

CARDIAC RISK ASSESSMENT AMONGST UNDERGRADUATE NURSING STUDENTS

AVALIAÇÃO PARA RISCOS CARDIOVASCULARES EM ESTUDANTES DE ENFERMAGEM

EVALUACIÓN DE RIESGO CARDIOVASCULAR EN ESTUDIANTES DE ENFERMERÍA

Jiovana De Souza Santos¹
 Anna Cláudia Freire de Araújo Patrício²
 Karoline de Lima Alves³
 Karla Fernandes de Albuquerque⁴
 Ivoneide Lucena Pereira⁵
 Iana Virgínia Bezerra Félix¹

¹ Undergraduate student in Nursing at the João Pessoa University Centre – UNIPE. João Pessoa, PB – Brazil.

² RN. Master's student in Nursing. Professor at UNIPE. João Pessoa, PB – Brazil.

³ RN. Master's student at the Postgraduate Programme in Nursing of the Federal University of João Pessoa – UFPB. João Pessoa, PB – Brazil.

⁴ RN. PhD in Health Science. Coordinator Nursing Undergraduate Degree of the UNIPE. João Pessoa, PB – Brazil.

⁵ Psychologist. Master's student at the Postgraduate Programme in Nursing of the UFPB. João Pessoa, PB – Brazil.

Corresponding Author: Jiovana de Souza Santos. E-mail: jiovana_santos@hotmail.com
 Submitted on: 2015/04/14 Approved on: 2015/10/14

ABSTRACT

The study objective was to identify cardiac risks amongst nursing undergraduate degree students. It is a cross-sectional exploratory quantitative survey carried out from March to November 2012. Research subjects were 84 first to third year students at a university in the city of João Pessoa. Data was collected through a questionnaire assessing demographic, personal, family history, clinical data and lifestyle habits. The researchers applied also the International Physical Activity Questionnaire (IPAQ). The study results revealed a predominance of healthy habits and normal clinical conditions. Nevertheless, the researchers found that 38 (33.3%) students had dizziness, 34 (40.5%) headache, 13 (15.5%) alcoholism signs, and 28 (33.3%) were under continuous medication. A total of 61 (72.6%) students had a family history of hypertension and 48 (57.1%) of diabetes. The research subjects' data revealed that 12 (14.3%) had hypertension (HTN); 31 (36.9%) had an increased waist circumference, and 57 (67.9%) led an inactive lifestyle. There was a statistical significance ($p < 0.05$) between BMI and the variables: waist circumference, family history and hypertension, capillary glycaemia, and sedentary lifestyle. There was also significance between waist circumference and family history, BMI and HTN, HTN and diabetes, sedentary lifestyle and high capillary blood glucose levels. The study results revealed possible risk factors associated with cardiovascular disease amongst young nursing students. The study points out to which extent self-care is necessary in order to maintain health and a good quality of life.

Keywords: Cardiovascular Diseases; Risk Factors; Nursing; Nursing Students; Nursing Care.

RESUMO

Objetivou-se identificar os riscos cardiovasculares em estudantes universitários do curso de Enfermagem. Trata-se de pesquisa transversal de caráter exploratório e abordagem quantitativa, realizada no período de março a novembro de 2012, junto a 84 estudantes cursando entre o primeiro e o sexto período do curso de Enfermagem de uma Universidade do município de João Pessoa, PB. Como método, utilizou-se um questionário objetivo contendo dados sociodemográficos, antecedentes pessoais, familiares, dados clínicos e hábitos. Empregou-se ainda o Questionário Internacional de Atividade Física (IPAQ). Quanto aos resultados, observou-se predominância de hábitos saudáveis e manifestações clínicas estáveis, no entanto, merece destaque a tontura em 33,3% (38), cefaleia em 40,5% (34), etilismo em 15,5% (13) e medicamento contínuo em 33,3% (28). Antecedentes familiares: hipertensão 72,6% (61) e diabetes 57,1% (48). Dados pessoais: hipertensão 14,3% (12), circunferência abdominal aumentada 36,9% (31) e insuficientemente ativo 67,9% (57). Há significância estatística ($p < 0,05$) entre IMC e as variáveis: CA, antecedentes familiares e pessoais IAM e HAS, glicemia capilar e atividade física. Ainda houve significância na correlação entre a CA e: antecedentes familiares IAM e HAS, pessoais HAS e diabetes, atividade física e glicemia capilar. Pode-se observar possíveis fatores associados às doenças cardiovasculares em jovens estudantes de enfermagem, havendo a necessidade do cuidado individual para manutenção da saúde e qualidade de vida.

Palavras-chave: Doenças Cardiovasculares; Fatores de Risco; Enfermagem; Estudantes de Enfermagem; Cuidados de Enfermagem.

RESUMEN

El objetivo del presente trabajo ha sido identificar los riesgos cardiovasculares en estudiantes del curso de enfermería. Se trata de un estudio transversal de aproximación exploratoria y cuantitativa llevado a cabo entre marzo y noviembre de 2012, con 84 estudiantes del primero al sexto semestre del curso de enfermería de una universidad de la ciudad de João Pessoa, estado de Paraíba. Como método, se ha utilizado un cuestionario sobre datos demográficos, antecedentes personales y familiares, datos clínicos y hábitos. También se ha utilizado el cuestionario internacional de actividad física (IPAQ). Los resultados han indicado que predominaban los hábitos saludables y las manifestaciones clínicas estables. Sin embargo, hay que mencionar mareos en 33,3% (38), cefaleas en 40,5 % (34), alcoholismo en 15,5 % (13) y medicación continua en 33,3% (28). Los antecedentes familiares eran hipertensión en 72,6% (61) y diabetes en 57,1% (48). Los personales han indicado que un 14,3 % tenía hipertensión (12), circunferencia abdominal aumentada en 36,9% (31) y que el 67,9 % (57) era poco activo. Hay significancia estadística ($p < 0,05$) entre el IMC y las variables: CA, antecedentes

familiares y personales IAM y HAS, glucemia capilar y actividad física. También hay significancia en la correlación entre la CA y antecedentes familiares IAM y HAS y diabetes, actividad física y glucemia capilar. Se han podido observar posibles factores asociados con enfermedades cardiovasculares en jóvenes estudiantes de enfermería lo cual indica la necesidad de establecer planes de cuidados individuales para mantener la salud y la calidad de vida. **Palabras clave:** Enfermedades Cardiovasculares; Factores de Riesgo; Enfermería; Estudiantes de Enfermería; Atención de Enfermería.

INTRODUCTION

Cardiovascular diseases (CVD) are leading cause of death in Brazil. Ischemic heart disease (IHD) and cerebrovascular diseases accounted for 95,449 and 97,860 deaths, respectively; in 2009 alone.¹ Many cardiovascular risk factors (CRF) are modifiable and, if controlled, can reduce mortality rates.

Socio-economic and environmental contexts, habits and lifestyle can be the cause of modifiable CRFs, such as systolic blood pressure (hypertension), diabetes *mellitus* (DM), smoking, alcohol consumption, dyslipidaemia, among others.

Hypertension, in particular, is a major public health problem due to its considerable contribution to morbidity and mortality. It is one of the biggest risk factors for the development of vascular lesions since it may cause malfunctions in target organs such as heart, kidney and brain.² Systolic arterial hypertension (SAH) is categorised as a non-communicable chronic disease.

The World Health Organization (WHO)³ defines non-communicable chronic diseases (NCDs) as medical conditions that last long and progress slowly. They start at a young age and are influenced by life conditions more than by individual choices. The WHO classifies as NCDs cardiovascular disease, cerebrovascular, ischemic, cancers, chronic respiratory diseases and diabetes *mellitus* (DM).³

Worryingly, NCDs are prevalent amongst the young population, as shown by the 2008 National Survey by Household Sampling (PNAD). This survey revealed that 11.2% of adolescent girls and 9.5% of boys had at least one chronic disease.⁴ Therefore, the situation requires health promotion interventions amongst this population in order to track down, diagnose and treat early cardiovascular risks.

The present study proposed the following question: What are the cardiovascular risks amongst undergraduate nursing students? In order to answer such question the authors establish the study objective as to identify cardiovascular risk amongst that population.

METHODOLOGY

This is a cross-sectional exploratory study with a quantitative approach. The study population consisted of 106 young undergraduate nursing students at a university in the city of João Pessoa. Sample size calculation using program *Statdisk*

version 11.1.0 revealed confidence level of 95% and 5% error and sample size was taken down to 84 individuals.

Research subjects should be aged between 20 and 30 years and enrolled in an undergraduate nursing course in a municipality of the city of João Pessoa. Researchers selected randomly first and third year students since others were tied up with external academic activities. All subjects showed preserved ability to answer the questions being able to contribute to this research.

Data collection used a questionnaire divided into three parts. The first dealt with demographic data (age, sex, marital status, number of children); the second, personal and family history (hypertension, diabetes *mellitus* and acute myocardial infarction); the third, clinical data and habits (dizziness, blurred vision, headache, tachycardia, smoking, alcoholism, illegal drugs and continuous prescription drugs use). A posteriori, study subjects answered the International Physical Activity Questionnaire (IPAQ)⁵. Data was collected from March to November 2012.

Blood pressure was measured by auscultation using an aneroid sphygmomanometer and following rigorously the VI Brazilian Guidelines on Hypertension of the Brazilian Society of Cardiology⁶. Before measuring blood pressure, the researchers calculated an estimated systolic blood pressure by palpating the radial pulse, inflating to 20-30 mmHg the estimated level of systolic pressure obtained by palpation. Orthostatic blood measurements were taken after 10 minutes rest at right and left arms once and the highest value was recorded.

Blood glucose testing used blood glucose test strips. Capillary venous blood specimens (from tip of index finger) were collected using disposable stiletos with instrumental reading of Optium Xceed Medi Sense[®]. Testing was performed after an eight hour fasting. Normal values were 100 mg/dL or less, as recommended by the Brazilian Diabetes Society guidelines.

The researchers used the IPAQ short version to assess the students' current physical activity level. The questions referred to those activities performed within the week prior to the interview. The study subjects were categorised according to IPAQ⁵ directions as: sedentary (no physical activity for at least 10 continuous minutes during the week); insufficiently active (physical activities for at least 10 uninterrupted minutes per week).

Respondents were weighed shoeless and with a light outfit using manual Filizola[®] scales and an anthropometric ruler of 1.95 m and 200 kg capacity.⁸ Height was recorded in meters; research

subject standing, facing forward. Calculation of body mass index (BMI) used the formula BMI = weight (kg)/height (m).⁹

Waist circumference (in centimetres) was the lowest measurement of the circumference at the level of the umbilicus, at the end-expiratory movement. Male participants with a waist circumference greater than 94 cm and female participants with a waist circumference greater than 80 cm were considered as having abdominal obesity.¹⁰

Data processing used Statistical for Social Sciences (SPSS), version 19.0. Data analysis observed descriptive and inferential statistics, based on the average and standard deviation of the mean, frequency and percentage. The researchers devised contingency tables; inferential statistics used Pearson's chi-square test of (χ^2) in order to identify possible associations between variables (significance level of 5%).

Research Ethics Committee of the João Pessoa University Centre authorised the research under protocol No. 140212. All participants signed the term of informed consent, as recommended by National Health Council Resolution No 196/96.¹¹

RESULTS

A total of 84 students participated in the study. The mean age was 23.4 ± 6.54 years; 72 (87.5%) were female; 71 participants were single (84.5%); and 72 (85.7%), childless.

Table 1 presents data on study subjects personal habits and clinical manifestations.

Table 1 - Habits and personal clinical manifestations – N = 84 – João Pessoa / PB, 2012

Personal clinical symptoms	N	%
Dizziness		
No	56	66.7%
Yes	28	33.3%
Total	84	100%
Blurred Vision		
No	69	82.1%
Yes	15	17.9%
Total	84	100%
Migraine		
No	50	59.5%
Yes	34	40.5%
Total	84	100%
Tachycardia		
No	73	86.9%
Yes	11	13.1%
Total	84	100%

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Table 1 - Habits and personal clinical manifestations – N = 84 – João Pessoa / PB, 2012

Personal clinical symptoms	N	%
Habits		
Smoking		
No	79	94%
Yes	5	6%
Total	84	100%
Alcohol use		
No	71	84.5%
Yes	13	15.5%
Total	84	100%
Illegal drugs		
No	82	97.6%
Yes	2	2.4%
Total	84	100%
Continuous prescription drugs		
No	56	66.7%
Yes	28	33.3%
Total	84	100%

Source: research data.

Data displayed on Table 1 reveal the predominance of healthy habits and stable clinical symptoms. However, it is worth mentioning the 33.3% (38) dizziness, 40.5% of migraine (34), 15.5% alcohol use (13), and 33.3% of continuous prescription drugs intake (28).

Table 2 displays data on personal and genetic predisposition to cardiovascular risks.

Table 2 - Personal and family history N = 84 – João Pessoa/PB, 2012

Personal (P) Family History (F)	N (P)	% (P)	N (F)	% (F)
Hypertension				
No	72	85.7%	23	27.4%
Yes	12	14.3%	61	72.6%
Total	84	100%	84	100%
Diabetes mellitus				
No	78	92.9%	36	42.9%
Yes	6	7.1%	48	57.1%
Total	84	100%	84	100%
Mi				
No	84	100%	68	81%
Yes	0	0%	16	19%
Total	84	100%	84	100%

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Table 2 - Personal and family history N = 84 – João Pessoa/PB. 2012

Personal (P)	Family History (F)	N (P)	% (P)	N (F)	% (F)
Others					
No		77	91.7%	0	0%
Yes		7	8.4%	0	0%
Total		84	100%	0	0%

Source: research data.

Table 2 data reveals that 61 (72.6%) participants had hypertension and 48 (57.1%) diabetes. Personal history data showed no significant quantitative changes. It is worth highlighting, however, that 12 (14.3%) students had hypertension.

Clinical and anthropometric data reveal that systolic blood pressure averaged 106.8 ± 16.5 mmHg and diastolic blood pressure, 71.6 ± 9.4 mmHg; body mass index was 23.9 ± 4.6 kg / m²; waist circumference, 83.9 ± 10.2 cm; and CBG levels were 79.4 ± 19 mg / dL.

Table 3 displays information about body mass index, waist circumference and physical activity frequency.

The data in Table 3 shows that 15 (17.9%) subjects were overweight; an increased waist circumference was present in 31 (36.9%); and that 57 (67.9%) were insufficiently active.

Table 3 - Body mass index, waist circumference and physical activity classifications N = 84 – João Pessoa / PB, 2012

Classification	N	%
BMI		
Underweight	10	11.9%
Normal weight	50	59.5%
Overweight	9	10.7%
Obesity	15	17.9%
Total	84	100%
Waist Circumference		
Increased	31	36.9%
Normal	53	63.1%
Total	84	100%
Physical Activity		
Active	12	14.3%
Insufficiently active	57	67.9%
Sedentary	15	17.8%
Total	84	100%

Source: research data.

The correlation between body mass index (BMI) and waist circumference with the study variables is displayed on Table 4.

The research adopted a significance level p <0.05.

Table 4 - Inferential statistics, correlation between body mass index and waist circumference and study variables C = 84 – João Pessoa – PB, 2012

	Variable	P
BMI	Waist circumference	0.01*
	Family history (MI and HTN)	0.00*
	Diabetes	0.275
	Personal history (MI and HTN)	0.00*
	Diabetes	0.275
	Physical activity	0.00*
	Capillary blood glucose	0.00*
Waist circumference	Family history (MI and HTN)	0.00*
	Family history of diabetes	0.275
	Personal history (HTN and diabetes)	0.00*
	MI	0.16
	Physical activity	0.00*
	Capillary blood glucose	0.00*

Source: research data.

Data displayed on Table 4 shows statistical significance (p <0.05) between BMI and the following variables: waist circumference, family and personal history MI and HTN, blood capillary glucose and physical activity. There was also statistical significance between waist circumference and family history, MI and HTN, HTN and diabetes, and physical activity and blood capillary glucose.

DISCUSSION

The results demonstrate that the population group represented by the research subjects are aware of the health effects associated with smoking and alcohol intake and that those habits are risk factors for diseases like hypertension and diabetes.

In contrast, a study¹² carried out at the University of Peltas (UFPEL) in 2008 shows the prevalence of alcohol consumption among the 485 students participating in that survey.

Health surveillance is necessary because prevention is decisive amongst this age group. Although not prevalent, dizziness was significantly represented. This symptom may be associated with morbidities, such as hypertension and diabetes or even stress. The link was established in research carried out in 2010, which assessed stress symptoms and dizziness amongst 154 young post graduate students. The research concluded that dizziness and stress are significantly correlated, i.e. students who complained of dizziness had a condition of stress.¹³

Regarding family history aspects, the researchers observed a high rate of hypertension and DM. Such result corroborates the findings of a study carried out in the city of Concordia, state of Santa Catarina from June to August 2010

which assessed blood pressure amongst adult population of both sexes, aged between 20 to 40 years. The study sample comprised 300 subjects whose family history presented a 23.3% of cardiac diseases.

Another study on cardio metabolic risk factors carried out with 236 elderly found hypertension, hyperglycaemia, smoking, increased waist circumference, dyslipidaemia and inadequate diet. In half of the population studied four or more of those factors were present.¹⁵ In such context, the prevention of cardiovascular risks amongst a younger generation is vital to reduce the appearance of the mentioned conditions so people reach old age in better health and enjoying a better quality of life.

The present study findings revealed a high percentage of insufficiently active young people being that one of the risk factors for cardiac diseases. Body mass index is an important determinant of high blood pressure. A study¹⁶ conducted amongst urban low-income population concluded that hypertension is directly proportional to an increase in body mass: overweight (59%) and obese (149%) individuals had prevalence for hypertension higher than those within a normal weight range.

According to the World Health Organization (WHO) a normal body mass index (BMI) in adults is between 18.50 and 24.99 kg/m². Waist circumference measurement is also used to assess health risks. It does not relate to individuals height, but to the amount of intra-abdominal fat that is a reliable risk predictor for metabolic diseases, especially arterial hypertension.³

There is a higher risk of health problems if waist size is ≥ 94 in man and ≥ 80 in women. In case waist sizes are ≥ 102 in men and ≥ 88 in women, the risk of complications substantially increases. Socioeconomic changes resulted in the improvement of people's living conditions. Changes in lifestyle, particularly in eating habits (fast food consumption) and a sedentary lifestyle increase the risk of cardiovascular diseases. Therefore, it is important to be within the normal standards set by the WHO.³

Physical activity and a healthy diet are priorities in health promotion and prevention of chronic diseases campaigns. Several institutions and organizations such as the American Heart Association, the World Health Organization and the American College of Sports Medicine emphasize the importance of regular exercises for the improvement of individual and collective health, especially for CVD prevention and rehabilitation.¹⁷ Several studies demonstrate that a sedentary lifestyle or lack of physical activity, along with smoking and poor diet are risk factors associated with the development of several conditions, mainly those chronic degenerative like heart disease, cancer, hypertension, diabetes *mellitus* and obesity.¹⁸

In most cases, the students' academic study load and their commitments outside university cause them to abandon physical activity and healthy eating. This directly influences the parameters related to cardiovascular risks: too much sitting, in-

creased waist circumference, continuous headache, blurred vision, dizziness, amongst others.

Most participants claimed not to have hypertension. Clinical examination demonstrated levels within the normal range, confirming data of a study with 326 young people of both sexes in public schools of the municipality of Iguaba Grande and São Pedro da Aldeia, state of Rio de Janeiro. This study was carried out from March to October 2010. Systolic blood pressure (mmHg) was 110.8 ± 15.5 for men and 110.1 ± 13.0 for women; diastolic blood pressure (mmHg) was 64.0 ± 10.3 for men and 64.1 ± 9.2 for women. Both levels are within the values established by the Brazilian Society of Cardiology.

Regarding significant correlations, the researchers cite a study²⁰ with 1,894 individuals from January 2000 to March 2001 investigating the association between obesity indicators (BMI, body weight, WHR and high CAD risk) and hypertension in São Paulo. The research subjects were elderly individuals. It was based on data from the Survey on Health, Well-Being and Ageing (SABE), a multicentre epidemiological home-based survey carried out in seven countries of Latin America and the Caribbean coordinated by the Pan American Health Organization. The survey demonstrated that BMI was the indicator that was more associated with hypertension in both sexes. Such conclusion agrees with the present study findings, since the BMI found had a significant difference in regards to other variables.

CONCLUSIONS

In order to assess an individual's cardiovascular risk factors it is essential to identify his profile. The latter allows researchers to develop strategies for disease prevention and health promotion. Considering the objective of this study – to identify cardiovascular risk amongst undergraduate nursing students – its results were, in general, positive. However, the authors identified possible risk factors for cardiovascular disease.

A low adherence to physical activity amongst the participants was observed. Hypertension and diabetes *mellitus* were also observed in the participants' family history data. What is therefore needed are educational interventions in order to prevent physical inactivity and obesity, whose high levels added to a genetic predisposition increase the risk of CVD.

Research data support the conclusion that it is possible to identify factors that influence morbidities which will often manifest themselves in old age. Such conditions are preventable with early detection.

The authors recommend the monitoring of CVD risk in this age group in order to minimize health damage. Promotion of healthy habits can reduce mortality from chronic diseases amongst this group that will make up those professionals responsible for caring for the health of the population.

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