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Original Article

Effects of potentially modifiable risk factors on the health of adults in the Eastern Province of KSA

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الملخص

أهداف البحث: تهدف هذه الدراسة للتحقق من العلاقة بين عوامل خطر رئيسة مختارة قابلة للتعديل، تتضمن عادات نمط الحياة، ودخل الأسرة والتدخين على الصحة.

طرق البحث: أجريت هذه الدراسة المستعرضة خلال الفترة من ٢٠١٥-٢٠١٦ على ١٠٤ من الرجال الأصحاء تتراوح أعمارهم بين ٣٨ ± ٨ عاما. جمعت البيانات باستخدام استبانة - تعبأ ذاتيا، تستفسر عن الخصائص السريرية لضغط الدم ومؤشر كتلة الجسم. وتم أخذ عينات من الدم لقياس مستوى سكر الدم الصائم، ومستوى الدهون، والبروتين الدهني عالي الكثافة والدهون الثلاثية.

النتائج: تعد حالة التدخين الحالية واستهلاك مشروبات الطاقة من عوامل الخطر الكبيرة لزيادة ضغط الدم ومستوى السكر دم، على التوالي. لدى المشاركين الذين دخلهم الشهري أكثر من ١٠٠٠٠ ريال سعودي انخفاض في مستوى ضغط الدم الانبساطي مقارنة مع ذوي الدخل الأقل. ولكن، كان هناك انخفاض ملحوظ في وزن الجسم بين مستهلكي الخضروات.

الاستنتاجات: تسلط هذه الدراسة الضوء على تأثير عوامل الخطر الرئيسة القابلة للتعديل على الصحة. وهناك حاجة كبيرة لتحسين وتعزيز نمط الحياة الصحي.

الكلمات المفتاحية: حياة مستقرة؛ عادات؛ مستوى الدهون؛ ضغط الدم؛ التدخين

Abstract

Objectives: The purpose of this study was to investigate the association between selected major modifiable risk factors including life style habits, household income and smoking on health.

Methods: This cross-sectional study was conducted during 2015–2016 among 104 healthy men aged 38 ± 8 years. The data were collected using a self-administered questionnaire that enquired about clinical information about blood pressure and body mass index. Venous blood samples were taken to assess the fasting blood glucose (FBG), lipid profile, high density lipoprotein and triglyceride.

Results: Current smoking status and consumed energy drinks were significantly positive risk factors for increased systolic blood pressure and FBG, respectively. Participants with monthly income of more than 10,000 Saudi Riyals showed significantly lower diastolic pressure than those with lower income. However, there was a significant decrease in body weight among those who consumed vegetables.

Conclusion: This study highlights the effect of major modifiable risk factors on health. There is a great need for improving and enhancing a healthy lifestyle behaviour.

Keywords: Blood pressure; Habits; Lipid profile; Sedentary; Smoking

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Introduction

Human health is influenced by many factors, and cultural and social transitions during the process of economic development are considered to influence the pace of the pathogenesis of many diseases emerging in developing countries.[1] The negative associations between socioeconomic factors and health in such societies have been reported in many studies.[2] For example, socio-demographic characteristics, such as income, schooling, race, obesity, physical inactivity, and smoking, are well-known factors associated with an increase in blood pressure.[3]

With "Westernization" and the increasing predominance of sedentary lifestyles, people from developing countries are engaging in unhealthy behaviours that contribute to the development of obesity.[4,5] For instance, the trend towards increased consumption of artificially sweetened soft drinks, sports drinks, high-energy beverages, and coffee products is observed among adolescents and is linked to the obesity epidemic.[6] The prevalence of obesity is increasing worldwide at an alarming rate in both developing and developed countries, and it has become a serious pandemic health problem. Obesity is a risk factor for many conditions, such as coronary heart disease, metabolic syndrome, type 2 diabetes mellitus, certain cancers, hypertension, and dyslipidaemia,[7–9] and it is estimated to be the fifth leading cause of mortality worldwide.[10]

In KSA, the findings of various studies on the relationship between obesity and lifestyle have not been encouraging. The rapid socioeconomic and cultural revolution that has occurred in KSA since the discovery of oil is associated with a sharp increase in the rate of obesity.[11] Dietary changes have been implicated in the increasing prevalence of both overweightness and obesity among Saudi adults, adolescents and children in the past few decades.[12] Studies have shown increased consumption of refined foods and animal products at the expense of vegetables and fruits among Saudi Arabians during the past few decades.[12] However, limited studies that quantify these behaviours are available.[13] Most related studies are either surveys or retrospective use of self-reporting surveys and do not investigate the relationship between lifestyle behaviours and health risks such as diabetes mellitus and cardiovascular risk factors such as lipid profile, blood glucose parameters, and blood pressure. Thus, the current study aimed to investigate the association between selected major modifiable risk factors, including lifestyle habits and smoking on indicators of metabolic syndrome including body mass index (BMI); arterial blood pressure; and levels of fasting blood glucose (FBG), high-density lipoprotein (HDL), and triglycerides (TG) of men in Eastern Province, KSA.

Materials and Methods

Participant characteristics

This cross-sectional study was conducted between 2015 and 2016. A total of 104 men who had not been diagnosed with any component disease of metabolic syndrome as defined by the International Diabetes Federation (IDF) and without any immobility-causing disorders were recruited to participate in this study. Participants were selected using convenience sampling. The study details were distributed via the noticeboard at Imam Abdulrahman Bin Faisal University, at some Eastern Province community centres, and via the WhatsApp to all members of Saudi Diabetes and Endocrinology Association at the Eastern Province of KSA. The participants were from Imam Abdulrahman Bin Faisal University, two schools at Al-Khobar and Saihat, and some Dammam city centres those who expressed an interest to participate and were eligible to participate signed a written informed consent form, according to the Helsinki Declaration. Further, the study protocol was approved by the Internal Review Board of Imam Abdulrahman Bin Faisal University (IRB No. 2014-14-221).

Study procedure

All participants completed a self-administered questionnaire manually. This questionnaire includes items from previously published tools.[14] Through a pilot study of the questionnaire previously conducted among urban and rural students in KSA, it was found to be valid and reliable.

Subjects' weight was measured using an ordinary scale (portable balance) with indoor clothing on but without shoes. Height was measured to the nearest millimetre with the subjects standing without footwear using a measuring tape that was part of the weighing scale. Subjects were categorized as underweight (BMI, <18 kg/m^2), lean (BMI, 18–25 kg/m^2), overweight (BMI, 25–30 kg/m^2), or obese (BMI, >30.0 kg/m^2).[11] With an electronic sphygmomanometer (Omron M6 Comfort [HEM-7223-E]; Omron Healthcare Co., Ltd., Kyoto, Japan), the average of three consecutive blood pressure readings recorded with a 5-min interval was obtained using an appropriately sized cuff as each participant sat with their arms supported at heart level. The cuff was wrapped around the upper arm loosely enough to allow two fingers to be easily placed under it. Systolic and diastolic blood pressures (SBP and DBP, respectively) were recorded digitally, and the values appeared on the screen. At a private laboratory, venous blood samples were drawn from an antecubital vein after the participants fasted overnight for a minimum of 10 h. The laboratory analysed the blood samples to assess the following components of the fasting blood profile: HDL, TG, and plasma glucose.[14]

In this study, quantitative methods were used to investigate the health risk factors. The *t*-test and analysis of variance (ANOVA) were used to analyse differences between lifestyle-related health risk factors. Data were presented as the mean values and standard deviations and analysed using SPSS version 22. Statistical significance was set at the 5% level. Binary logistic regression was used to determine the influence of independent variables on metabolic syndrome.

Results

The baseline characteristics and demographic data of the study participants are presented in Table 1.

The mean age of the 104 participants was 38 ± 8 years and the mean BMI was 29 ± 5 (overweight category). The mean recorded SBP and DBP were 120 ± 12 and 78 ± 8 mmHg, respectively. As shown in Table 2, the mean TG level was 129 ± 22 mg/dl and HDL level was 42 ± 9 mg/dl.

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