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Original Research

Influence of family history and lifestyle on blood pressure and heart rate in young adults in Jordan

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Hypertension;
Jordan

Summary *Background:* The most prevalent disease in Jordan is hypertension. Jordan is a small, middle-income developing country in the Middle East. It has a population of 5 611 202 people. Few studies have examined the associated cardiovascular risk factors in Jordan.
Design: The aim of this investigation was to explore specific lifestyles in Jordan, measuring blood pressure and heart rate through a randomized cross-sectional population study.
Methods: A total of 14 310 adult males (7400) and females (6910) were selected in various regions of Jordan. Selected participants were interviewed by trained senior pharmacy students. They were asked whether they had hypertension or other cardiovascular disorders and if the answer was negative further questions were asked. This was followed by measurement of blood pressure and heart rate. Demographic data such as age, sex and nationality were also recorded, as was family history of hypertension. For each individual of the sample, systolic blood pressure (SBP), diastolic blood pressure (DBP) and heart rate were measured three times with 10–15 min intervals in a sitting position and resting state. The Student's unpaired t-test was used for statistical analysis. Results were considered statistically significant when the *P* value was less than 0.05.
Results: A general trend in all the results tables was a lower blood pressure among those without a family history of cardiovascular disease and higher values among those with a family history of cardiovascular disease.
Conclusion: This study demonstrates that SBP and DBP increase with all associated risk factors if a family history of hypertension is positive. This cross-sectional study

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revealed the presence of a consistent and strong relationship between certain lifestyle risk factors with an elevation in blood pressure concurrent with a positive family history of hypertension.

Introduction

Cardiovascular diseases (CVD) are a leading cause of morbidity and mortality in many countries. Atherosclerotic risk factors, such as hypertension, smoking and alcohol, represent significant predictors for several CVD.[1,2] Examining these risk factors against family history can efficiently reduce the risk of CVD.[3,4] Evidence indicates that CVD can be viewed as a predictable and preventable disease.[5–7] However, the relative importance of the risk factors varies in accordance with lifestyle considerations and family history of CVD.

Few studies have explored the risk factors associated with lifestyle and family history of hypertension in an Arab population, such as in Jordan. In Jordan, major causes of death and disability have shifted from a predominance of nutritional deficiencies and infectious diseases, to chronic diseases such as CVD, cancers and diabetes. The most prevalent condition in Jordan is hypertension, with 20.6% suffering from this chronic disease. Jordan is a small, middle-income developing country situated in the Middle East. It has a population of 5 611 202 people.[1,2] It is a country in which this disease reflects changes in lifestyle from a nomadic culture towards a more urban city life. Jordan has undergone tremendous development over the past 50 years since its independence from Great Britain. However, with social progress come certain negative risks that affect lifestyle; notably, chronic diseases are on the rise. According to the Ministry of Health,[3] a household survey study in 2003 revealed 9.4% suffering from chronic diseases, with 26.7% of this figure reported as having two or more chronic diseases.

Methods

This study was performed during the period February–June 2004. The study sample was selected from nearly all regions of Jordan including northern, southern, eastern, western and central areas. However, most of the sample (78%) was selected from students of Jordan University of Science and Technology located in Irbid, in the northern part of Jordan. Participants of this university represent a young, normotensive, and healthy adult population of all regions of Jordan, as well as various other nationalities.

Previously diagnosed hypertensive participants whether on antihypertensive therapy or not were excluded ($n = 457$). Moreover, any participant with a recent or past medical history of a cardiovascular disorder was also excluded ($n = 389$). Selected individuals of the sample were interviewed by trained graduate pharmacy students. Each participant was individually interviewed and asked about their cardiovascular risk factors such as cigarette smoking, alcohol use, salt use, etc. Each participant was questioned as to whether they had hypertension or other cardiovascular disorders, and if the answer was negative further questions were asked. This was followed by measurement of their blood pressure and heart rate. Demographic data such as age, sex, nationality, place of residence, occupation and level of education were also recorded. Interviewed persons were asked to report their lifestyle factors including cigarette smoking, Shisha smoking (traditional Middle Eastern tobacco use), intake of caffeine, alcohol, salt and chocolate (each individual was asked to report his/her chocolate intake whether mild (1–2 bars/week), moderate (3–4 bars/week) or excessive (>4 bars/week)) (Table 1).

For each participant of the sample, their systolic blood pressure (SBP), diastolic blood pressure (DBP) and heart rate were measured three times with 10–15 min intervals in the sitting and resting position. Their arterial blood pressure (ABP) was calculated from the measured SBP and DBP. The mean values were distributed according to sex and smoking habit. Calibrated mercury sphygmomanometers were used for all measurements. The mean of each blood pressure and heart rate value was calculated by dividing the total values by the number of measurements. The ABP was estimated using the following equation, $ABP = ((SBP-DBP)/3)+DBP$.

Statistical analysis was carried out utilizing the unpaired *t*-test in Excel and Access programs. The unpaired Student's *t*-test was used to compare the means. Results were considered statistically significant when the *P*-value was less than 0.05. The results are expressed as a mean $\pm$ standard deviation (SD).