method of learning. Face to face teaching is disappearing and distance mode of education is becoming popular. Self-learning modules are designed where the learner is free to choose what, how, when and where to learn. This flexibility is an importance characteristic in open learning process. The learner is getting familiar more and more to non-formal mode of education thereby shifting the preference to self-learning methods (Sequeira, 2012)

Operational definitions to youth are an age group leaving adolescence and entering working life or higher education, and societal life. The definition of youth varies in different contexts; one definition, used by the (United Nations, 2010) is the age

from 18–24 years. Health status in this group is also important for the future health of the population (Dorn & Biro, 2011).

Aims of the study were to: estimate the prevalence of hypertension among youth in Helwan University campus and help its prevention through providing self-learning package.

Hypothesis:

Youth who received health education through self-learning package on hypertension will be satisfied in their knowledge better than who not received.

2. Subjects and Methods

Research design:

A quasi experimental research design was utilized to fulfill the aims of the study.

Setting:

This study was carried out in Helwan University at a campaign; it passed over 5 days period, the study was conducted during academic year December 2011-2012. Data were collected over 4 months from the start of December 2011 to end of March 2012.

Subjects:

The youth were chosen according to the inclusion criteria: male and female, student at Helwan University, adolescent stage aged from 17 to 25 years and who agreed to continue and complete the questionnaire, until the sample size reached 1040 youth.

Sample:

A purposive sample of 204 youth was recruited randomly and reported mild and high blood pressure from youth in Helwan University campus.

Tools:

Two tools were used for data collection, self-administered interview sheet and physical assessment sheet. The first sheet developed by researchers and it was used for obtaining information from students by self-reporting.

The first part was Self administrated interview sheet consists of:-

- Socio-demographic data which include (age, gender, parent education & occupationetc.)
- Assessment about smoking and dietary habits such as (smoked or not and eat salt food.....etc.)
- Assessment about personal and family history of chronic diseases as (complain of disease, medication and treatment....etc.)

The second part was physical assessment sheet which assess height, weight and measure blood pressure .This tool used before and after implementing the program. All data collected during academic year 2011-2012 in December.

Filed work:

Preparatory phase:

A review of the current, past, local and international related literature and theoretical knowledge of various aspects of the study using books, articles, internet, periodicals and magazines was done..

An official written permission was obtained through letters directed from Dean Faculty of Nursing, Helwan University to Vice Presidents of Community services and Environmental Affairs to conduct the study. As well, the researchers met with every participant to obtain oral consent and invited to participate in the survey via a campaign in University; they agreed to participate after explaining the purpose and conduct of the campaign.

The researchers started data collection by introducing themselves to the participants and explained the aim of the

study and its importance. Data pertinent to the study variables were collected through the previous mentioned tools and all tools were filled in by the researchers. All questions were answered and detailed explanation was given to obtain their acceptance and cooperation during the conducted interviewing session. Interviewing the participant was carried out in a quiet place at the campaign. The data sheet for every youth was taking 10-15 minutes to be filled in. Data were collected over 4 months from the start of December 2011 to end of March 2012. The researchers trained demonstrators on measuring blood pressure according to American Heart Association guidelines. The researchers and demonstrates invited the youth to participate in the study.

Blood pressure (BP) was measured according to American Heart Association guidelines using a mercury column sphygmomanometer and a cuff suitable to the participants arm circumference. BP was measured twice by skilled, trained staff after 5 minutes of rest in the sitting position, and the average of 3 readings after a 5 minutes rest was recorded. Participants who considered hypertensive if they met one of the following conditions, diastolic blood pressure (DBP) greater than or equal to 90 mmHg. Systolic blood pressure (SBP) greater than or equal to 140 mmHg.

Body-weight and height were measured using scales. Body mass index (BMI) was calculated dividing the weight by square of height (kg/m^2). According to the definition by the World Health Organization (WHO), a BMI ≥ 25 kg/m^2 was overweight, and a BMI ≥ 30 kg/m^2 was obesity.

Data collection tools were tested for content validity by 5 expertise's in the community health nursing specially. The expertise's recommended content validity of all items.

A pilot study was conducted on 10 % of the total study sample, in order to insure the feasibility and validity of the tools and to elicit the desired information and modifications were done as necessary. Rephrasing in some statements, changing and ordering in some questions and addition of other questions were done in order to achieve the aim of the current study.

Program development

Based on the results obtained from the self-administered interviewing questionnaire self-learning package was developed by the researchers. The aim of the study was to estimate the prevalence of hypertension among youth in Helwan University campus and help its prevention through providing health education by self-learning package in order to accomplish this aim.

Program development based on the result obtained from the pre-test questionnaire sheet. The plan of health education program will be prepared, implemented, and evaluated the degree of improvement in study group condition in relation to program objectives.

Ethical considerations:

The agreements for participation of the youth were taken after the purpose of the study was explained to them. Before data collection, the participants were informed about the aim of the study and they were given the opportunity to refuse participation in the study and they were notified that they could withdraw at any time from the research at any time. Also, they were assured that the information would remain confidential and used for the research purpose only. The researchers gave self-learning package

Statistical design

All collected data were coded and entered on Microsoft Access database XP and analyzed with SPSS version 15. Data

were presented using descriptive statistics in the form of frequency and percentage. Chi-square (X²) test was applied to test significance of difference. P-values which were less than 0.05 were considered as statistically significant.

Program objectives

By the end of the program the student will be able to:

- Define the concept of hypertension.
- Determine the normal values of hypertension.
- Explain causes of high blood pressure.
- List high risk group for hypertension.
- List types of hypertension.
- Explain complication of hypertension.
- Explain measures to control high blood pressure.

1. Assessment phase: in this phase, the needs in knowledge and practice will be identified through collection and analysis of baseline data from the filled tool.

2. Planning phase: the researchers will determine the important needs in knowledge and health related practice for target group, and set priorities of the needs, goals and objectives are developed and should reflect health improvement that participants can realistically achieve for improve their knowledge regarding hypertension field through:

-The researchers will give every student self-learning package in the form of booklet containing all scientific material in the form of sessions. General guidelines for the student will be written to help him how to use this booklet.

-The researchers will develop electronic web site and all scientific material will be downloaded for every student through using special user name and password developed for every student.

-The researchers will give the package into sessions at the beginning of every session its content and its aim with the time needed to learn.

- The researchers will conduct post- test after every task or session the student pass.

Teaching methods:

- Self-learning method.

Media:

- Digital library and electronic web sites.

3- The evaluation phase:

Evaluation of the implemented program will be accomplished and assess youth knowledge by using the post-test questionnaire immediately and after 3 months to ensure the retention of knowledge.

3. Results:

Table (1):

The table shows that socio demographic characteristics of studied sample, it reveals that (66.3%) two-third of sample belonged to age group ≤ 20 years and more than half (56.6%) of them were male. Concerning the smoking habits, less than ten percent (9.8%) of studied sample were smoked, and about (6.6%) had chronic disease, while, 17.1 % has family chronic disease. As regarding to BMI, 37.1% of participants were overweight. While only 6.4% of them were obese.

Table (2)

This table illustrates that about two third of participants (67.4%) had normal level of BP. While less than one quarters (19.5%) had high level of blood pressure and less than one sixes (13%) had low of blood pressure.

Table (3):

It presents the relation between socio demographic characteristics of studied sample and their blood pressure. According to this table, the participants with age <20 (69.7%) had high blood pressure and 70.37% of them had low blood pressure ($P=0.000$).

Concerning to sex, the results indicated that the male had high blood pressure than female (61.76, and 38.24 %, respectively). Results showed that there is no statistical significant between smoked youth and whose family has chronic disease with high blood pressure ($p=0.714$ & 0.120 respectively). While the youth with history of chronic disease has statistically significant with high blood pressure ($P=0.000$). Regarding BMI, the results shows that there is statistically significant relationship between overweight and obese with high blood pressure ($P=0.000$).

Table (1) Socio demographic characteristics of studied sample (no=1040)

Socio demographic data	Frequency	%
Age :		
≤ 20	690	66.3
> 20	350	33.7
Sex :		
Male	589	56.6
Female	451	43.4
Smoking		
Yes	102	9.8
No	938	90.2
History of chronic disease		
Yes	69	6.6
No	971	93.4
Family history of chronic disease		
Yes	178	17.1
No	862	82.9
BMI		
$<25\%$	587	56.4
≥ 25 - $<30\%$	386	37.1
$>30\%$	67	6.4

Table (2) Distribution of study sample according to level of blood pressure

Levels of blood pressure	Frequency	%
Normal	461	67.4
High	204	19.5
Low	135	13

Table (3) Relation between socio demographic characteristics of studied sample and their blood pressure

Socio demographic characteristics	blood pressure						X2 test	p-value
	Normal		High		Low			
	No.	%	No.	%	No.	%		
Age :								
≤ 20	481	68.62	114	55.88	95	70.37	12.601	0.002
> 20	220	31.38	90	44.12	40	29.63		
Sex :								
Male	402	57.35	126	61.76	61	45.19	9.536	0.008
Female	299	42.65	78	38.24	74	54.81		
Smoking								
Yes	67	51.54	23	11.27	12	8.89	0.675	0.714
No	63	48.46	181	88.73	123	91.11		
History of chronic disease								
Yes	86	12.27	80	39.22	12	8.89	88.287	0.000
No	615	87.73	124	60.78	123	91.11		
Family history of chronic disease								
Yes	42	5.99	20	9.80	7	5.19	4.234	0.120
No	659	94.01	184	90.20	128	94.81		
BMI								
Normal <25%	391	55.8	104	51.0	92	68.1	64.931	0.000
Overweight ≥25- <30%	283	40.4	63	30.8	40	29.6		
Obese >30%	27	3.9	37	18.1	3	2.2		

4. Discussion

It is important to determine the prevalence of hypertension in youth, not only because it varies from one community to the other, but also because it is essential to identify the population at risk. Early identification translates into early interventions and possibly prevention of later morbidity and mortality (Jafar, et al., 2005). The aim of the present study was estimate the prevalence of hypertension among youth in Helwan University campus and helps its prevention through providing self-learning package.

The prevalence of hypertension varies widely from population to population depending on biological, demographic, social and environmental factors present in each of them. The present study reported that the prevalence of hypertension was less than fifth of studied sample. Similarly, the finding of study done in India by Sharma, et al., (2009) who indicated that the prevalence of hypertension was 18.2%. On the contrary, Al-Majed and Sadek, (2012); Shajari1, et al., (2010) estimated that hypertensive students represented (7%) in Arab country as Kuwait and Iran.

This study revealed that the prevalence of hypertension increased significantly with age of youth (P=0.002), especially in the age group < 20. On the same line, Naim Nur, et al., (2008) found that the hypertension is seen frequently, especially in individuals aged 16-17 years among high school in a Middle Anatolian Province of Turkey. Therefore, there is a need to identify and prevent high blood pressure in early life.

The study results revealed that male had significant high of blood pressure than female (61.8 & 38, 2 %, respectively). Similar to Grotto, et al (2006) found that the men were affected more often than women (40% versus 23%) among young Israeli adults. On the other hand, many studies conducted in Turkey and other countries have shown that women have a significantly higher prevalence than men (34.1% and 15.6%, respectively) (Arslantas, et.al., 2008). Generally, hypertension is significantly more prevalent in males than in females. This is possibly due to the differences in hormonal activity between boys and girls in early life (Hulanicka, et al., 2007).

It was observed from the results of this study that the prevalence of hypertension more common among participants with chronic disease. Also, the results indicated that the significantly relation between chronic disease and hypertension. This could be explained by the fact that chronic disease was an important risk factor for hypertension among college students.

On the consistent, the findings of study done in Kuwait by Al-Majed and Sadek, (2012) who reported that high prevalence hypertension among students with chronic disease, although not statically significantly.

The researchers found that family history was the factor most strongly associated with hypertension in the study. Similarly, Salman, et al., (2011) found that the family history of hypertension was 20% in study group in Sudan. If any one of the parents was hypertensive, the probability of being hypertensive for their children may be 28%. If both the parents are hypertensive, the probability of being hypertensive for their children may be 41.0% in Turkey (Naim Nur, et al., 2008). In contrast to these results, the study showed no significant difference between parents with chronic illness and hypertension among youth. These results are similar to findings of Naim Nur, et al., (2008).

Smoking and high blood pressure were known to accelerate the development of the process of atherosclerosis and increase the risk of all other coronary lesions. On the contrary, the results showed that the habit of smoking had no significant with hypertension in students on Turkey. These results were in agreement with the previous study (Naim Nur, et al., (2008).

The literature indicates that an increase in blood pressure is related to diverse causes, but most studies have highlighted obesity as an important factor. Based on the BMI categories, results show that 37.1% overweight and 6.4% are obese of all the youth. It also demonstrates significantly relationship between high of blood pressure in university students with BMI ≥ 25. In support of these data, there are several studies that have recognized the relation between higher levels of blood pressure and increased levels of BMI as in Jamaica & Nigerian (Ferguson, et. al., 2008; Oladapo, et al., 2010).

Gupta et. al., (2009) showed a positive relationship between hypertensive Indian adults, aged 20 to 29 years, and high levels of BMI. Finally, Sabra et al., (2007) demonstrated a relationship between the increased level of blood pressure and overweight in male students (aged 18 - 26 years) at King Faisal University (KFU) in Dammam, Saudi Arabia. Frequent measurement of blood pressure of students with overweight, could be an effective preventive method for the early detection of hypertension and its complications. Continuous health education concerning healthy lifestyle is also essential in this age-group.

The findings of this survey provide a further demonstration of the feasibility and value of worksite initiatives as sources of epidemiologic data and important opportunities for public health and preventive medicine. This survey is also a timely reminder of the need for continuing awareness in the detection and management of hypertension at an early stage, together with efficient preventive programs.

Conclusions:

In conclusion, there was a high prevalence hypertension among youth in university. Blood pressure increased with age in both genders and this is associated with history of chronic disease and increase of BMI. So great emphasis should be placed on the need for a community health program for the detection, prevention, and control of hypertension, including other risk factors, as well as for the modification of foods and life health habits, specifically in individuals who are most likely to be at risk of hypertension

The study had certain limitations. Subjects for the study were chosen from a single locality and thus may not be representative of affluent subjects throughout Egypt. Blood pressure measurements were taken on a single day. Hence, we may have over-diagnosed of hypertension.

Recommendations

- 1- Increase awareness and educate public about this silent killer especially among men whose age below or equal 20 years.
- 2- Change the culture of public about importance of physical examination
- 3- More concentration about the role of community health nurse as health educator and case finding

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