REME • Rev Min Enferm. 2016; 20:e963
DOI: 10.5935/1415-2762.20160033

RESEARCH

RISK FACTORS OF CORONARY ARTERY DISEASE IN FAMILY MEMBERS LIVING WITH ACUTE CORONARY PATIENTS

FATORES DE RISCO DA DOENÇA ARTERIAL CORONARIANA DOS FAMILIARES CONVIVENTES DE INDIVÍDUOS COM SÍNDROME CORONARIANA AGUDA

FACTORES DE RIESGO DE LA ENFERMEDAD ARTERIAL CORONARIA EN FAMILIARES QUE CONVIVEN CON PACIENTES CON SÍNDROME CORONARIO AGUDO

Aluê Constantino Coelho [1]
Juliana de Lima Lopes [2]
Vinicius Batista Santos [3]
Alba Lucia Bottura Leite de Barros [4]

[1] RN. MS student in Nursing. Federal University of São Paulo – UNIFESP, Paulista Nursing School-EPE. São Paulo, SP – Brazil.
[2] RN. PhD. Assistant Professor. UNIFESP. São Paulo, SP – Brazil.
[3] RN. MS in Science. UNIFESP, São Paulo Hospital, Coordinator of Cardiology Units. São Paulo, SP – Brazil.
[4] RN. Full Professor. UNIFESP, EPE. São Paulo, SP – Brazil.

Corresponding author: Aluê Constantino Coelho. E-mail: alueconstantino@gmail.com
Submitted on: 2015/08/18 Approved on: 2016/09/08

ABSTRACT

Coronary artery disease is a major cause of morbidity and mortality in the world and such comorbidity when diagnosed affects the context individual and family performance, so the aim of this study was to identify risk factors for coronary artery disease in cohabiting family members patients with acute coronary syndrome and identify the association of these factors with sociodemographic profile. It is a cross-sectional study, conducted at the University Hospital; the sample was composed of 50 different families and 158 cohabiting family members of patients with the acute coronary syndrome. The risk factors were evaluated by an interview with an instrument developed by the researchers and previously validated instruments. Data were submitted to descriptive statistics and to assess the relationship between the variables association tests were used. Most families had low income, low education level and a high number of cohabiting and dependents. Hypertension, diabetes mellitus, dyslipidemia, obesity, physical inactivity, alcohol consumption and smoking were risk factors most commonly found. The age over 51 years was associated with diabetes mellitus, hypertension, dyslipidemia and age between 20 to 50 years showed greater association with alcoholism and smoking; poor education with diabetes mellitus, obesity and high blood pressure; marital status with diabetes mellitus, hypertension, dyslipidemia and alcoholism; the occupation was related to alcoholism and smoking, low income with alcoholism and alcohol abuse was associated with smoking. Improper lifestyle associated with sociodemographic factors and existing comorbidities demonstrate the need for health education also for these cohabiting family.

Keywords: Risk Factors; Coronary Disease; Caregivers.

RESUMO

A doença arterial coronariana é a principal causa de morbimortalidade no mundo e compromete o desempenho individual e familiar. O objetivo deste estudo foi identificar os fatores de risco da doença arterial coronariana e associá-los ao perfil sociodemográfico dos familiares conviventes de pacientes com síndrome coronariana aguda. Trata-se de estudo transversal realizado em um hospital universitário. A amostra foi composta de 50 famílias distintas e 158 familiares conviventes de pacientes com síndrome coronária aguda. Os fatores de risco foram avaliados mediante entrevista com instrumento elaborado pelos pesquisadores e por meio de instrumentos previamente validados. Os dados foram submetidos à estatística descritiva e para a avaliação das relações entre as variáveis foram utilizados testes de associação. A maioria das famílias apresentava baixa renda, baixo nível de escolaridade e elevado número de conviventes e dependentes. A hipertensão arterial, diabetes mellitus, dislipidemia, obesidade, sedentarismo, etilismo e tabagismo foram os fatores de risco mais encontrados. As associações registradas foram: idade acima dos 51 anos com diabetes mellitus, hipertensão arterial, dislipidemia; idade entre 20 e 50 com alcoolismo e tabagismo; baixa escolaridade com diabetes mellitus, obesidade e hipertensão arterial; estado civil com diabetes mellitus, hipertensão arterial, dislipidemia e alcoolismo; ocupação com alcoolismo e tabagismo; baixa renda com alcoolismo; e o alcoolismo com tabagismo. O estilo de vida inadequado associado aos fatores sociodemográficos e às comorbidades já existentes demonstram a necessidade de educação em saúde também para esses familiares conviventes.

Palavras-chave: *Fatores de Risco; Doença das Coronárias; Cuidadores.*

How to cite this article:
Coelho AC, Lopes JL, Santos BV, Barros ALBL. Risk factors of coronary artery disease in family members living with acute coronary patients. REME – Rev Min Enferm. 2016; [cited _____ ___ ___]; 20:e963. Available from: _____ DOI: 10.5935/1415-2762.20160033

RESUMEN

La enfermedad coronaria es la causa principal de morbilidad y mortalidad en el mundo y afecta el desempeño individual y familiar. El objetivo de este estudio fue identificar los factores de riesgo de la enfermedad coronaria y asociarlos con el perfil sociodemográfico de los familiares que conviven con pacientes con síndrome coronario agudo. Se trata de un estudio transversal realizado en un hospital universitario. La muestra consistió en 50 familias distintas y 158 familiares de pacientes con síndrome coronario agudo. Los factores de riesgo fueron evaluados en entrevistas con un instrumento elaborado por los investigadores y por medio de instrumentos previamente convalidados. Los datos fueron sometidos a la estadística descriptiva y se utilizaron pruebas de asociación para evaluar las relaciones entre las variables. La mayoría de las familias era de bajos ingresos, bajo nivel de escolaridad y alto número de convivientes y dependientes. Los factores de riesgo más encontrados fueron hipertensión arterial, diabetes mellitus, dislipidemia, obesidad, sedentarismo, etilismo y tabaquismo. Las asociaciones más frecuentes fueron: edad superior a los 51 años con diabetes mellitus, hipertensión arterial, dislipidemia; edad entre 20 y 50 años con alcoholismo y tabaquismo; baja escolaridad con diabetes mellitus, obesidad e hipertensión arterial; estado civil con diabetes mellitus, hipertensión arterial, dislipidemia y alcoholismo; ocupación con alcoholismo y tabaquismo; bajos ingresos con alcoholismo; y alcoholismo con tabaquismo. El estilo de vida inadecuado juntamente con los factores sociodemográficos y con las comorbilidades existentes demuestra que los familiares que conviven con estos pacientes deben recibir educación en salud.

***Palabras clave**: Factores de Riesgo; Enfermedad Coronaria; Cuidadores.*

INTRODUCTION

Cardiovascular diseases (CVD) are responsible for 17 million deaths in recent decades, with global growth projection adjusted inability to years of life in 2020 to 150 million patients.[1]

Among the CVDs, the coronary artery disease (CAD) is the leading cause of death in adults in developed countries[1] and is it one of the main causes of morbidity and mortality in the world.[1] In Brazil, in 2010, accounted for 8.8% deaths.[2] This disease has significantly socioeconomic impact[1] and from the control of risk factors such as high blood pressure (hypertension), diabetes mellitus (DM), dyslipidemia (DLP), obesity, physical inactivity, excessive alcohol consumption, smoking and psycho-emotional stress, the results can be favorable for patients.[3] Therefore, it is needed educational, preventive and promotional health.

Health promotion provides access to the guidance of health and education services, favoring the development of behaviors for healthy living and opportunities for the population to get safe and appropriate information from health/disease.[3] Then, the individual is encouraged to adapt, acquire and maintain a healthy lifestyle.

CAD is an acute event and to identify individuals predisposed to the development of this comorbidity and subsequent prevention, it is essential to identify the risk factors and risk scores.[1] The risk factors are components that may contribute to the development of diseases. Therefore, they can be prevented to avoid performance and health maintenance of diseases. The Framingham study defined the main risk factors for CAD as smoking, high blood pressure, cholesterol and diabetes mellitus. Later, the Framingham Risk Score was created, which identifies individuals with high and low risk of developing CAD.[4]

The family of patients with chronic diseases participates directly in the health/disease process, so it is essential to include them in health education process, as their performance may change the face of multidisciplinary guidelines and lifestyle adaptations.[5] These adaptations favor the structural, socio-economic and emotional imbalance, encompassing not only the biological aspect but also the social, political and cultural of the individual and their immediate family.[5]

Faced with the big effect of chronic disease in cohabiting families and to propose an educational program for health, it is important to know the reality and lifestyle both patients as many of the families who received the information and the access to guidance.

Based on these, the following questions emerged: What is the socio-demographic profile and what are the risk factors associated with coronary artery disease cohabiting family members of individuals with acute coronary syndrome? What is the association between cardiovascular risk factors and sociodemographic data?

It is understood that by identifying the profile of these patients, it may be thought of strategies to work in prevention, promotion, recovery, treatment adherence and disease control as well as providing conditions for these people to have their needs met, fully and continuously considering the individuality and integrity of the group. Thus, the objectives of the study were to identify the sociodemographic characteristics and risk factors for CAD of cohabiting relatives of patients with acute coronary syndrome and the association of these factors with the sociodemographic profile.

MATERIAL AND METHODS

This is a descriptive and cross-sectional study with a quantitative approach performed at the Cardiology Unit of a large university hospital in São Paulo. The research project was approved by process n° 1430/10 by the Ethics Committee in Research of the Federal University of São Paulo and the data were collected after the family accept to participate in the study and signing the free and informed consent form.

The sample was type convenience, consisting of family members living together with patients hospitalized for acute

coronary syndrome (ACS) in the period from November 2010 to January 2011. There were 158 families family members living together with 50 families, and 100% of the families interviewed were included in the analysis of data, so there was no loss of sample. The cohabitant family was considered as the individual belongs to the same family residing in the same household as the hospitalized patients, with no need to present ties of consanguinity. The inclusion criterion was to be family member cohabitant with the patients with a diagnosis of CAD. The exclusion criterion was established for those patients who had no relatives living together, that is, those who reported in the nursing history institution they were living alone and did not present close relationship with a family member.

The interview was conducted with the cohabiting family older than 18 years old present in the visiting hours, and they responded by absent cohabitants family members or children under 18 years old to the variables related to the study.

For data collection, there was a structured interview by an instrument built by the researchers and based on the literature, containing two parts: the first part contained questions related to sociodemographic variables of the family. The second part consisted of interrogation data as to the existence of the major risk factors for coronary heart disease, according to Framingham,[4] and the measurement of weight and height, calculation of body mass index (BMI) and classification of smoking addiction level,[6,7] if any family report this dependency, according to the Smoking Dependency Instrument of Fagerstrom.

Sociodemographic variables and their respective categorization were: gender (male/female), age (up to 20 years old/21-50 years old/> 51 years old), race (white/nonwhite), marital status (married/unmarried), religion (Catholic/Evangelical/other), education (up to elementary school/high school/higher education), cohabiting number and number of dependents (continuous variables), housing (own/not), family income (was obtained by income division total household by the number of household members and analyzed according to the minimum wage – MW – in force in 2010 in Brazil, amounting to R$ 510.00, being categorized as up to five MW or more than five MW), occupation (according to the Brazilian Institute of Geography and Statistics – IBGE[8] – and categorized as economically active population and economically inactive population).

The variables related to coronary disease were evaluated through interviews with family members, or thy were questioned about the risk factors for coronary diseases, such as smoking, alcohol consumption, high blood pressure (hypertension), diabetes mellitus (DM) and dyslipidemia (DLP). For the classification of the level of physical activity performed by cohabiting family members, the guidelines of the American Heart Association (AHA) was used,[9] considering to be physically active adult individual who performs at least 30 minutes of aerobic activity of moderate intensity at least five days a vigorous aerobic week or at least 25 minutes at least three days a week (or a combination of moderate and vigorous activity) or aerobic into two or three segments of 10 to 15 minutes per day. Physical inactivity in children and adolescents (children aged less than 2 years old) is considered by the AHA as the lack of aerobic activity for at least 60 minutes of moderate to vigorous physical activity every day or even two segments of 30 minutes or four segments of 15 minutes. Physical activity includes aerobic exercise such as walking, climbing stairs and practicing sports.[9] Thus, the family cohabitants were asked if they performed this practice of physical activity.

For the stratification of nicotine dependence level, the Smoking Dependency Instrument of Fagerstrom was applied, already translated and validated in Brazil,[6,7] in the family who reported smoking. This instrument evaluates the level of nicotine dependence and consists of six questions with several possible answers, ranging between two and four points, depending on the item to be evaluated.[6,7] The score ranges from zero to 10 points and the categorization was: 0 to 2 points, very low; 3 to 4 points, low; 5 points, average; 6 to 7 points, high; and 8 to 10 points, very high.

The anthropometric evaluation carried out by calculating the weight, height and BMI was made only with the family present at the interview. Children under 18 were not measured anthropometric data because they were not present at the interview, only the classification of body mass index for adults according to the World Health Organization was used.[10] Based on this classification, patients were classified as: <18.5 kg/m^2 (underweight), 18.5 and 24.9 kg/m ^{2} (normal weight), 25.0 to 29.9 kg/m^2 (overweight) 30 to 34.9 kg/m^2 (obesity I), 35.0 to 39.9 kg/m^2 (obesity II)> 40 kg/m^2 (obesity III).

The results were organized, processed and stored in Microsoft Office Excel® 2007 spreadsheet software and used for statistical calculation SPSS version 20.0. Descriptive analysis using minimum calculation, maximum, the average and standard deviation for quantitative variables and absolute and relative frequencies for qualitative variables were carried out. The analysis of associations between sociodemographic variables and risk factors for coronary artery disease was obtained using the chi-square association tests of Pearson and Fisher's exact test. Statistically significant were considered $p < 0.05$.

RESULT AND DISCUSSION

The sample consisted of 158 family members living together with 50 families, and the number of cohabiting family in the study ranged from one to six, averaging 3.16±1.37 cohabiting. The number of dependent families ranged from none to four and average of 1.54±1.15 dependents. It was observed

that most of the family living together with patients with acute coronary syndrome lives with three to four cohabitants, averaging a dependent for home and mostly have their house. These data are consistent with those found in the IBGE census, which found an average of 3.3 residents per household and 73.5% own homes.[11]

Regarding to age, gender, and race of the members living together with the patient, it was observed that the age ranged from 10 to 70 years old: 36.7% being 20 years old, 47.5% from 21 to 50 years old, with a predominance of females (n=89; 56%) and white (n=107; 67%).

As for religion, marital status, education and occupation, it was found that more than half declared being Catholic (n=94; 59.5%), followed by Evangelicals (n=38; 24%). Unmarried (n=121; 76.6%) prevailed when compared to married (n=37; 23.4%). And in most cases, individuals had up to elementary school (n=70; 44.3%), followed by high school (n=52; 32.9%) and higher education (n=36; 22.8%). As to occupation, most were economically active (n=75; 47%).

The family income of most families (n=50) was up to five MW (n=37; 74.0%) and most of them had their own house (n=38; 76.0%).

Regarding the variables related to coronary heart disease, the risk factors found were more sedentary lifestyles, obesity and alcohol consumption (Table 1).

Table 1 - Risk factors distribution of cohabiting family members of patients hospitalized for acute coronary syndrome according to the individual report of each subject – São Paulo, SP, Brazil, 2011

Risk factors	n (%)
Hypertension	18 (11.4)
Diabetes *mellitus*	7 (4.4)
Dyslipidemia	14 (8.9)
Obesity I/II	14 (23.7)
Sedentary lifestyle	136 (86.1)
Alcohol consumption	26 (16.4)
Smoking	24 (15.2)

Studies[1,12] show that social, economic, demographic, technological and cultural changes resulting from the process of urbanization, globalization and industrialization, influenced in recent decades in Brazil, the lifestyle and health of the population. The changes in dietary habits and reduced physical activity justify the prevalence of obesity among Brazilians, which is a major factor in the development of chronic diseases.[12]

Regarding smoking, it was found that the 24 family members who reported the nicotine dependence, nine (37.5%) had very low level of smoking dependence, followed by six (25.0%) with a high degree, four (16.7%) with low dependence, three (12.5%) with an average dependence and two (8.3%) with very high dependence of nicotine according to the Fagerstrom scale.

When evaluating the association between the risk factors of coronary heart disease in relatives of patients hospitalized for the coronary syndrome and sociodemographic variables, it was found a statistical difference that the lower the number of cohabiting, the higher the prevalence of DM. Although not statistically significant, this trend was also for other risk factors except smoking (Table 2).

Table 2 - Association between the number of cohabiting and coronary risk factors in cohabiting family members of patients with acute coronary syndrome – São Paulo, SP, Brazil, 2011

Risk factors	Present or Absent	Number of cohabiting members		p-value*
		1 to 3	4 to 6	
Hypertension	Yes	5	0	0.058
	No	23	22	
DM	Yes	2	0	0.049
	No	26	22	
DLP	Yes	3	0	0.245
	No	25	22	
Smoking	Yes	0	4	0.120
	No	8	4	
Alcohol Consumption	Yes	4	1	0.368
	No	24	21	
Obesity	Yes	3	1	0.620
	No	25	21	
Sedentary lifestyle	Yes	22	21	0.324
	No	6	1	

Regarding gender, income, and race, it was not observed statistically significant differences in tests of association between risk factors for CAD.

In the analysis of coronary risk factors and age, the family members older than 51 years old had a higher prevalence of hypertension, DM and DLP and smoking and alcoholism were present more often in the age range from 21 to 50 years old (Table 3).

Studies show that increasing age is directly proportional to the increase of risk factors for CVDs.[13] Hypertension is one of the major risk factors for CAD and its prevalence varies from 16.7 to 40.3%. Age is related, with significant increase of 39 to 59% of population aged over 60 years.[14]

The DM is among the main risk factors for CVD, as the patients with this disease have a high coronary risk since the myocardial infarction is the most common complication diagnosed in this population.[13] It is estimated that 64 million people will

have diabetes by 2025 and in the developing countries it will be significantly increased in the group of 45-64 years old.[14]

Table 3 - Association between age and coronary risk factors in cohabiting family members of patients with acute coronary syndrome – São Paulo, SP, Brazil, 2011

Risk factors	Present or Absent	Age			p-value*
		Up to 20 years old	21 to 50 years old	51 to 70 years old	
Hypertension	Yes	0	7	11	<0.001
	No	58	68	14	
Diabetes	Yes	0	1	6	<0.001
	No	58	74	25	
Dyslipidemia	Yes	0	5	9	<0.001
	No	58	70	16	
Alcohol consumption	Yes	2	20	4	0.002
	No	56	55	21	
Smoking	Yes	1	21	2	<0.001
	No	57	54	23	

* Fisher's exact test.

DLP is related to atherosclerosis, chronic inflammatory processes associated with the formation of fatty deposits (atheromas) in the walls of arteries, and therefore it favors the acute coronary event.[15] Study showed that older people have a higher prevalence of DLP because of its association with other comorbidities such as diabetes mellitus, obesity, and alcoholism.[15]

Alcoholism and smoking were associated with family aged between 21 and 50 years old. About two billion people consume alcoholic beverages worldwide, and the beginning of this habit begins in adolescence, with the influence of friends associated with the social context, behavior extending into the adulthood.[16] The same study confirmed the prevalence of alcohol use by individuals under 50 years old, and this result may be related to personal difficulties, work and family, which causes individuals to seek alcohol in anticipation of decreasing anxiety, increasing well-being sensations and facilitating social interactions.[16]

Smoking is the third most common risk factor in populations with CVD.[17] Study[18] reported smoking minority in the lower ages of 25 and adults over 65, data that corroborate those found in this study, where most smokers were aged between 21 and 50 years old. Research[19] shows that problems in the family and social setting contribute to the development of risk behaviors such as smoking, whose behavior is directly related to other risk behaviors such as alcohol consumption – a result also found in this study.[20]

By associating the education data to coronary risk factors, it was found that family members with education completed by the elementary school had a higher prevalence of hypertension and DM, while the same group, but with higher education, had a higher prevalence of obesity (Table 4).

Table 4 - Association between education and coronary risk factors in cohabiting family members of patients with acute coronary syndrome – São Paulo, SP, Brazil, 2011

Risk factors	Present or Absent	Education			p-value*
		Up to elementary school	Up to high school	Higher education	
Hypertension	Yes	13	2	3	0.030
	No	57	50	33	
Obesity	Yes	2	2	5	0.050
	No	68	50	31	
Diabetes	Yes	6	0	1	0.045
	No	64	52	35	

* Fisher's exact test.

Hypertension and DM related to the low educational level and study[21] data reveal the existence of the association between higher levels of education and/or family income and lower prevalence of cardiovascular risk factors, probably due to more access to information and to health services, which results in the practice of healthy lifestyle habits.

In the analysis of the risk factors and marital status, it was shown that married people had a higher prevalence of risk factors such as hypertension, diabetes mellitus, alcoholism and DLP (Table 5).

Table 5 - The association between marital status and coronary risk factors in cohabiting family members of patients with acute coronary syndrome – São Paulo, SP, Brazil, 2011

Risk factors	Present or Absent	Marital status		p-value*
		Not married	Married	
Hypertension	Yes	6	12	0.001
	No	115	25	
Diabetes	Yes	2	5	0.002
	No	119	32	
Dyslipidemia	Yes	5	9	< 0.001
	No	116	28	
Alcohol consumption	Yes	15	11	0.010
	No	106	26	

* Fisher's exact test.

As for marital status, it was observed that the DM, hypertension, and DLP were related to married individuals and alcoholism in unmarried families. Study[22] reveals that the marital relationship provides personal happiness and well-being. Al-

though marriage fosters positive emotions, imposes the couple to adapt and, in turn, changing habits and routines for a harmonious coexistence. This may expose the individual to unhealthy lifestyle and development of comorbidities, such as diabetes mellitus, hypertension, and DLP. Alcoholism was associated with unmarried because the alcohol consumption begins in early childhood, adolescence, and young adults. In these phases, the individual is more susceptible to risk behavior, more exposed to negative emotions and more vulnerable to feelings of depression and disillusionment,[22] in turn, causing to consume alcohol in search of better social interaction.

There was more association between occupation with smoking and alcohol consumption, that is, it was observed that patients with a tougher habit of alcohol consumption and cigarette were in the group of economically active family with income less than five minimum wages. This may be related to everyday stress at work and in family relationships, making individuals seek the feeling of well-being promoted by smoking and alcohol. Study23 shows that alcohol use is related to the economic level, due to the interaction of the individual with personal, social and economic systems, showing that, in the face of difficulties, the human being is exposed to risk factors related to lifestyle.

It is extremely important to control the risk factors for chronic diseases to prevent the development of cardiovascular disease. This study evaluated the cardiovascular risk factors in cohabiting family members of patients hospitalized for ACS, as it is believed that the same lifestyle habits that caused the acute coronary event of the patient are the same committed by family members, that is, both share the same factors risks associated with cardiovascular disease.

To act with targeted strategies for prevention, promotion, recovery, treatment adherence, disease control and provide a better quality of life, it is essential to know the reality and the profile not only of hospitalized patients and their cohabiting family members who influence directly and indirectly in the attitudes of the entire family. Thus, it should be considered the individuality, completeness, the factors of modifiable risk and non-modifiable related habits/lifestyle inadequate and conducive to the development of the disease and encourage improvement in socioeconomic indicators to reduce morbidity and mortality of CAD.

Given that there is a high prevalence of cardiovascular risk factors in relatives of patients with coronary artery disease, it is necessary to incorporate nursing interventions for the whole family, that address correction lifestyle inadequate cardiovascular health reducing the incidence and prevalence of cardiac ischemic events and thus the mortality.[24]

The family participates directly in the care of individuals both in disease situations such as health, especially when it is significant in this process. Therefore, there is the importance of adherence to the treatment of patients, promotion and health prevention.[25] For this to occur, there must be cooperation of all family structure and, before that, they must know not only the risk factors and lifestyle habits of patients but also their cohabiting family members to promote education health.

CONCLUSIONS

It was found that the profile of the subjects is mostly female, economically active, family income of up to five minimum wages, low education with religious beliefs and family unit with a high number of cohabiting family members who directly influence the development of the whole group. The more comorbidities were obesity, physical inactivity, and alcohol consumption.

The age over 51 years old had more association with diabetes, hypertension, and DLP; and aged between 21 and 50 years old with the alcoholism and smoking habit. The lowest number of cohabiting was significantly associated with DM and the lowest level of education with hypertension, obesity, and diabetes. The Marital status had more association with DM, hypertension, DLP, and alcoholism.

It is known that the sociodemographic profile interferes with the biopsychosocial relationship and contributes favorably to the development of inappropriate lifestyle habits and risk factors associated with cardiovascular disease and other comorbidities.

Considering the results, in which the family of coronary patients has a significant prevalence of risk factors, it is believed that it is essential that the multidisciplinary team recognizes the importance of establishing health education programs, to establish educational forms that both cover the patient and their cohabiting family members.

ACKNOWLEDGEMENT

Research carried out with the support of the National Scientific and Technological Development Council (CNPq) number PIBIC process/CNPq: 111820 / 2010-3.

REFERENCES

1. Simão AF, Précoma DB, Andrade JP, Correa Filho H, Saraiva JFK, Oliveira GMM, *et al*. Sociedade Brasileira de Cardiologia. I Diretriz Brasileira de Prevenção Cardiovascular. Arq Bras Cardiol. 2013[cited 2011 June 15];101(Supl.2):1-63. Available from: http://publicacoes.cardiol.br/consenso/2013/Diretriz_Prevencao_Cardiovascular.asp
2. Ministério da Saúde (BR). Departamento de Informação e Informática do SUS. Informações de saúde: cadernos de informação de saúde do Brasil, 2011. Brasília: MS; 2011. [cited 2012 Jan 20]. Available from: http://datasus.gov.br/caderno/geral/br/BrasilGeralBR.xls.
3. Ribeiro AG, Cotta RMM, Ribeiro SMR. A promoção da saúde e a prevenção integrada dos fatores de risco para doenças cardiovasculares. Ciênc Saúde Coletiva. 2012[cited 2011 June 15];17(1):7-17. Available from: http://www.scielo.br/scielo. php?script=sci_arttext&pid=S1413-81232012000100004

4. Kannel WB, Dawber TR, Kagan A, Revotskie N, Stokes J. Factors of risck development of coronary heart disease-six years follow-up experience: the Framingham study. Ann Intern Med.1961[cited 2011 June 15];55:33-50. Available from: http://www.ncbi.nlm.nih.gov/pubmed/13751193
5. Ferreira HP, Martins LC, Braga ALF, Garcia MLB. O impacto da doença crônica no cuidador. Rev Bras Clin Med. 2012[cited 2011 June 15];10(4):278-84. Available from: http://files.bvs.br/upload/S/1679-1010/2012/v10n4/a3045.pdf
6. Carmo JT, Puevos AA. A adaptação ao português do Fagestrõm test for nicotine dependence (FTND) para avaliar a dependência e tolerância à nicotina em fumantes brasileiras. Rev Bras Med. 2002[cited 2011 June 15];59(1/2):73-80. Available from: http://www.moreirajr.com.br/revistas.asp?id_materia=1798&fase=imprime
7. Heatherton TF, Kozlowski LT, Frecker RC, Fagerstrom KO. The Fagerstrom test for nicotine dependence: a revision of the Fagerstrom Tolerance Questionnaire. Br J Addict. 1991[cited 2011 June 15];86:1119-27. Available from: http://www.ncbi.nlm.nih.gov/ pubmed/1932883
8. Instituto Brasileiro de Geografia e Estatística (IBGE). Pesquisa de Orçamentos Familiares 2002-2003: análise da disponibilidade domiciliar de alimentos e do estado nutricional no Brasil. Rio de Janeiro (RJ): IBGE; 2004.
9. Strath SJ, Kaminsky LA, Ainsworth BE, Ekelund U, Freedson PS, Gary RA, *et al*. Guide to the Assessment of Physical Activity: clinical and research applications a scientific statement from the American Heart Association Circulation. 2013[cited 2011 June 15];128(20):2259-79. Available from: http://www.ncbi.nlm.nih.gov/pubmed/ 24126387
10. World Health Organization. Obesity: preventing and managing the global epidemic. Report of a WHO Consultation on Obesity. Geneva: World Health Organization; 1998.
11. Instituto Brasileiro de Geografia e Estatística (IBGE). Censo Demográfico 2010. Famílias e Domicílios: resultados da amostra. Rio de Janeiro (RJ): IBGE; 2010.
12. Santos RD, Gagliardi ACM, Xavier HT, Magnoni CD, Cassani R, Lottenberg AM, *et al*. Sociedade Brasileira de Cardiologia. I Diretriz sobre o consumo de gorduras e saúde cardiovascular. Arq Bras Cardiol. 2013[cited 2011 June 15];100(Supl.3):1-40. Available from: http://publicacoes.cardiol.br/consenso/2013/Diretriz_Gorduras.pdf
13. Silva VR, Cade NV, Molina MCB. Coronary risk and associated factors in hypertensive patients at a family health clinic. Rev Enferm UERJ. 2012[cited 2011 June 15];20(4):439-44. Available from: http://www.facenf.uerj.br/v20n4/v20n4a05.pdf
14. Soares GP, Brum JD, Oliveira GMM, Klein CH, Silva NAS. Evolução de indicadores socioeconômicos e da mortalidade cardiovascular em três estados do Brasil. Arq Bras Cardiol. 2013[cited 2011 June 15];100(2):147-56. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0066-782X2013000200007
15. Xavier HT, Izar MC, Faria NJR, Assad MH, Rocha VZ, Sposito AC, *et al*. V Diretriz Brasileira de Dislipidemia e Prevenção da Aterosclerose. Arq Bras Cardiol. 2013[cited 2011 June 15];101(Supl.1):1-22. Available from: http://www.scielo.br/ scielo.php?script=sci_arttext&pid=S0066-782X2013004100001
16. Cavariani MB, Oliveira JB, Correa FK, Lima MCP. Positive expectations towards alcohol use and binge drinking: gender differences in a study from the GENACIS project, São Paulo, Brazil. Cad Saúde Pública.2012[cited 2011 June 15];28(7):1394-404. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0102-311X2012000700017
17. Muniz LC, Schneider BC, Silva ICM, Matijasevich A, Santos IS. Accumulated behavioral risk factors for cardiovascular diseases in Southern Brazil. Rev Saúde Pública. 2012[cited 2011 June 15];46(3):534-42. Available from: http://www.ncbi.nlm.nih.gov/ pubmed/22450564
18. Ministério da Saúde (BR). Vigitel Brasil 2013: vigilância de fatores de risco e proteção para doenças crônicas por inquérito telefônico. Brasília (DF): Ministério da Saúde; 2014.
19. Barreto SM, Giatti L, Casado L, Moura L, Crespo C, Malta DC. Smoking exposure among school children in Brazil. Ciênc Saúde Coletiva. 2010[cited 2011 June 15]; 15(2):3027-34. Available from: http://www.scielo.br/scielo.php?script=sci_ arttext&pid=S1413-81232010000800007
20. Albrecht DS, Kareken DA, Yoder KK. Effects of smoking on D2/D3 striatal receptor availability in alcoholics and social drinkers. National Institutes of Health, Brain Imaging Behav. 2013[cited 2011 June 15];7(3):1-17. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3818334/
21. Souza RKT, Bortoletto MSS, Loch MR, González AD, Matsuo T, Cabrera MAS, *et al*. Prevalência de fatores de risco cardiovascular em pessoas com 40 anos ou mais de idade, em Cambe, Paraná (2011): estudo de base populacional. Epidemiol Serv Saúde. 2013[cited 2011 June 15];22(3):435-44. Available from: http://scielo.iec.pa.gov.br/scielo.php?script=sci_arttext&pid=S1679-49742013000300008
22. Comin FS, Santos MA, Souza RM. Expressão do afeto e bem-estar subjetivo em pessoas casadas. Estud Psicol. 2012[cited 2011 June 15];17(2):321-8. Available from: http://www.scielo.br/pdf/epsic/v17n2/17.pdf
23. Thompson RG, Greenstein E, Grant BF, Hasin DS. Substance-use disorders and poverty as prospective predictors of first-time homelessness in the United States. National Institutes of Health. Am J Public Health. 2013[cited 2011 June 15];103(2):1-13. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3865876/
24. Bulechek GM, Butcher HK, Dochterman JM. Classificação das intervenções de enfermagem – NIC. 5ª ed. Rio de Janeiro: Elsevier; 2010. 944 p.
25. Squarcini CFR, Silva LWS, Reis JF, Pires EPOR, Tonosaki LMD, Ferreira GA. A pessoa idosa, sua família e a hipertensão arterial: cuidados num programa de treinamento físico aeróbio. Rev Temática Kairós Gerontol. 2011[cited 2011 June 15];14(3):105-25. Available from: http://revistas.pucsp.br/index.php/kairos/ article/view/6492/4708.