Family Functionality and Modifiable Risk Factors for Arterial Hypertension

Funcionalidad familiar y factores de riesgo modificables para hipertensión arterial

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ABSTRACT

The health of the family is linked to the effective functioning of the same; on the other hand, hypertension (HT) is a process of high prevalence and one of the main preventable causes of cardiovascular complications. Some associated risk factors can be prevented. The present cross-sectional, correlational study of 414 participants aged 20-64 determined the relationship between family functionality and risk factors for hypertension. Family dysfunction is a risk factor for presenting: low level of physical activity (OR 1.61; $CI_{95\%}$ = 1.03-2.52); tobacco consumption (OR 1.63; $CI_{95\%}$ = 1.04-2.55); overweight-obesity (OR; 1.77; $CI_{95\%}$ = 1.13-2.76); altered blood pressure (OR: 2.00; $CI_{95\%}$ = 1.22-3.28), and risky consumption of alcohol (OR: 5.69; $CI_{95\%}$ = 3.59-9.01). The analysis of this relationship contributes to the advancement of knowledge and as a basis for delineating preventive strategies.

Keywords
family medicine; body mass index; tobacco use; obesity.

RESUMEN

La salud de la familia está ligada con su funcionamiento efectivo; por otra parte, la hipertensión arterial (HTA) es un proceso de gran prevalencia y una de las principales causas prevenibles de complicaciones cardiovasculares. El presente estudio transversal correlacional realizado con 414 participantes de 20 a 64 años de edad determina la relación entre funcionalidad familiar con factores de riesgo para HTA. La disfunción familiar constituye un factor de riesgo para presentar: nivel bajo de actividad física (OR: 1,61; $IC_{95\%}$: 1,03-2,52), consumo de tabaco (OR: 1,63; $IC_{95\%}$: 1,04-2,55), sobrepeso-obesidad (OR: 1,77; $IC_{95\%}$: 1,13-2,76), tensión arterial alterada (OR: 2,00; $IC_{95\%}$: 1,22-3,28) y consumo de alcohol de riesgo (OR: 5,69; $IC_{95\%}$: 3,59-9,01). El análisis de esta relación contribuye al avance del conocimiento y como base para delinear estrategias preventivas.

Palabras clave
medicina familiar; índice de masa corporal; uso de tabaco; obesidad.

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Introduction

Family health problems influence the individual health, since the latter is determined by healthy or pathogenic practices followed by the family group. A healthy family lifestyle promotes the health of its members, whereas an unhealthy family lifestyle can make the family members sick (1).

It is considered that the relationship between individual and family health is a two-way issue, that is, the influence is reciprocal. Individual health develops in the context of a family, with the formation of habits, lifestyles, value systems, norms, attitudes and behaviors towards health (1,2).

On the other hand, hypertension is a highly prevalent process in all countries, whether developed or not, and affects almost 40% of adults; it is also the main cause of death and disability worldwide through its cardiovascular complications. In the genesis of this high prevalence and incidence, multiple authors point to the change in lifestyle as a generator —at least partial— of this very negative evolution (3,4,5).

The scarce physical activity and sedentary behaviors are associated with dysfunctional aspects of family dynamics (6). The prevalence of a sedentary lifestyle is greater in women, increases as their age increases and has been related to the enlargement of the waist circumference; furthermore, it has been described that sedentary people have an increase in their heart rate that could be related as a sign of cardiovascular system involvement (7).

Individuals who live in family dysfunction develop bad eating habits (8), that is, a dysfunctional family environment and a single parent structure are risk factors for overweight and obesity (9).

The determination of anthropometric indices are tools for predicting hypertension, due to their strong association (10,11). The presence of conflict between parents is associated with a more deteriorated bond between parents and children and greater consumption of alcohol and other drugs (12).

In the province of Loja there is a high prevalence of risk factors for arterial hypertension, among which are overweight and obesity, with 63.9%; alcohol consumption, with 40.6%; tobacco consumption, with 42.3%; physical inactivity, with 55.8%, and prehypertension, with 34.8% (13). Hence, lifestyle not only influences the onset and development of arterial hypertension, but also its control (14,15).

Treating high blood pressure and its complications requires costly interventions that deplete governmental and individual budgets, so that lifestyle changes, through early detection and control of risk factors, generate both health and economic benefits (16,17,18,19,20).

Changes in lifestyles such as smoking cessation, reduction of excess weight, moderation of alcohol consumption, physical activity, reduction of salt intake, increase of fruit and vegetable intake, together with reduction of the consumption of saturated fats, can contribute to lower blood pressure rates (21).

The objective of this research was to determine the relationship between family functionality and modifiable risk factors for arterial hypertension in adults from 20 to 64 years of age from the city of Loja, Ecuador.

There are few studies on the influence of the family on health risk behaviors, so *the relationship between family functionality and the modifiable risk factors for arterial hypertension is unknown.*

Materials and Methods

Type of Study

A cross-sectional, correlational, analytical study was conducted during November 2015 and October 2016, in a random sample of individuals between 20 and 64 years of age.

Design of the Research

In the development of the present project, field research was used, based on information from surveys and direct observation of the participants.

Calculation of the Sample Size

The data from the Ecuador Population and Housing Census 2010 was taken as a basis, considering the age group between 20 and 64 years of the urban parishes of the city of Loja (97,223 adults). The number of surveys was determined applying the Pita Fernández formula with an expected proportion of 5%, a confidence level of 95% and an accuracy of 5%.

To determine the number of surveys that were to be carried out in each of the four urban parishes of the city of Loja, a classification performed in subgroups or strata with similar environmental (altitude and latitude) and demographic (population density in adults from 20 to 64 years of age) characteristics. The number of surveys in each parish was divided by the number of neighborhoods and the blocks in which the instrument was applied were randomly drawn using Excel®. The work was carried out with a minimum desired power of 80%, and its verification was carried out using the G*Power® software, with which a total number of 414 people was obtained.

The inclusion criteria were: men and women from 20 to 64 years of age who agreed to be part of this study. The exclusion criteria were: refusal to participate in the study, pregnant women, people with intellectual or physical disabilities that made it difficult to take anthropometric measurements, body mass index less than 18.5 kg/m^2, patients diagnosed with or under treatment for arterial hypertension. Once the stratification and randomization was done, the roadmap was developed to apply the instrument in the field and collect the information.

Techniques Used to Collect the Information

The secondary information was collected with the help of documents and information about the work context. The primary information was obtained by applying a survey addressed to the participants who were asked to answer objectively and concretely the items proposed.

Ethics

There was an informed consent, which let the participants know about the purpose of the study, its importance, the procedures that were to be carried out, as well as that their participation is voluntary and that they can change their mind later and stop participating, although they had accepted before.

Procedure to Collect the Data

Family functionality. It was determined applying the Family Function Perception Test, which assesses the cohesion, harmony, communication, permeability, affectivity, roles and adaptability of the family. A pilot test was carried out on 30 individuals with similar characteristics and a Cronbach's alpha of 0.768 was obtained, with an acceptable internal consistency.

Degree of tobacco consumption. It was determined according to the parameters and stratification of the World Health Organization (WHO). Likewise, a pilot test was applied on 30 individuals with similar characteristics and a Cronbach's alpha of 0.803 was obtained, with a good internal consistency.

Degree of alcohol consumption. It was established according to the parameters of the Alcohol Use Disorder Identification Test (AUDIT). For the local validation of the AUDIT, a pilot test was carried out on 30 individuals with similar characteristics and a Cronbach's alpha of 0.873 was obtained, with a good internal consistency.

Physical activity. It was determined through the International Physical Activity Questionnaire. This is a short, self-administered format of the last 7 days. After a pilot test on 30 individuals with similar characteristics, a Cronbach's alpha of 0.727 was obtained, with an acceptable internal consistency.

Body Mass Index (BMI). It was established using a weight/height scale previously calibrated to meet the international standards and scales in kilograms and in linear meters. The nutritional status was classified based on the WHO stratification, according to the body mass index (Weight [kg]/height [m^2]).

Blood pressure. It was determined by the auscultatory method with a calibrated and properly

validated tensiometer. The patients remained seated and still in a chair for at least 5 minutes, with the feet on the floor and the arm at the height of the heart with an adequate size of bracelet (that surpasses at least 80% the arm). The systolic blood pressure was taken as the point at which the first of two or more sounds is heard (phase 1), and the diastolic blood pressure, as the point after which the sound disappears. The blood pressure indices were classified based on the parameters of the Spanish Society of Cardiology.

Method and Model of Analysis. Once the collection instrument was applied, the data was systematized and tabulated with the SPSS program (version 16.0). The relationship of variables was analyzed applying the Pearson's chi-square statistical test. To measure the association between the variables studied, it was necessary to calculate the Cramer V coefficient. Regarding the odds ratio (OR), to determine protective or risk factors, we worked on dichotomous tables and confidence limits with an interval of 95%.

Results

The sample consisted of 414 participants (132 men and 282 women), with an average age of 38.41 years, of which 68.1% were female. The prevalence of family dysfunction was 52.17%; low level of physical activity, 74.88%; tobacco consumption, 26.09%; overweight-obesity, 73.91%; altered blood pressure (normal high), 21.01%, and risky alcohol consumption, 35.75% (see annexes).

Family dysfunction was a risk factor for: low level of physical activity, since a χ^2_c value of 11.97 was found (p<0.05 [0.007]; OR: 1.61; 95% CI: 1.03-2.52); tobacco consumption, with a χ^2_c of 10.53 (p<0.05 [0.015]; OR: 1.63; 95% CI: 1.04-2.55); overweight-obesity, with a χ^2_c of 10.49 (p<0.05 [0.015]; OR: 1.77; 95% CI: 1.13-2.76); altered blood pressure, with a χ^2_c of 21.37 (p<0.05 [0.000]; OR: 2.00; 95% CI: 1.22-3.28); risky alcohol consumption, with a χ^2_c of 62.91 (p<0.05 [0.000]; OR: 5.69; 95% CI: 3.59-9.01).

Discussion

The results of the study show a statistically significant association between family functionality and risk factors for hypertension, such as low physical activity, tobacco consumption, overweight-obesity, normal high blood pressure and risky alcohol consumption; however, the magnitude of this association, determined by the Cramer's V coefficient, ranges from 0.17 to 0.39, which establishes a low to moderate degree of association, and this relationship should, therefore, be investigated further.

In the nutritional diagnosis of the population studied, classified according to the BMI, overweight-obesity was prevalent, with 73.91%, similar to what occurred in the study by Freire et al. (13), where an overweight-obesity prevalence of 62.8% was observed.

Family dysfunction is a risk factor for the development of scarce physical activity. The correlation between family dysfunction and tobacco consumption contrasts with the results of the study by Santander et al. (22), where participants belonging to households perceived as dysfunctional had a significantly higher risk of tobacco use (OR: 1.46; 95% CI: 1.02-2.07; p<0.03).

Family dysfunction constituted a risk for the development of overweight-obesity, results similar to those obtained in the study by González-Rico et al. (23), in which there was an association between family dysfunction and obesity (OR: 1.63; 95% CI: 1.08-2.46; p<0.01).

Participants with family dysfunction presented altered blood pressure, results that could be compared with the study by González et al. (24), where it was shown that 84.13% of dysfunctional families showed lack of control of blood pressure levels (χ^2: 54.6, p = 0.0000, Cramer V: 0.4223).

The association between family dysfunction and alcohol consumption determined in this study is comparable with the results of the study by Musitu et al. (25), which shows a positive and significant relationship between a negative family functionality and substance use (β = 0.15, p<0.01), among these alcohol.

Conclusions

There is a statistically significant relationship between family function and risk factors for arterial hypertension. The data support the hypothesis that family dysfunction constitutes a predisposing factor for the development of risk factors for arterial hypertension.

The analysis of this relationship contributes to the advancement of knowledge and is very useful as a basis for delineating family and community preventive strategies.

Conflicts of interest

The authors declared no conflicts of interest.

Acknowledgements

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Annex

Annex 1. Relationship between family dysfunction and risk factors for arterial hypertension

Source: Direct research 2016. Database of the research project *Family factors and their relationship with modifiable risk factors for hypertension in adults from 20 to 64 years of age Loja 2016.* UNL-ASH. Prepared by: MD Jorge Poma.

Annex 2. Distribution of Adults by Age and Gender

Source: Direct research 2016. Database of the research project *Family factors and their relationship with modifiable risk factors for hypertension in adults from 20 to 64 years of age Loja 2016.* UNL-ASH. Prepared by: MD Jorge Poma.

Annex 3. Prevalence of Family Dysfunction

Source: Direct research 2016. Database of the research project *Family factors and their relationship with modifiable risk factors for hypertension in adults from 20 to 64 years of age Loja 2016.* UNL-ASH. Prepared by: MD Jorge Poma.

Annex 4. Prevalence of Scarce Physical Activity

Source: Direct research 2016. Database of the research project *Family factors and their relationship with modifiable risk factors for hypertension in adults from 20 to 64 years of age Loja 2016.* UNL-ASH. Prepared by: MD Jorge Poma.

Annex 5. Prevalence of Tobacco Consumption

Source: Direct research 2016. Database of the research project *Family factors and their relationship with modifiable risk factors for hypertension in adults from 20 to 64 years of age Loja 2016.* UNL-ASH. Prepared by: MD Jorge Poma.

Annex 6. Prevalence of Overweight-Obesity

Source: Direct research 2016. Database of the research project *Family factors and their relationship with modifiable risk factors for hypertension in adults from 20 to 64 years of age Loja 2016.* UNL-ASH. Prepared by: MD Jorge Poma.

Annex 7. Prevalence of normal high blood pressure

Source: Direct research 2016. Database of the research project *Family factors and their relationship with modifiable risk factors for hypertension in adults from 20 to 64 years of age Loja 2016.* UNL-ASH. Prepared by: MD Jorge Poma.

Annex 8. Prevalence of Risky Alcohol Consumption

Source: Direct research 2016. Database of the research project *Family factors and their relationship with modifiable risk factors for hypertension in adults from 20 to 64 years of age Loja 2016.* UNL-ASH. Prepared by: MD Jorge Poma.

Additional information