REFLECTION OF SOME LIFE STYLE FACTORS ON ARTERIAL BLOOD PRESSURE

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ABSTRACT

High blood pressure remains a major cause of cardiovascular morbidity and mortality worldwide; risk factors for developing hypertension divided to non modifiable (age, gender, inherited risks), and modifiable (food therapy, losing weight, getting regular exercise, quitting smoking as well managing stress). Studying lifestyle pattern of population is required for controlling and prevention of hypertension complications. The current study was carried out to detect the effect of some life style factors on blood pressure.

The subject of the study are male middle aged (20-40) years and classified according to blood pressure measurement into: group 1 normotensive subject (n=50), 2-hypertensive subject (n=50). An interviewing questionnaire of lifestyle pattern was developed and utilized by the investigator. A descriptive correlation research design was utilized to achieve the aim of the present study.

There was a significant relation between HTN and lifestyle pattern regarding (body weight, physical activity, stress, and smoking.The current study concluded that following unhealthy lifestyle pattern can lead to HTN. The study recommended applying modified lifestyle pattern can improve blood pressure and decrease the risk of associated health complication.

Keywords: blood pressure, hypertension, life style, obesity, physical in activity, smoking and stress.

INTRODUCTION

Blood pressure (BP) is the pressure exerted by circulating blood upon the walls of blood vessels, and is one of the principal vital signs. When used without further specification, "blood pressure" usually refers to the arterial pressure of the systemic circulation.

Classification of blood pressure for adults (JNC7)

Category	Systolic, mm Hg	diastolic, mm Hg
Normal	90-199	60-79
High normal (Prehypertension)	120-139	80-89
Stage 1 hypertension	140-159	90-99
Stage 2 hypertension	160-179	100-109
Stage 3 hypertension (Hypertensive emergency)	≥180	≥110
Isolated Systolic hypertension	≥140	≥90

Hypertension (HTN), also known as high blood pressure (HBP), is a long term medical condition in which the blood pressure in the arteries is persistently elevated (Naish, Jeannette; Court, Denise Syndercombe 2014). High blood pressure usually does not cause symptoms (CDC, 2015). Long term high blood pressure, however, is a major risk factor for coronary artery disease, stroke, heart failure, peripheral vascular disease, vision loss, and chronic kidney disease (Lackland and Weber, 2015).

High blood pressure is classified as either primary (essential) high blood pressure or secondary high blood pressure (Poulter *et al.,* 2015) About 90–95% of cases are primary, defined as high blood pressure due to nonspecific lifestyle and genetic factors. Lifestyle factors that increase the risk include excess salt, excess body weight, smoking, and alcohol. The remaining 5–10% of cases are categorized as secondary high blood pressure, defined as high

blood pressure due to an identifiable cause, such as chronic kidney disease, narrowing of the kidney arteries, an endocrine disorder, or the use of birth control pills (Poulter *et al.,* 2015).

Blood pressure is expressed by two measurements, the systolic and diastolic pressures, which are the maximum and minimum pressures, respectively. Normal blood pressure at rest is within the range of 100–140 millimeters mercury (mmHg) systolic and 60–90 mmHg diastolic Giuse ppe, (Mancia et al., 2013). High blood pressure is present if the resting blood pressure is persistently at or above 140/90 mmHg for most adults (Poulter *et al*., 2015).

Lifestyle changes and medications can lower blood pressure and decrease the risk of health complications (National Heart, Lung, and Blood Institute, 2015). [Lifestyle changes include weight loss, decreased salt intake, physical exercise, and a healthy diet. If lifestyle changes are not sufficient then blood pressure medications are used (National Heart, Lung, and Blood Institute, 2015). High blood pressure affects between 16 and 37% of the population globally. In 2010 hypertension was believed to have been a factor in 18% (9.4 million) deaths.

The World Health Organization has identified hypertension, or high blood pressure, as the leading cause of cardiovascular mortality. The World Hypertension League (WHL), an umbrella organization of 85 national hypertension societies and leagues, recognized that more than 50% of the hypertensive population worldwide are unaware of their condition.

Hypertension is a silent killer: Because HTN does not cause symptoms, it is important to have blood pressure checked regularly. HTN cannot be diagnosed unless an elevated blood pressure is found when measured twice at different times (Berman and Synder, 2012).

Diagnosis depends upon accurate and repeated two or more blood pressure readings taken at each two or more visits after an initial screening. The objective of clinical and laboratory evaluation is to establish the presence of HTN. Furthermore, identify other cardiovascular risk factors, diagnose target organ damage, and detect secondary forms of HTN.

There are significant health and economic gains attached to early detection, adequate treatment and good control of HTN. Treating the complications of HTN entails costly interventions such as cardiac bypass surgery, carotid artery surgery and dialysis, draining individual and government budgets (WHO, 2013). Treatment of HTN reduces the risk of stroke, coronary artery disease and congestive heart failure, as well as overall cardiovascular morbidity and mortality from cardiovascular causes. However, only 54 percent of patients with HTN receive treatment and only 28 percent have adequately controlled blood pressure (Takahisa et al., 2013).

Venkata and Ram (2014) pointed out that there is no cure for primary HTN, but blood pressure can almost be lowered or controlled with the correct treatment. The goal of treatment is to lower blood pressure to levels that will prevent heart disease and other complications of HTN. In secondary HTN, the disease that is responsible for the HTN is treated in addition to the HTN itself. Successful treatment of the underlying disorder may cure secondary HTN.

Treatment to lower blood pressure usually includes changes in diet and getting regular exercise. Patients with mild or moderate HTN who do not have damage to the heart or kidneys may first be treated primarily with lifestyle changes. Lifestyle changes that may reduce blood pressure by about 5-10 mm Hg can be concluded in (reducing salt intake, reducing fat intake, losing weight, getting regular exercise, quitting smoking, reducing alcohol consumption and managing stress).

Lifestyle pattern: Lifestyle pattern is a group of specific forms of how individuals live and interpret their lives in a social context. Lifestyle links the social structure to attitudes and behavior. Therefore, lifestyle is the first line of treatment for H1N, such lifestyle changes include; (dietary habits, physical exercises, alcohol use, smoking, weight, and social stress) this called non-pharmacological therapy (American Society of HTN ASH, 2013).

Lifestyle assessment is the process of identifying behavioral risk factors particular to an individual with the intent to encourage behavior change for the prevention of poor health outcomes in the future. A good assessment will identify what behaviors need to be changed as well as how best to intervene. The most common behaviors of focus in lifestyle assessments are smoking, alcohol use, diet, and physical activity (CDC, 2014).

Lifestyle changes: Lifestyle measures should be instituted, whenever appropriate, and in all patients, subsequently administered. Lifestyle measures are also advisable in subjects with high normal BP and additional risk factors to reduce the risk of developing HTN, (American College of Cardiology (ACC, 2012).

According to the American College of Cardiology (2012) updated guidelines, lifestyle measures that are widely recognized to lower BP or lead to cardiovascular risks, and that should be stressed and considered are: smoking cessation, weight reduction or weight stabilization, reduction of excessive alcohol intake, physical exercise, reduction of salt intake, increase in fruit and vegetable intake and decrease in saturated and total fat intake.

Hypertension complications in Egypt: In 2013 CDC Egypt pointed out that the rise in blood pressure is the most important risk factor for many types of diseases as affecting heart, arteries, eyes, kidneys, in addition, high blood pressure strain the membranes lining the wall of arteries and leading to a defect in the performance of its functions, as well as it increases stiffness and lack of blood flow as normal. Further, it increases the incidence of stroke to heart or brain and might end up with weakness of heart muscle, damage to the brain or kidney failure. Ischemic heart disease has the first rank in causes of mortality among Egyptians which is estimated as 21 % of all causes of death according to health statistics of the year 2011.

AIM OF WORK

To detect the possible effect of some life style factors on blood pressure.

SUBJECTS

This is a cross sectional community based study.

Subject of this study are selected according to the following inclusion criteria:

1- Male middle aged (20-40) years to detect the possible life style factors affection on blood pressure and avoid the senility effect of cardiovascular system .

2- Subject should be free from kidney, blood, endocrinal and / or general neurogenic disease.

3- Subject are classified according to blood pressure measurement into:

Group 1- normotensive subject

2- hypertensive subject

(Prehypertension)   **(Stage 1 hypertension)**

Method: Both groups will be subjected to the following investigation:

1- Special questionnaire including:

I- Socio-demographic characteristics of the study subjects

II- Disease information of the study subjects.

III- Life style pattern of the study subjects

2- Clinical examination to detect irregular blood circulation and blood pressure.

3- Cardiovascular performance.

4- Measurement of systolic and diastolic blood pressure.

5- Statistical analysis:

To link between different environmental variable (some life style factors) and level of arterial blood pressure.

RESULTS

The most important results of the study:

Table (1): The correlation between blood pressure and their weight of test group:

Variables	Correlation	P-value
Checking weight by self	0.612(**)	0.000
Patients' knowledge about their ideal body weight	0.122	0.4
Patients' knowledge regarding effect of body weight on blood pressure	0.050	0.7
BMI categories	0.810(**)	0.000

** Correlation is significant at the 0.01 level High significant.

* Correlation is significant at the 0.05 level significant.

Table (2): The correlation between blood pressure and their practicing physical activity of test group:

Variables	Correlation	P-value
Practicing any type of sports	0.494(**)	0.000
Choose the practiced sports	0.475(**)	0.001
Frequencies of practicing sports/ week	0.469(**)	0.001
Frequencies of walking exercises	0.462(**)	0.001
History of being tired during last month	0.639(**)	0.001
Taking any action to avoid body stress	0.612(**)	0.000
Using elevators instead of using the stairs	0.802(**)	0.000
Always use transportation aids instead of walking	0.764(**)	0.001
Sometimes walk for pleasure?	0.434(**)	0.002
Practice heavy sports for feeling relaxed or being sweat	0.459(**)	0.001

Table (3): The correlation between blood pressure and their stress cause symptoms, ways of management and social support of test group:

Variables	Correlation	P-value
Using self prescribed medications beside HTN medications	0.150	0.3
Purpose of self prescribed medications	0.411(**)	0.003
Asking for knowledge about prescribed medications from physician	0.764(**)	0.000
Receiving instructions about prescribed medications	0.724(**)	0.000
Description of feelings & stress and current adaption	0.608(**)	0.000
Causes of worries and stress	0.748(**)	0.000
Patients' signs of being stressed	0.154	0.3
Patients' satisfaction of current life	0.695(**)	0.000
Satisfaction of occupational life	0.667(**)	0.000
Presence of social support	0.885(**)	0.000
Sources of social support	0.877(**)	0.000

** Correlation is significant at the 0.01 level High significant.

* Correlation is significant at the 0.05 level significant.

Table (4): The correlation between blood pressure and their smoking habits of test group:

Variables	Correlation	P-value
History of smoking	0.688(**)	0.000
Duration of being smoking	0.707(**)	0.000
The average number of smoking cigarettes/day	0.726(**)	0.000
Quit smoking because of the raised health problem	0.716(**)	0.000

** Correlation is significant at the 0.01 level High significant.

* Correlation is significant at the 0.05 level significant.

Regarding correlation between life style pattern subscales and blood pressure. It was found that there was a significant

I- Positive correlation:

    1- Body weight subscale & blood pressure (table 1).

    2- Stress subscale & blood pressure (tale 3).

    3- Smoking subscale & blood pressure (table 4).

II- Significant negative (table 2): correlation between physical activity & blood pressure.

DISCUSSION

Although blood pressure is easily measurable it has taken several decades to realize that HTN is a frequent worldwide health disorder. Chronic Non-Communicable diseases are assuming greater importance among adult population in developed as well as developing countries (Kannana and Satyamoorthyb, 2009).

The prevalence of chronic diseases such as HTN, diabetes mellitus etc, is showing an upward trend in most countries. The main factors responsible for this rising trend is changing life styles, obesity, and behavior pattern of people etc. The Joint National Committee reports on prevention, detection, evaluation and treatment of high blood pressure (JNC - VI & VII) emphasized the necessity of clinicians' appropriate judgment of their patients in diagnosis and treatment. Further, these guidelines for primary care physicians have been specified in the report. Therefore, this national guideline should serve as a tool to be adopted and implemented in local and individual situation (JNC, 2014).

Approximately 75% of CVD can be attributed to known risk factors. With changing lifestyles in the Arab countries, there is likely to be greater exposure to risk factors such as high blood pressure, diabetes, physical inactivity, smoking, obesity and diets high in saturated fat, leading to elevated serum cholesterol levels. Increase in proportion of old people is another contributing factor for the high prevalence of CVD. Policies, recommendations and programs designed to control CVD in Arab countries should emphasize what is valuable in traditional diets, existing food supplies, and physical activity patterns.

HTN is a serious health problem not only because of significant mortality and morbidity but also because of its treatment poses complex nursing and medical problems. These problems relate primarily to the difficulty clients experience in complying with long term drug regimens and lifestyle changes that require major behavioral adaptations. Often these behavioral changes are related to cultural patterns and traditions, such as dietary habits, daily activities, and lifestyles. As individuals live longer, there is an increased likelihood that they will develop a chronic disease such as HTN. Because such large numbers of persons are at risk for developing HTN, health professionals must increase, direct their efforts toward prevention and help clients to implement lifestyle changes that will decrease their risk for developing HTN.

Berman and Synder (2012) pointed out that, the goals of lifestyle assessment are to provide the following; 1) an opportunity for clients to assess the impact of their lifestyle on health, and 2) to be a basis for decisions related to desired behavior and lifestyle changes.

The current study was carried out to detect lifestyle pattern of patients diagnosed with HTN.

Regarding correlation between lifestyle pattern subscales and blood pressure, it was found that there was a significant positive correlation between body weight subscale and HTN, this result was supported by (Nguyen and Lau, 2012), who concluded that, in a meta-analysis study it was reported that, the mean systolic and diastolic blood pressure reductions, is associated with an average weight loss of 5.1kg.

The study results found that there is a significant negative correlation between physical activity subscale and blood pressure which is supported with all reviewed literature, such as Fagard (2012), a recent meta-analysis of randomized controlled trials concluded that the reduction in resting blood pressure was more pronounced in the hypertensive group (-6.9/-4.9 mmHg) than in the normotensive one (-1.9/-1.6 mmHg). Even moderate levels of exercise lowered blood pressure and this type of training also reduced body weight, body fat and waist circumference, and increased insulin sensitivity and HDL-cholesterol levels. Dynamic resistance training decreased resting blood pressure by 3.5/3.2 mmHg.

Regarding correlation between lifestyle pattern subscales and HTN, it was found that there was a significant positive correlation between stress subscale and blood pressure, this result is supported by Hicken *et al*. (2013) found that; many reasons may lead to chronic stress that contributes to the well-documented higher prevalence of HTN especially among Blacks than Whites; it is a possible contributor to HTN among Hispanics but not Whites.

Concerning smoking, the majority of the test group subjects are smokers. From the investigator's point of view, smoking may has a strong effect on the progression of HTN and the increase in hypertensive patients' number. This view is supported by Aikins *et al.* (2010) who concluded that the relatively higher prevalence of HTN in Africa has been linked to population growth and ageing rising urbanization, mass migration from rural to urban areas, and an increased uptake of western lifestyles including tobacco and alcohol consumption.

The CDC (2013) explained that tobacco injures blood vessel walls and speeds up the process of hardening of the arteries. Tobacco use has a major role in developing HTN among adult male and female. On the same line Shields and Wilkins (2013) mentioned that tobacco use is considered among the first lines leading to HTN and CVD.

Conclusion

The study concluded that following unhealthy life style pattern can lead to HTN, especially regarding total body weight, physical inactivities, stress and smoking.

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انعكاس بعض عوامل النمط الحياتي علي ضغط الدم الشرياني

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المستخلص

فرط ضغط الدم (Hypertension) حالة مرضية تتصف بارتفاع ضغط الدم الشرياني بصورة مزمنة تسمى هذه بالكامل بفرط ضغط الدم الشرياني. يتم تصنيف فرط ضغط الدم إلى أساسي (أولي أو مجهول السبب) أو عرضي (ثانوي، عندما يكون مظهراً لمرض آخر مشخص).

وحددت منظمة الصحة العالمية ارتفاع ضغط الدم كسبب رئيسي الوفيات أمراض القلب والشرايين. وصرحت الرابطة العالمية لارتفاع ضغط الدم أن أكثر من ٥٠ فى المائة من مصابي ارتفاع ضغط الدم في جميع أنحاء العالم لا يعلمون حالتهم.

تبين الإحصاءات الطبية الأهمية الكبرى للحفاظ على ضغط الدم بحيث يكون في المتوسط ١١٥/٧٥ مليمتر زئبق ، وأن زيادته عن هذا الحد تؤدي إلى إجهاد القلب والكلى ، وقد يؤدي ارتفاعه إلى سكتة دماغية .

يمكن لارتفاع ضغط الدم على مدى فترة من الزمن أن تساهم فى كثير من الأمراض، بما فى ذلك:

- النوبات القلبية.   فشل القلب.
- أمراض الكلى.   السكتة الدماغية.

مرض نمط الحياة: مرض مرتبط بطريقة حياة الناس. أمراض نمط الحياة تشمل تصلب الشرايين وأمراض القلب، والسكتة الدماغية، ومرض الزهايمر، وتصلب الشرايين والربو والسرطان وأمراض الكبد المزمنة أو تليف الكبد، ومرض الانسداد الرئوى المزمن والسكرى من النوع ٢، ومتلازمة التمثيل الغذائى، التهاب الكلية أو الفشل الكلوى المزمن وهشاشة العظام، حب الشباب، والاكتئاب والسمنة.

أمراض نمط الحياة هى نتيجة الطريقة التى نقود بها حياتنا. تتم تسمية هذه أيضاً أمراض طول العمر أو أمراض الحضارة.

أمراض نمط الحياة هى نتيجة وجود علاقة سيئة من الناس مع بيئتهم.

الهدف من العمل: الكشف عن التأثير المحتمل لبعض عوامل نمط الحياة على مستوى ضغط الدم.

المواضيع: دراسة عبر قطاعات المجتمع.

يتم اختيار موضوع هذه الدراسة وفقاً للمعايير التالية:

ذكر فى منتصف العمر (٢٠–٤٠) سنة.

يجب مراعاة أن يكون خالى من أمراض الدم، والكلى، والغدد الصماء.

يتم التصنيف وفقاً لقياس ضغط الدم إلى:

١- مستوى ضغط الدم طبيعى

٢- مستوى ضغط الدم مرتفع

أسلوب الدراسة: سيخضع كلا الفريقين إلى كل ما يلى:

١-استبيان خاص عن:

١- خصائص المريض الاجتماعية (العمر – السن – الحالة الاجتماعية)

٢- التاريخ المرضى والدوائى العائلى للمريض

٣- نمط حياة المريض

٢- الفحص السريرى للكشف عن عدم انتظام الدورة الدموية وضغط الدم:

٣- الكشف عن أداء القلب والأوعية الدموية .

٤- قياس ضغط الدم الانقباضى والانبساطى، والضغط الشريانى.

٥- التحليل الإحصائى: وذلك للربط بين المتغيرات البيئية المختلفة (بعض عوامل نمط الحياة) ومستوى ضغط الدم وحالة القلب والشرايين.

النتائج وملخص المناقشة: رصد علاقة إيجابية بين مستوى ضغط الدم، (ومؤشر كتلة الجسم (السمنة)، التوتر النفس، التدخين).

رصد علاقة سلبية بين مستوى ضغط الدم والقيام بالتمرينات الرياضية وعليه فإن نمط الحياة له تأثير على ضغط الدم الشريانى ويوصى الباحثون أصحاب الضغط المرتفع بتغيير نمط حياتهم لتجنب المشكلات الصحية الناتجة عن ارتفاع ضغط الدم وذلك ومن خلال:

- الحفاظ على وزن الجسم ضمن الحدود الطبيعية.
- الحد من كمية الصوديوم المتناول ضمن الغذاء.
- الحرص على انتظام ممارسة التمارين الرياضية.
- اتباع نظام غذائى غنى بالفواكه والخضار وتجنب الوجبات السريعة.
- المشاركة بالبرامج المصممة للحد من التوتر النفسى والنوم بشكل كافى.
- ومراقبة ضغط الدم بانتظام.

يساعد تغيير نمط الحياة بشكل فعال فى خفض ضغط الدم بدرجة تعادل قدرة الأدوية الفردية الخافضة للضغط.