

Prevalence of Hypertension Among students in Hadhrmout University - College of Medicine (HUCOM)

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Abstract:

Background: Hypertension is a common health problem in developed and undeveloped countries. Although hypertension is a treatable condition, without treatment, it leads to serious and life-threatening complications such as heart, kidney, and brain disorders.

Objective: The aim of this study is to assess the prevalence of hypertension among HUCOM students at the first three basic levels in the three academic programs (Medicine, Pharm D, and Laboratory).

Methods: This was a cross-sectional study carried out among the undergraduate medical students of HUCOM. Data were collected from first of March 2018 to end of April 2018. The sample included 400 students. A systematic random method was used through a list of college registration. Blood pressure measurements were taken by trained personnel.

Result: Out of a total 400 students participated in the study, about 226 (56.5%) were male while 174 (43.5%) were female. Normotensive students constituted 89.5% (n = 358) for systolic pressure, and 86.5% (n = 346) for diastolic pressure. The prevalence of systolic hypertension among students was 10.5%, while diastolic hypertension was 13.5%.

Conclusion: The findings of the present study highlighted the prevalence of systolic hypertension is 10.5% while diastolic hypertension is 13.5% among students in HUOCM.

Key words: Awareness, Osteoarthritis, teachers, primary school, Al-Mukalla district.

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الخلاصة :

الخلفية: يعتبر ضغط الدم مشكلة عامة في الدول المتقدمة و النامية. على الرغم أن ضغط الدم مرض قابل للعلاج إلا أن إهمال علاجه ممكن أن يؤدي إلى كثير من المضاعفات الخطيرة والمهددة للحياة كأمراض القلب والكلى و الدماغ.

الهدف: هدف الدراسة الحالية هو معرفة إنتشار ضغط الدم بين طلاب كلية الطب والعلوم الصحية بجامعة حضرموت في المراحل الثلاث الأولى من التعليم الجامعي في الأقسام الطبية الثلاثة (قسم الطب بشري، قسم دكتور صيدلاني، وقسم المختبرات).

منهجية البحث: البحث عبارة عن دراسة مقطعية شملت 400 طالب من طلبة الطب والعلوم الصحية بجامعة حضرموت تم إختيارهم عشوائيا وفقا لسجل الطلاب بالكلية. الدراسة تمت في الفترة من بداية شهر مارس حتى نهاية شهر إبريل 2018 . قياس ضغط الدم للطلبة تم بواسطة أطباء مدرسين.

النتائج: بينت الدراسة التي شملت 400 طالب أن 56.5% من الطلبة كانوا من الذكور بينما 43.5% من الإناث. 89.5% من الطلبة كان ضغطهم الانقباضي طبيعي و 86.5% كان ضغطهم الانبساطي طبيعي بينما 10.5% من الطلبة كان عندهم إرتفاع ضغط الدم الانقباضي و 13.5% كان لديهم إرتفاع في ضغط الدم الانبساطي.

الإستنتاج: سلطت الدراسة الحالية على إنتشار ضغط الدم بين طلبة الجامعة حيث شكل إرتفاع ضغط الدم الانقباضي 10.5% بينما إرتفاع ضغط الدم الانبساطي شكل 13.5% من مجموع الطلبة المشاركين في الدراسة.

Introduction:

Blood pressure (BP) is the pressure of circulating blood against the walls of the arteries (1). Pressure is highest during systole, when the ventricles are contracting (systolic pressure) and lowest during diastole, when the ventricles are relaxing and re-filling (diastolic pressure). Hence, BP is an important indicator of the health of the circulatory system. For a healthy person aged 18 to 30, these pressures are typically about 120 mmHg for systolic pressure and 80 mmHg for diastolic pressure. Arterial BP is written as a ratio of systolic over diastolic pressure: 120/80 (2). Muscular contraction and emotional stress such as fear, stress and excitement raise systolic blood pressure (SBP) and is at its lowest during sleep. Severe shock may lead to abnormally low BP and possibly circulatory failure. BP is usually adjusted to its normal level by the sympathetic nervous system and hormonal controls (3).

Hypertension is a "Silent Killer" and a complex public health problem in most countries as it constitutes an important risk factor for coronary heart disease, stroke, eye and renal complications (4).

One third of the total death (approximately 17 million) is caused by cardiovascular disease worldwide. Of these, annually 9.4 million deaths occur due to the complications of hypertension worldwide. At least 45% of deaths due to heart disease, and 51% of deaths due to stroke occur due to hypertension (5).

Hypertension is classified into two types primary hypertension of unknown cause and secondary hypertension caused by several affected organs (6). According to the Joint National Committee (JNC) 7 report (7) blood pressure (BP) categories were defined as normal blood pressure if the observed systolic blood pressure (SBP) was between 91 and 120 mm Hg or diastolic blood pressure (DBP) was between 61 and 80 mm Hg; and considered as HTN if the observed SBP was equal to or above 140 mmHg and DBP was equal to or above 90 mmHg; and finally hypotension was defined as SBP being equal to or less than 90 mm Hg or DBP being equal to or less than 60 mm Hg (8).

Most studies assess the prevalence of hypertension in older adults and the elderly, but there is a paucity of such data among young adults, as they are considered to be at a lower risk of developing the disease. With a growing problem of hypertension worldwide, there is a concern that hypertension in young adults may also be on the rise and that cases are not detected because of inadequate screening in this age group (9).

This study aimed to assess the prevalence of hypertension among a group of young people and the author choose the university students of Hadhramout University College of Medicine (HUCOM) in Mukalla city.

Materials and methods:

This was a cross-sectional study carried out among the undergraduate medical students of HUCOM, which is a government medical college in Al-Mukalla, located on Hadhramout coast of the Arabian sea, which extends on 450 kilometers in the south of Yemen. The study was conducted over a period of 2 months (March 2018 to end of April 2018). A total of 400 students (male and female) were enrolled randomly for the study. The purpose of the study was explained to the students; informed verbal consent was taken. A systematic random method was used through a list of college registration (if one of the students were absent, the following student on the list was chosen, to constitute the study sample). However, eligibility criteria included students who were aged 18 to 25 years old; and willing to participate in the study. Students who had chronic illnesses such as diabetes, renal disease or pregnant students were excluded from the study.

BP was measured according to American Heart Association guidelines using the auscultatory method with a tested and appropriately calibrated aneroid sphygmomanometer and an appropriate sized cuff encircling at least 80% of the arm. Measurements of arterial blood pressure were performed after the students had rested for five minutes in a sitting position. Their right arms were kept at the same level of their heart during the measurement. BP was measured from the right upper arm with aneroid sphygmomanometer and appropriate size of cuff, and standard measures were taken to ensure accuracy. The systolic blood pressure was recorded at the appearance of relevant sounds (first Korotkoff sounds); while the diastolic blood pressure was recorded at the disappearance relevant sounds (fifth Korotkoff sounds) (10). Three consecutive measurements were taken at an interval of at least five minutes, but only the second and third measurements were used in calculating the mean systolic and diastolic blood pressures that serve as the blood pressure of the subject (11). Systolic and diastolic blood pressure measurements were taken by trained persons.

Statistical analysis:

Data obtained were analyzed using the Statistical Package for the Social Sciences (SPSS, version 20). Frequencies and percentage were used to describe participants' characteristics for categorical variables, means and standard deviation for continuous, and data were presented in tables. T test is used to test the difference between mean blood pressure in males versus females and chi square is used to test the association between hypertension as a categorical variables with the gender. The cut of point of significance level used is 0.05.

Methods:

Out of a total 400 student participated in the study, about 226 (56.5%) were male while 174 (43.5%) were female. 90 (22.5%) of participants were in the

age group less than or equal to 20 years and the remaining 310 (77.5%) were in the age group greater than or equal to 21 years. Mean age was found to be 21.29 years. Regarding the educational level a total of 144 (36%) of participants were in the first level, 118 (29.5%) from the second level, and 138 (34.5%) were from the third level. According to the specialty, a total of 200 (50%) of participant were from medical department, 100 (25%) from pharm Department, and 100 (25%) from laboratory department respectively (Table 1).

The mean SBP in males is 112.52 (± 15.9), while the mean SBP in females is 113.28 and the standard deviation is 17.267 but the difference is not significant (P-value 0.652). The mean DBP in males is (75.58 ± 10) and is significant higher than the mean DBP in females (73.05 ± 9.8) (p-value 0.013) (Table 2).

Table 1: Socio-demographic characteristics of the participants (N=400).

Socio-demographic characteristics		Frequency	Percent
Gender	Male	226	56.5
	Female	174	43.5
	Total	400	100.0
Age group in years	< = 20	90	22.5
	> = 21	310	77.5
	Total	400	100.0
	Mean age \pm SD	21.293 \pm .9838	
Academic level	Level one	144	36.0
	Level two	118	29.5
	Level three	138	34.5
Academic program	Medical	200	50
	Pharm D	100	25
	Laboratory	100	25

Table 2: The mean systolic and diastolic blood pressures and standard deviation in relation to gender.

Variable	Gender	Number	Mean	SD	T	P-value
Systolic blood pressure	Male	226	112.52	15.9	-0.452	0.652
	Female	174	113.28	17.3		
Diastolic blood pressure	Male	226	75.58	10	2.5	0.013*
	Female	174	73.05	9.8		

**significant*

Blood pressure was analyzed as a categorical variables for both systolic and diastolic type. The cut-off point for systolic BP is 140 mmHg and for diastolic BP is 90 mmHg. Table 3 shows the differences between systolic blood pressure and diastolic blood pressure with student sex (male and female). About 10.5% of students have high SBP and 13.5% of them have high DBP. Both male and female students have same high SBP (11mm/Hg), while 15% of male students have high DBP compared to females (11.5%) but the difference is not significant (0.376).

Table 3: The gender differences between systolic and diastolic blood pressure among students

BP		Sex of students				Total		X ²	P-value
		Male		Female					
		No.	%	No.	%	No.	%		
Systolic	<140	202	24	156	89%	358	89.5%	0.008	1
	>140	89%	11%	18	11%	42	10.5%		
	Total	226		174	100%	400	100%		
Diastolic	<90	192	85%	154	88.5%	346	86.5%	0.016	0.376
	>90	34	15%	20	11.5%	54	13.5		
	Total	226	100%	174		400	100%		

Discussion:

Hypertension was considered to be one of the important public health problems worldwide. Hypertension leads to increasing morbidity and mortality. Hypertension increased progressively in younger age groups among the past 20 years (12).

The present study included 400 medical students, 226 males (56.5%) and 174 females (43.5%). Normotensive students constituted 89.5% (n = 358) for systolic pressure, and 86.5% (n = 346) for diastolic pressure. The prevalence of systolic hypertension was 10.5% among the student participants. This result is in line with a study conducted on Saudi medical college students revealing that the prevalence of systolic hypertension was 9.3% (13). Another study revealed that the prevalence of systolic hypertension was 9.8% in Iranian college students (14). A study in Kuwait showed that the proportion of systolic hypertensive patients was 11.8% (15). In contrast to the present study, Benedicta et al (2015) reported high prevalence of systolic hypertension 21.2% among the high school students of Mthatha (South Africa) conducted (16).

Results from present study reported the prevalence of diastolic hypertension was 13.5%. These results are consistent with a study at King Fahd University in Dammam city stated rates of diastolic hypertension (13.8%) (17). In our study, there is no significant association between gender of students and hypertension. These results are similar to a study done by Jaddou et al (2001) (18) who reported that there is no significant differences between the gender of participants and hypertension. In contrast, Grotto et al (2008) (19) found that males were affected more often than females while studies conducted in Turkey and other countries have shown that females have a significantly higher prevalence than males (20). The difference to these results being to that this study was limited to

young people (university students) while the others studied old people

The prevalence of hypertension among young adults needs urgent attention and further evaluation because of the grave consequences of hypertension and because secondary hypertension is likely in this age group. Lee & Cooper suggested that for CVD, the hypertension is an important amendable risk factor (21).

Conclusion:

There is high prevalence of hypertension in young people in Yemen (SBP 10.5%, DBP 13.5%) without significant difference regarding gender.

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