Journal of Applied Medical Sciences, vol. 4, no. 3, 2015, 13-24
ISSN: 2241-2328 (print version), 2241-2336 (online)
Scienpress Ltd, 2015

Study of Life Habits, Blood Pressure and Physical Inactivity in Male Subjects and their correlation with Chronic Diseases

Antonia Dalla Pria Bankoff[1], Carlos Aparecido Zamai[2] and Osmar Jesus Macedo[3]

Abstract

Background: Show that eating habits and lifestyles not suitable for health, can contribute to the early onset of chronic diseases. To study eating habits and lifestyles in male subjects and correlate with chronic diseases. **Method:** Using a questionnaire containing the name, age, lifestyle, nutrition and physical inactivity. Also, it was applied exercise test using the Bruce- exercise test protocol to measure physical effort. **Results:** The results showed high correlations between variables, specifically, heart rate, systolic blood pressure and blood pressure diastólica. As lower correlations were observed in relation to the variable idade. As to lives habits, individuals belonging to two classes and three have higher predisposition to cardiovascular diseases. **Conclusions:** Excessive consumption of red meat, tobacco, alcohol, physical inactivity, stress, intolerance are factors that we should be watchful for our health and the onset of chronic diseases at an early age, specifically, hypertension and diseases cardiovascular, thus, a population of young people with predisposition for Non-communicable chronic diseases- NCDs. The results showed high correlations between variables.

1 Introduction

[1] Recommended the Brazilians, changing habits and distinctive lifestyle. These actions are a response to the continuous increase in cases of diseases that could be prevented by changing habits. Diabetes itself has reached, in that year, 11% of the population aged 40

---

[1]Professora Titular e Professora Visitante Nacional Sênior-Universidade Federal de Mato Grosso do Sul.
[2]Carlos Aparecido Zamai- Professor Doutor e Coordenador do Programa Mexa-se Unicamp.
[3]Osmar Jesus Macedo-Professor Doutor do Curso de Matemática da Universidade Federal de Mato Grosso do Sul.

Article Info: *Received :*July 7, 2015. *Revised :*August 2, 2015.
Published online : September 25, 2015

or more. That represented about 5.3 million Brazilians. Studies have proven that would exist in the country 250,000 new cases per year. The highest incidence occurs among obese and sedentary.

[1] Indicated that through the project 'Brazil Healthy' it was recommended that the Brazilians should to adopt healthy habits. Every year more than 40% of the deaths recorded in the country occur because of non-communicable diseases, such as myocardial infarction, stroke, pulmonary emphysema, cancer and diabetes. These are the main causes of hospitalization and death.These are the leading causes of hospitalization and death. Brazil spends about R$ 15 billion a year on consultation, hospitalizations and surgeries, including transplants. These diseases, however, can be avoided with a simple change in habits and lifestyles. That is why the Ministry of Health launched the Brazil Healthy Project, to encourage the population to adopt different lifestyle habits, with emphasis on physical activity, dietary reeducation and tobacco control.

[2] The physical activity has been shown to be beneficial in reducing several risk factors, providing, for example, improvement in metabolism of fats and carbohydrates, weight control and often controlling hypertension. This practice also contributes to the maintenance of bones, muscles and joints healthier, reduces symptoms of depression and anxiety and is also associated with the prevention of diseases such as diabetes mellitus, cardiovascular diseases, osteoporosis and some cancers, such as colon and breast. Thus, physical activity not only contributes to improving the quality of life of individuals but also generates economic financial

resources with medical treatments In Brazil, physical inactivity, during leisure period, is more prevalent among women, elderly and individuals with low socioeconomic level, but regional population-based surveys are still rare in our country [3,4].

In Brazil, the physical activity levels during leisure period of the adult population are low (15%) and only 18.2% consume five servings of fruits and vegetables five or more days per week. While 34% consume foods with high fat content and 28% consume soft drinks five or more days per week, which contributes to the increased prevalence of overweight and obesity, with rates of 48% and 14% of adults, respectively [5].

Cardiovascular diseases (CVD) are, in Brazil, the leading causes of death in women and men. They are responsible for about 20% of all deaths in individuals over 30 years. According to the Ministry of Health, in 2009 there were 962,931 deaths in individuals over 30 years. Because of ischemic heart disease (IHD) there were 95,449 deaths, and cerebrovascular diseases (CVD) were responsible for 97,860 deaths. The cardiovascular causes attributable to atherosclerosis were responsible for 193,309 deaths [6].

Degenerative cardiovascular diseases may have their cause associated with increased life expectancy that generates natural and progressive degenerative changes but also due to changes in lifestyle habits. They are the leading causes of death and disability worldwide and are responsible for 59% of the 56.5 million deaths worldwide [7].

Individuals in physically active occupations are at risk 2 to 3 times less of heart attacks than individuals who work in sedentary activities. Even more, the odds of surviving a heart attack increases substantially for those with an activity or a lifestyle that impose high physical demands. Physical activity also modifies, favorably, some of the most important risk factors for Coronary Heart Disease – CHD [8]. Regular aerobic exercise, lowers high blood pressure, reduces excessive body fat and improves blood lipid profile. The mechanism of blood clotting can be normalized by exercising on the rough surface of a coronary artery. Regular exercise can also improve myocardial blood flow and slow the progression of heart disease, or at least maintain an adequate blood supply to the heart muscle to compensate the coronary arteries narrowed by fatty deposits within its walls [9,10].

Hypertension is the major risk factor for early death amenable to prevention worldwide. The World Health Organization considers hypertension above smoking as a preventable cardiovascular risk factor and estimates that 25% of the adult population, that is, about 1.25 billion people, will suffer hypertension in 2025, which will be responsible for approximately 13% of global mortality [11].

According [12] (Surveillance of Risk and Protective Factors for Chronic Diseases), hypertension reaches 22.7% of Brazilian adults. Diagnosis in women (25.4%) is more common than among men (19.5%). The frequency of the disease increases over the years. If between 18 and 24 years, only 5.4% of the population reported having been diagnosed hypertensive, at 55 years the proportion is 10 times higher, reaching more than half the population (50.5%) studied. From the age of 65, in Brazilians, the same condition is observed in 59.7%. The highest frequency of diagnosis in women occurs in all age groups. The research also indicates that the education level has a strong influence on the diagnosis of the disease among women. While 34.4% of women with up to eight years of education reported having been diagnosed with hypertension, the percentage is lower - 14.2% - among women with higher education level.

2 Material and Methods

2.1 Population

We evaluated 37 male subjects from 29 to 53 years, mean age 42.3 years, using a questionnaire developed for this research by the laboratory of postural assessment and electromyography, containing name, age, lifestyle habits, diet and sedentarism. In addition to the questionnaire, we applied cardiac effort test using the Bruce protocol (Table 1). The work was developed at the University of Campinas during the Programa Mexa-se Unicamp (Get Active Unicamp Program) - Public Development Policies on Health Promotion - University of Campinas. The project in was approved by the Ethics Committee of Unicamp, number 431/2011.

Table 1: Representative model of the Bruce Protocol

Phases	Mph	%inclination	VO2max	METs	min
1	1.7	10	15	4	1
2	2.5	12	25	7	3
3	3.4	14	35	10	3
4	4.2	16	45	13	3
5	5.0	18	55	16	3
6	5.5	20	65	19	3
7	6,0	22	75	22	3

[13]

2.2 Material used for Cardiac Effort Test

We used the Ergometry-TEB System which is composed by a Treadmill Apex 2200, two monitors, with setting for six and others protocols that meet the speed limits and inclination of the system. The system is prepared to act in automatic and semi-automatic modes and emergency stop. It is a system made up of 13 simultaneous channels and allows us to perform exercise tests with the classic configuration of the three derivations MV5, D2M and V2M, this latter was the configuration we used. This system begins with a 1.5 mph speed, containing seven phases.

2.3 Development of this Study

The thirty-seven subjects who used to attend the Get Active Unicamp Program were invited to go to the Laboratory of Postural Assessment and Electromyography of School of Physical Education of University of Campinas to participate in the research. All of them signed an Informed Consent and then the Coordinator of the Research Project conducted the presentation of the questionnaire through Power point, explaining the questions. After the presentation and explanations, the questionnaires were distributed individually.

2.4 Data Acquisition

During the ergometric evaluation the men wore shorts to facilitate the electrodes placement according to the selected derivation. The electrodes were from 3M (Electrode for cardiac monitoring) Ag/AgCl, with adhesive gel. All participants signed the Informed Consent prior to the beginning of the evaluations.

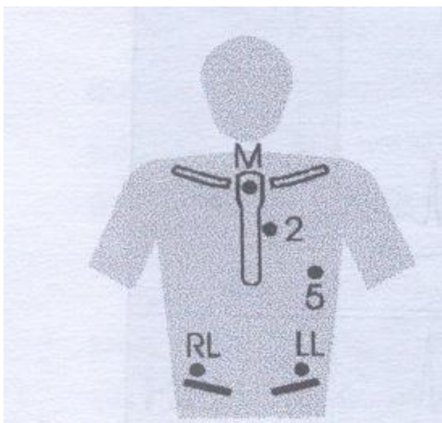

Figure 1: Model representing the electrodes placement.

The men were asked to attend the assessments places (Laboratory of Postural Assessment and Electromyography of School of Physical Education of University of Campinas) one hour before the evaluations. They also received a laboratory folder a week in advance with the following guidelines:

a) Eating up to two hours before the start of the Protocol;
b) Avoiding any kind of physical activity the day before the Protocol;
c) Bringing suitable clothes for the realization of the Protocol (shorts and sneakers);
d) Preventing abuses and excesses the night before;
e) Sleeping 6 to 8 hours the day before the assessment day;

f) Avoiding using sedatives; and communicate any changes in health condition in the last 24 hours.

3 Results

For purposes of results statistical calculations in the treadmill test using the Bruce protocol with respect to heart rate, systolic blood pressure and diastolic blood pressure we considered the phase at which it was possible to obtain data from all the individuals, which occurred in the resting phase, stage 1, stage 2, recovery 3 and recovery 4. The questionnaire questions considered in this study were: age, eating habits and unhealthy habits.

We used the multivariate technique of Principal Component Analysis as statistical model, which aims to take the variables $X_{1,}$ $X_{2.......}X_p$ and find their linear combinations to produce the so-called principal components, uncorrelated and that can faithfully describe the variance of the original data. The statistical analysis of the data was developed using the software R Core Team (2013). In the correlation matrix among the sixteen variables, as Table 2, we can see that there are relatively high correlations between variables, thus indicating the adequacy of applying the Principal Components method to the dataset.

Table 2: Correlation matrix for data age; heart rate - HR; systolic blood pressure - SP and diastolic blood pressure - DP of the thirty-seven subjects in the resting - R phase; stages 1 and 2; recovery phases - R 3 and 4, belonging to the Get Active Unicamp Program.

	Age X_1	RHR X_2	RSP X_3	RDP X_4	RH1 X_5	SP1 X_6	DP1 X_7	RH2 X_8	SP2 X_9	DP2 X_{10}	RHR3 X_{11}	RSP3 X_{12}	RDP3 X_{13}	RHR4 X_{14}	RSP4 X_{15}	RDP4 X_{16}
X_1	1															
X_2	0.46	1														
X_3	0.39	**0.50**	1													
X_4	0.43	**0.60**	**0.88**	1												
X_5	0.33	**0.70**	0.44	0.36	1											
X_6	**0.54**	**0.65**	**0.81**	**0.74**	**0.63**	1										
X_7	0.35	0.35	**0.79**	**0.76**	0.42	**0.81**	1									
X_8	0.26	**0.72**	0.43	0.41	**0.91**	**0.61**	0.43	1								
X_9	0.45	**0.62**	**0.76**	**0.69**	**0.62**	**0.95**	**0.77**	**0.62**	1							
X_{10}	0.39	0.37	**0.73**	**0.77**	0.33	**0.78**	**0.92**	0.40	**0.74**	1						
X_{11}	0.12	0.48	0.02	0.11	0.35	0.18	-0.04	0.49	0.11	0.07	1					
X_{12}	0.34	0.41	**0.76**	**0.72**	0.40	**0.83**	**0.78**	0.44	**0.82**	**0.79**	0.10	1				
X_{13}	0.32	0.33	**0.77**	**0.81**	0.32	**0.71**	**0.87**	0.36	**0.67**	**0.91**	0.02	**0.76**	1			
X_{14}	0.15	0.44	-0.03	0.04	0.38	0.16	-0.11	**0.53**	0.13	0.03	**0.88**	0.11	-0.07	1		
X_{15}	0.33	0.44	**0.78**	**0.71**	0.46	**0.80**	**0.82**	0.47	**0.83**	**0.76**	-0.01	**0.91**	**0.78**	0.03	1	
X_{16}	0.22	0.26	**0.71**	**0.74**	0.30	**0.65**	**0.85**	0.35	**0.65**	**0.88**	-0.11	**0.73**	**0.93**	-0.07	**0.81**	1

RHR, HR1, HR2, HR3 and HR4 - Resting Heart Rate; Heart Rate stage 1; Heart Rate Stage 2; Heart Rate Stage 3 recovery and Heart Rate Stage 4 at resting.

RSP, SP1, SP2, RSP3 and RSP4 - Resting systolic blood pressure; systolic blood pressure stage 1; systolic blood pressure stage 2; systolic blood pressure stage 3 recovery and systolic blood pressure stage 4 recovery.

RDP, DP1, DP2, RDP3 and RDP4 - Resting diastolic blood pressure; diastolic blood pressure stage 1; diastolic blood pressure stage 2; diastolic blood pressure stage 3 recovery and diastolic blood pressure stage 4 recovery.

Table 2 shows the symmetric matrix of correlations between the variables X_1, X_2, ..., X_{16} of the numerical data regarding the variables. The main diagonal values are always equal to one (1) because it corresponds to the correlation of the variable of line i with itself in column i, i = 1,2, ..., 16. Values higher than or equal to 0.50 indicate that the correlation between the variables is high and they are in bold in Table 1 for easy viewing.

From the information of the correlation matrix, Table 1, we obtained the 16 eigenvalues and the 16 corresponding eigenvalues. The linear combination coefficients of the

variables X_1, X_2, ..., X_{16} that produce the principal components PC_1, PC_2, ..., PC_{16} are the values obtained on the eigenvalues. We observed that the first two components explain about 76% of the data variability. In this case, it was possible to reduce the 16 original variables of difficult analyze by only two principal components. The values of these two components serve as indices for each subject (total of 37). The PC1 attributed the lowest rate to the subject number 5 (-5.655) and the highest rate to the subject number 28 (7.123) and PC2 attributed the lowest rate to the subject number 13 (-6.6) and the highest to the subject number 36 (3.08). To analyze the variables on the lifestyle habits we considered for the PC1 the following class intervals: [5,65; -1,39]; [-1,39; 2,86]; [2,86; 7,12].
It was a challenge to give a proper interpretation of the results during the principal components analysis. Given this objective, we have Table 2 showing contingency between the classes Principal Component 1 with variables related to lifestyle habits, diet and sedentarism. The indices obtained for subjects in the principal components 1 and 2 are shown in Table 2.

Table 3: Indices for subjects in the sample obtained by the principal components 1 and 2.

Subjects	PC1	PC2	Subjects	PC1	PC2
1	-4.1743594	-0.81752437	20	-1.5022933	1.21109167
2	-3.3891938	0.33155208	21	-1.0296628	1.16509703
3	-3.2786643	-0.43319992	22	1.9763045	0.66819656
4	-3.5302261	2.25487005	23	-1.9058799	0.29824582
5	**-5.6545855**	-1.17933212	24	-3.2932433	-0.01592697
6	3.3471496	1.49692831	25	-0.2761525	-0.95346975
7	1.2904537	-0.38273235	26	-2.6314124	-0.47044201
8	3.2907630	-0.34335352	27	1.4902682	1.99127322
9	-0.0109199	-0.76987049	28	**7.1234351**	1.43634187
10	-2.3328172	-1.48790409	29	-0.6360935	2.47553350
11	-0.4747830	1.82581327	30	-3.3997007	0.56789451
12	-0.4531032	-1.49583315	31	3.2422033	0.85962134
13	5.7106057	**-6.59954092**	32	6.4992169	2.05699468
14	-1.2869006	1.15973857	33	2.7513826	-1.31015025
15	-2.8288125	-0.39510213	34	1.8535475	-1.14350930
16	0.4663726	-1.49611161	35	1.2889295	-0.92856115
17	-2.2335694	-1.12907600	36	2.4791423	**3.08023699**
18	-0.5746598	-0.56052759	37	2.5497031	0.17336478
19	-0.4624441	-1.14062658			

PC1: Principal Component 1
PC2: Principal Component 2

Table 3 shows the rates obtained by the principal components 1 and 2. To represent data of a continuous variable in a contingency table it is necessary to create class intervals. First we defined the number of classes we wanted (we tested multiple numbers and the three classes presented the best information). For this study we defined the three classes as follows: (highest value - lowest value) divided by the number of classes, thus subsidizing the formation of the tables 04 and 05.
Our questionnaire had the following variables: consumption of red meat; how many days per week; how many times per day; stress; intolerance; alcohol consumption; how many days consuming alcohol in the week; how often consume alcohol per day; medicament consumption; medicament consumption for hypertension; consumption of other

medicaments; physical activity; tobacco use; smoking how many times a day.

Table 4: Contingency table between the Principal Component 1 and the variables on the lifestyle habits.

Classes of Principal Component 1	**Number of days per week of red meat consumption**				**How many times a day of red meat consumption**	
	4	5	6	7	1	2
[-5.6545855; -1.395245]	0	1	7	5	3	10
[-1.395245; 2.864095]	2	0	3	13	2	16
[2.864095; 7.123435]	0	0	0	6	0	6

	Go through stressful situations		**Consider intolerant**		**Drink alcohol**	
	No	Yes	No	Yes	No	Yes
[-5.6545855; -1.395245]	4	9	12	1	12	1
[-1.395245; 2.864095]	3	15	8	10	8	10
[2.864095; 7.123435]	0	6	0	6	0	6

	Drink alcohol how many times a week				**Tobacco use**	
	1	2	3	4 or more	No	Yes
[-5.6545855; -1,395245]	4	4	2	3	9	4
[-1.395245; 2.864095]	3	2	1	12	4	14
[2.864095; 7.123435]	0	0	0	6	0	6

	Smoke how many cigarettes per day				**Consume alcohol how many times a day**	
	0	10	12	14 or more	1	2 or more
[-5.6545855; -1.395245]	9	1	2	1	9	4
[-1.395245; 2.864095]	4	2	2	10	16	2
[2.864095; 7.123435]	0	0	0	6	6	0

	Do physical activity			
	2 times a week	3 times a week	Play soccer	No
[-5.6545855; -1.395245]	5	3	2	3
[-1.395245; 2.864095]	2	1	2	13
[2.864095; 7.123435]	0	0	0	6

In Table 4 we can observe that the subjects classified in the second and third class interval of the principal component answered questions about lifestyle habits that predispose them to noncommunicable chronic diseases earlier in relation to age. Habits not recommended by the Ministry of Health. Therefore, positive indices for this principal component indicate that the subjects do not have adequate lifestyle habits. This same observation was verified after analysis of the indices of principal component 2. In class two we found for all variables the highest concentration of individuals and lower concentration in class three, constituting thus individuals with high correlations of risk factors. In relation to sedentary there was also higher concentration of individuals in classes 2 and 3.

Table 5: Contingency table between Principal Component 1 and variables on medication for hypertension, age, heart rate, systolic blood pressure and diastolic blood pressure.

Classes of Principal Component 1	**Age (in years)**				**Take medication for hypertension**	
	[29, 34]	[35, 40]	[41, 46]	Over 46	No	Yes
[-5.6545855; -1.395245]	5	1	6	1	13	0
[-1.395245; 2.864095]	0	3	8	5	14	4
[2.864095; 7.123435]	0	2	1	3	2	4
	RHR - Resting Heart Rate					
	[47, 57]	[58, 68]	[69, 79]	Over 80		
[-5.6545855; -1.395245]	5	6	2	0		
[-1.395245; 2.864095]	4	6	6	2		
[2.864095; 7.123435]	1	0	2	3		
	RSBP - Resting Systolic Blood Pressure					
	[100, 118]	[119, 137]	[138, 156]	[157, 175]		
[-5.6545855; -1.395245]	9	4	0	0		
[-1.395245; 2.864095]	3	10	5	0		
[2.864095; 7.123435]	0	1	3	2		
	RDBP - Resting Diastolic Blood Pressure					
	[64, 74]	[75, 84]	[85, 94]	[95, 105]		
[-5,6545855; -1,395245]	4	9	0	0		
[-1,395245; 2,864095]	1	4	9	4		
[2,864095; 7,123435]	0	0	1	5		

In Table 5, regarding age group, the subjects were between 29-53 years and we noted that eight of them were already taking antihypertensive medication. As to the heart rate at resting only five individuals were in the classes 2 and 3 with heart rate higher than 80 bpm. As to the systolic blood pressure at resting only five individuals were in the class 2 and three were in the class three with pressure levels between 138-156 mmHg. We observed two subjects in the class 3 with pressure levels between 157-175 mmHg. For diastolic blood pressure at resting there was higher concentration of individuals in the classes 2 and 3 with pressure levels between 85-94 and 95-105 mmHg. If we compare the pressure levels of the classes 2 and 3 between diastolic blood pressure in number of individuals with systolic blood pressure, the diastolic blood pressure is higher. Individuals belonging to the second class have a distribution close to the symmetry in the variables, age, RHR, RSBP and RDBP, indicating a warning about heart health. Individuals belonging to the first class of the principal component are classified in the variables RHR, RSBP and RDBP with values less worrying from the heart health point of view. We could not observe clearly the results obtained for the principal component number 2 because the distribution of data in relation to the variables age, RHR, RSBP, RDBP did not present a dependency relationship that could be observed with evidence.

It is worth remembering that the heart rate (HR) is primarily mediated by the direct activity of the autonomic nervous system (ANS), through the sympathetic and parasympathetic branches on the rhythmicity of the sinus node with a predominance of vagal activity (parasympathetic) at resting and sympathetic during exercise[14]. According [14], a low resting heart rate tends to represent a good picture of health, while higher values are apparently related to increased mortality risk. Systolic BP at resting usually varies between 110 and 140 mmHg and diastolic BP between 60 and 80 mmHg [15, 16]. The results clearly show that individuals from the classes 2 and 3 have a higher predisposition to cardiovascular diseases.

4 Discussion

The impact of scientific and technological development on the population living conditions have led to increased life expectancy, exposing the population to a higher risk of developing noncommunicable chronic diseases (NCDs). Both in developed and developing countries these diseases are on the top positions in the statistics of mortality worldwide [17,18] . Projections for the year 2020 show that mortality due to chronic degenerative diseases should represent 73% of deaths worldwide [19].

In Brazil, besides the increased prevalence of chronic diseases, there is the challenge of new and old diseases coexistence, since the high magnitude of infectious and parasitic diseases and regional inequalities afforded by differences in income distribution, education and public policy is continuing increasing[20].There are important Brazilian population studies on socioeconomic factors and prevalence of risk factors for NCDs [21,22]. However, in national and international studies, little is known about the impact of these risk factors for NCDs in the general population quality of life. It is known that for noncommunicable chronic diseases there are non-modifiable and modifiable risk factors. The non-modifiable factors are: age, gender and race, and the modifiable are those that are part of the subject's lifestyle, smoking, excessive alcohol consumption, obesity, dyslipidemia, excessive salt intake, inadequate intake of fruit and vegetables, stress and physical inactivity [23].

[9]studied the events of the cardiac cycles in sedentary women and the results showed a strong association between lifestyle habits and relations with noncommunicable chronic diseases, specifically in relation to high levels of systolic blood pressure, diastolic blood pressure and heart rate.

That study found that risk factors, altered pressure levels, excessive alcohol consumption, smoking, excessive meat consumption, sedentarism lifestyle and others are associated with a worse Quality of Life, and also, high correlations with heart diseases. Studies in the United States of America indicate that the relative risk of a person having comorbidity is much higher if he/she has low physical capacity [24,25]. Hypertension might result limitation regarding individual daily activities. Although hypertension is characterized as an asymptomatic disease, individuals with abnormal pressure levels have higher frequency of symptoms of headache, anxiety, asthenia, sleep disorders, than the normotensive [26]. Studies show an association between good control of systolic hypertension with treatment and improved quality of life [27,28]. The pressure levels control and health education have been suggested as one way to encourage treatment adherence and improved quality of life.

In our study, in Table 02 (numbers in bold means high correlations), we verified the results which show the levels of correlations between variables. The age variable, that is an unmodified variable, was correlated with systolic blood pressure at resting and at stage 1; diastolic at resting and heart rate in stage 1. In this study age was a dependent factor on pressure levels. Heart rate variable was correlated with systolic blood pressure at resting, on stage 1 and stage 2 and with diastolic blood pressure in stages 1 and 2. [10] in studies on the events of the cardiac cycles in sedentary subjects, found correlation between the age factor and cardiac cycles, as well as heart rate with blood pressure levels. The variable systolic pressure at resting showed correlations with diastolic pressure at resting, stage 1, stage 2 and stage 4 recovery and with itself on stage 2, 3 and 4 recovery. Diastolic blood pressure showed correlations with systolic pressure stage 1, stage 2 and stage 4 in recovery, and with itself on stage 2, recovery stage 3 and 4.

Table 04 shows the contingency between Principal Component 1 and the variables on the lifestyle habits considered harmful to health. We found that the subjects allocation in intervals 2 and 3 are higher, it means they are very close to risk factors for noncommunicable chronic diseases, especially cardiovascular. In this table, we can see the habits of meat consumption, alcohol, tobacco, stress intolerance and sedentarism, habits that lead the development of earlier noncommunicable chronic diseases, noting they are modifiable factors and depend directly on the subject's lifestyle changing.

Table 05 presents contingencies between Principal Component 1 and variables on medication for hypertension, age, heart rate, systolic blood pressure and diastolic blood pressure. Regarding the consumption of antihypertensive medication, there were 8 subjects that use this medication, pointing out that the individuals are between 29 and 53 years. As for pressure levels, two individuals were in the third class with pressure levels (RSBP) between 157-175 mmHg, and (RDBP) there were four individuals in class 2 and 5 individuals in class 3 with pressure levels between 95-105 mmHg . With these results we observed there are high correlations between the studied variables.

5 Consideration and Conclusion

The eating habits of each individual from birth constitute a family culture passed from generation to generation, and often these habits can cause health problems in the future or not. Other lifestyle habits (good or harmful to health) can also be made from the family environment. Already, the lifestyle of each is an individual choice. "Lifestyle is the way in which a person or a group of people experience the world and, consequently, behave and make choices. But that's only part of what defines a lifestyle. " Excessive consumption of red meat, tobacco, alcohol, physical inactivity, stress, intolerance are factors that we should be watchful for our health and the onset of chronic diseases at an early age, specifically, hypertension and cardiovascular disease, thus constituting a population of young people with predisposition for NCDs. The results showed high correlations between variables.There were high correlations between the variable age with pressure levels at resting and during various stages of the Bruce treadmill test; The resting heart rate showed correlations with pressure levels at resting and during various stages of the Bruce treadmill test.

As to lifestyle habits**:** Most of the subjects eat red meat seven days a week and twice a day; Thirty individuals said they go through stressful situations and 17 considered themselves intolerant; Twenty one individuals ingest alcohol more than four or more times a week and 8 two or more times a day; Seventeen subjects smoke more than 14 cigarettes per day; Twenty two individuals do not perform any physical activity.

ACKNOWLEDGEMENTS: Our thanks to the participants of this research for believing that the Program Physical Activity and Exercise could modify their quality of life.

References

[1] Ministério da saúde. Uma análise da situação de saúde no Brasil. Secretaria de Vigilância em Saúde. Departamento de Análise de Situação em Saúde. Brasília, 1ª ed, 2005, disponível em http://bvsms.saude.gov.br/bvs/publicacoes/saude_brasil_2005parte1.pdf acesso em 22 de janeiro de 2014.

[2] Schmidt MI, Duncan BB, Stevens A, Luft V, Iser BPM (2010) Doenças crônicas não transmissíveis no Brasil: mortalidade, morbidade e fatores de risco. In: Ministério da Saúde. Saúde Brasil 2009: uma análise da situação de saúde e da Agenda Nacional e Internacional de Prioridades em Saúde, 2010, Brasília, p.111-36.

[3] Bareta E, Bareta M, Peres KG. Nível de atividade física e fatores associados em adultos no Município de Joaçaba, Santa Catarina, Brasil. Cad. Saúde Pública, Rio de Janeiro, 2007, 23, 7, 1595-1602.

[4] Chrestani MA, Santos IS, Matijasevich AM. Hipertensão arterial sistêmica auto-referida: validação diagnóstica em estudo de base populacional. Cad. Saúde Pública, 2009, 25 , 11, 2395-2406.

[5] Ministério da saúde. Plano de Ações Estratégicas para o enfrentamento das doenças Crônicas não Transmissíveis no Brasil (2011-2022). Secretaria de Vigilância em Saúde. Departamento de Análise de Situação de Saúde. Coordenação Geral de Doenças e Agravos Não Transmissíveis, Guia de Vigilância Epidemiológica, Brasília, 1ªed, 2011.

[6] Mansur AP, Favarato D. Mortalidade por Doenças Cardiovasculares no Brasil e na Região Metropolitana de São Paulo: Atualização 2011, Arq Bras Cardiol, 2012, 99, 2, 755-761.

[7] Organização Pan-Americana da Saúde. Doenças crônico-degenerativas e obesidade: estratégia mundial sobre alimentação saudável, atividade física e saúde. Brasília: Organização Pan-Americana da Saúde (OPAS), 2007, 148p.

[8] Zamai CA et al. Estudo dos fatores de risco para o desenvolvimento de doenças crônicas não transmissíveis entre funcionários.Revista Conexões, 2008, 6 , 1, 14-30.

[9] Bankoff A D P, Zamai C A, Rocha J, Guimarães P RM . Study on little active and sedentary women: Comparison between protocols and prospects for admission in physical activity program. Open Journal of Preventive Medicine, 2013, 3, 1, 413-419.

[10] Bankoff ADP, Zamai CA. Effects of a Physical Activity Program on Cardiac Cycle Events in Sedentary Individuals. J Clinic Experiment Cardiol, 2012, 5, 3,177-186.

[11] Ministério da Saúde (2011) Secretaria de Vigilância em Saúde. Secretaria de Gestão Estratégica e Participativa. Vigitel Brasil 2010: Vigilância de fatores de risco e proteção para doenças crônicas por inquérito telefônico. Brasília. Disponível em http://bvsms.saude.gov.br/bvs/publicacoes/vigitel_2010.pdf. Acesso em 05 de dezembro de 2013.

[12] Ministério da saúde. Secretaria de Vigilância em Saúde. Plano de Ações Estratégicas para o enfrentamento das doenças Crônicas não Transmissíveis no Brasil. Secretaria de Vigilância em Saúde. Departamento de Análise de Situação de Saúde. Coordenação Geral de Doenças e Agravos Não Transmissíveis, Guia de Vigilância Epidemiológica, 2012, Brasília.

[13] Araujo CGS Manual de Teste de Esforço. 2ª ed, Rio de Janeiro: Ao Livro Técnico, 1986,p. 286.

[14] Guyton AC, Hall JE .Tratado de fisiologia médica. 11ª ed. Rio de Janeiro: Elselvier, 2006,548 p.
[15] Lessa I. Epidemiologia da hipertensão arterial. In: Lessa I, organizador. O adulto brasileiro e as doenças da modernidade. Epidemiologia das doenças crônicas não-transmissíveis. São Paulo: Hucitec, Rio de Janeiro: ABRASCO, 1998, 77-96.
[16] Lima MT, Bucher JSNF, Lima JW de O. A Hipertensão Arterial sob o olhar de uma população carente: Estudo exploratório a partir dos conhecimentos, atitudes e práticas. *Cad. Saúde Publica*, 2004, 20, 4, 1079-1087.
[17] Lopez AD. The evolution of the Global Burden of Disease framework for disease, injury and risk factor quantification: developing the evidence base for national, regional and global public health action. *Globalization and Health*, 2005, 1,5, 1-8.
[18] Wilson KM, Satterfield DW . Where Are We to Be in These Times? The Place of Chronic Disease Prevention in Community Health Promotion.*Prev Chronic Dis*, 2007, 4, 3,A74.
[19] Mathers CD, Loncar D. Projections of Global Mortality and Burden of Disease from 2002 to 2030. PLoS.Med, 2006, 3, 11, e442.
[20] Malta DC, Cezário AC, Moura L, Morais Neto OL, Brito JJ. A construção da vigilância e prevenção das doenças crônicas não transmissíveis no contexto do Sistema Único de Saúde. *Epidemiol. Serv. Saúde*, 2006, 15, 3, 47-65.
[21] Marcopito LF et al. Prevalência de alguns fatores de risco para doenças crônicas na cidade de São Paulo. Rev Saúde Publica, 2005, 39, 5, 738-745.
[22] Castro RAA, Moncau JEC, Marcopito LF. Prevalência de Hipertensão Arterial Sistêmica na Cidade de Formiga, MG. Arq.Bras.Cardiol, 2007, 88,3, 334-339.
[23] Bankoff ADP et al. Estudo das variáveis da pressão arterial sistólica e diastólica da população de Votuporanga-SP durante a Semana do Coração. Anais Congresso Brasileiro de Atividade Física e Saúde. Florianópolis, 2001,148 p.
[24] Lee LM, Hsich S, Paffenbarger RS. Exercise intensity and longevity in men. The Harvard Alumni Healthy Study.*JAMA*, 1995, 273, 15, 1179-1184.
[25] Blair SN, Goodyear NN, Gibsons LW. Physical fitness and incidence of hypertension in healthy normotensive men.*JAMA*, 1984, 252, 4, 487-490.
[26] Cutler JA et al. Trends in hypertension prevalence, awareness, treatment and control rates in United States adults between 1988-1994 and 1999-2004.*Hypertension*, 2008,52,5, 818-827.
[27] Erickson SR, Williams BC, Gruppen LD. Perceived symptoms and health-related quality of life reported by uncomplicated hypertensive patients compared to normal controls. *J Hum Hypertens*, 2001, 15, 8, 539-548.
[28] Wiklund I, Halling K, Ryden-Bergsten T, Fletcher A. Does lowering the blood pressure improve the mood? Quality-of-life results from the Hypertension Optimal Treatment (HOT) study. *Blood Press*, 1997, 6, 6,357-364.