

Prevalence of Cardiovascular Risk Factors in Low Income Women

ORIGINAL

**Bárbara Marques Anginoni¹,
Vinicius Batista Santos²,
Solange Guizilini³,
Camila de Souza Carneiro⁴,
Suelen Alves Oliveira⁵,
Regimar Carla Machado⁶,
Rita Simone Lopes Moreira⁷**

Abstract

Goals: Identify the most prevalent risk factors for developing cardiovascular diseases (CVD) in low-income women; verify the relation between the prevalence of risk factors to develop CVD and social economic factors and identify beliefs of death without relation to the main diseases affecting females.

Methods: Interview of 100 cleaning ladies in São Paulo University Hospital. It was used a quiz composed by 25 closed questions based on VIGITEL/2006 quiz, Health Ministry, a risk factor surveillance quiz.

Results: The most prevalent cardiovascular risk factor was hypertension followed by smoking. Most of the women carrying cardiovascular risk factors were over 55 years old. It was also verified the relation between a higher income and higher education to CVD deaths.

Conclusion: In order to reduce mortality by CVD, it is necessary to provide more information to these women about the main risks of developing such diseases through prevention programs, specially among groups with more vulnerability

- 1 Nurse. Master in Nursing EEU SP. Specialist for Cardiology Program at UNIFESP Multidisciplinary Residency, *.
- 2 Nurse. Master of Science by UNIFESP Nursing, *.
- 3 Physiotherapist. PhD in Sciences Graduate Cardiology Program, UNIFESP. Professor of Interdisciplinary Graduate Program in Health Sciences, UNIFESP, *.
- 4 Nurse. PhD in Nursing from UNIFESP Nursing, *.
- 5 Nurse. PhD in Applied Biology (UNESP, Botucatu-SP). Research Group's interest in evidence-based health and teaching strategies at the Federal University of São Carlos (UFSCar). São Carlos, SP, Brazil.
- 6 Nurse. Cardiovascular Surgery Dr. (UNIFESP, São Paulo); Professor of the Nursing Department of the Federal University of São Carlos (UFSCar), São Carlos, SP, Brazil.
- 7 Nurse. PhD in Sciences Graduate Cardiology Program, UNIFESP. Cardiology Program coordinator of the Multidisciplinary Residency UNIFESP, *.

*: São Paulo/SP, Brazil

Keywords

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Introduction

The cardiovascular diseases (CVD) have a significant role in mortality rates on western world. Currently, the world mortality is around 15 million people/year due to these diseases, pointing out that myocardial ischemia and stroke are the main cause of death in adults [1].

In Brazil, CVDs are still the main cause of death whereas in developed countries, studies show an inverse relation between social

Contact information:

Rita Simone Lopes Moreira.

Address: Hospital São Paulo, Barros Street Napoleon, 715 Zip Code: 04024-002. São Paulo, SP, Brazil.

Tel: 55 -11- 55764621.

✉ molosiri@hotmail.com

economic level and the incidence and mortality by CVDs [2].

At the beginning of the XX century, social, demographic and economic changes have brought a higher life expectancy and the reduction of infection diseases leading to an increase of CVDs [3].

All the socioeconomic and cultural transformation lived during the second half of the XX century, have brought behavioral changes in all population, but more expressive among women. Their insertion in the job market associated to their old tasks as housewives - taking care of family and children – have lead them to a major physical and mental exhaustion, motivating diseases [4].

Thus, many are wrong to affirm that diseases related to circulation are masculine. In all Europe, CVD are responsible for 52% of death among women – a much higher number compared to the deaths among men by the same cause, which is 42% [5].

In Brazil, CVD is the main cause of death among women over 50 years old in menopause, possibly due to the estrogen's natural protection effect up to this period. On this population, there are more deaths caused by CVD (41.3%) when compared to breast cancer deaths [6].

However, there are important differences on the presentation, prognostic and response to the CVD treatment between genders. Studies indicate that women have a lower prevalence of coronary disease as myocardial infarction (MI) compared to men. However, mortality rates is higher among women – which is around 2.46% whereas for men is 1.66%. Regarding stroke, mortality rates are equally high – 2.69% among women, especially among young women [7-9].

A very limiting feature for a good heart therapy in women is it's peculiar anatomy where coronary circulation tends to be more tortuous and of smaller caliber – which decreases the frequency of stent implants, making it difficult to perform the procedure [4].

When survival rates are compared, there are no expressive differences between men and women

but there are distinctions between genders when we discuss the quality of life after surgery. Women remain symptomatic, presenting a higher occlusion rates and a higher probability of a new revascularization. Also, during the post operative period they don't face the disease so well nor its consequences [7-8].

Besides the clinical factors related, the women insertion in the job market can be seen as a trigger to the emergence of circulatory system diseases although that is usually disregarded. The Framingham study highlights the sum of functions - responsibilities between work and family – as an important stressing condition among women [9]. In addition to that, the increasing age, number of working years and smoke placed married and smoking women in a situation of having twice more chances to develop coronary disease [10].

It is evident in literature that women are not familiar about how serious cardiovascular diseases are, their impact in health and the risk factors that trigger them. In addition to that, the lack of knowledge among health professionals about CVD as a main cause of death among women, make this population have their symptoms, many times, analyzed as "emotional matters" [11].

Although the results of these studies are not leveled, the evidences that females are associated to a lower access to medical care are huge and they point to the need of policies to reduce inequalities. Some studies show that the use of therapies to treat coronary diseases have been unequal between genders, tending to treat women "not so well" [4,11,12].

It is believed that the multiples mistakes made during coronary disease treatments among women were due to a relatively low proportion of female patients included in the studies. Women represent not more than 30% of the total enrolled patients on the majority of clinical trials. Therefore, their treatment have been based in evidences found in studies made mostly with males [7, 8].

Factors as devaluation of the disease by health professionals, the lack of information about the di-

sease among women, and even media campaigns focusing other diseases in women, may information get worse leading to an increase of CVD incidence. In this context, there is a need for clinical researches that include a higher number of women, and above all, it is believed that studies focused on female heart health will produce specific results to the female population contributing to a better development of precise diagnosis and even development of new treatments.

Based on the above, the objective of this study was to identify the most prevalent risk factors for cardiovascular diseases (CVD) development in low-income women; verify the relation between the prevalence of risk factors to develop CVD and social economic factors and to identify beliefs about death without relation to the main diseases that affect females.

Methods

This is a descriptive study using a quantitative approach. The research was made through active search with employed women of a company that provides cleaning services to the São Paulo University Hospital.

We have included women of same age or over 18 years old, no race distinction, all employed and earning the same salary or less than two minimum wage and that has accepted to take part of it leading us to a number of 100.

In order to gather data, a quiz composed of 25 closed questions was used, from July to August, 2012. The quiz was built in two parts – the first aiming to characterize their socioeconomic-cultural situation and the second part, the CVD risk factors, information about their first line ancestors (parents), tests that the interviewed had to undergo, the physician specialty who asked for them and type of health insurance (private or public).

The second part of the quiz referred to the question: what would she most likely to die? The an-

swer given by them was based on their subjectivity, beliefs and perception.

The data gathering was made by private interview before they start to work or right after that and lasted around 20 minutes during which the researcher read each question and wrote down all the answers. It was held at the hospital cleaning service's office.

The elaboration of the questions about characterization and risk factors were based on VIGI-TEL/2006 quiz – Health Ministry – and the rest of the questions were built according to the objectives of the research.

For statistical analysis purposes, initially the normality of the facts was analyzed according to the Kolmogorov-Smirnov normality test and then all data were subjected to parametric tests.

The ANOVA tests were used to compare averages; Pearson correlation tests were used to analyze the interconnection between averages; square Qui test and the two proportions equality test – which is a non parametric test that compares if the answers proportion of two specific variables and /or their levels are statistically significant.

In order to calculate p-value, each answer level was compared always to the most prevalent described as Reference (ref.). It was considered statistically significant $p < 0,05$ with confidence interval of 95%. The project was sent and approved by the Ethic and Research Committee as reported 02838612.0.0000.5505. The participants were accepted only after they've signed a free and clear consent term that gives them the right either to accept or not to take part of the study, according to the resolution 466/12 of Health National Council which regulates the research evolving human beings.

Results

Before the analysis of the facts, it was identified that among 100 women, 51% were brown, aged

between 46-55 years old, 28% were married, 49% had 1 to 4 years of education and 30% had children. About socioeconomic profile, 63% had their own home, 33% aged between 46-55 years old and 30% had children.

Among the risk factors presented, systemic hypertension (SH) was the most present (26%), but when compared to other more frequent ones, it was not observed an statistical difference. (Table 1)

Table 1. Cardiovascular Risk Factors Distribution São Paulo, 2013.

Risk Factors	N	%	P-value*
Smoking	26	26	0.750
Diabetes Mellitus	12	12	0.005
Systemic Arterial Hypertension	28	28	Ref.
Dyslipidemia	16	16	0.041
Use of birth control methods	17	17	0.063

*: equality test of two proportions.

When comparing the number of risk factors to the age of the women surveyed, it was observed an interval between 56 and 65 years old as a subgroup with a higher number of cardiovascular risk factors and average of 2.14 related to risk factors associated. There was no differences statistically significant observed concerning race and marital status. (Table 2)

Analyzing risk factor numbers and marital state, we can highlight stable relationships and divorced subgroups presenting higher number of risk factors 1.76 and 1.78 respectively with $p=0.83$ – difference not considered statistically significant.

Comparing risk factors number with race, we observe whites with a higher number of risk factors (1.82) but with no significant statistic difference ($p=0.216$)

But evaluating the number of risk factors by the number of years of education, we observe that women who went to school during 5 to 8 years had a higher number of risk factors. Among the women that had only 1 to 4 and 9 to 11 of years of educa-

Table 2. Comparison between Age and number of RF. São Paulo, 2013.

Age	18 to 25	26 to 35	36 to 45	46 to 55	56 to 65	P-value*
Average	1.50	1.11	1.66	1.79	2.14	0.216
Median	1.5	1	1	1	2	
Standard Deviation	0.53	1.08	1.26	1.22	0.90	
Coefficient of Variation (%)	35	97	76	68	42	
Minimum	1	0	0	0	1	
Maximum	2	4	5	4	3	
N	10	18	32	33	7	
Confidence Interval	0.33	0.50	0.44	0.42	0.67	

*: ANOVA test.

Table 3. Comparison between school years number and RF number São Paulo, 2013.

Age	18 to 25	26 to 35	36 to 45	P-value*
Risk Factor Average	1.49	2.15	1.48	0.070
Median	1	2	2	
Standard Deviation	0.96	1.50	1.12	
Coefficient of Variation(%)	64	70	76	
Minimum	0	0	0	
Maximum	4	5	4	
Number	49	20	31	
Confidence Interval	0.27	0.66	0.39	

*: ANOVA test.

tion had the same average risk factors, but with no statistically relevance. ($p=0.07$) (Table 3).

There was no significant statistic differences comparing the number of risk factor to owning a house and an automobile, that is, women that own a house had an average of 1,68 risk factor and the ones that didn't own houses 1.51 with value $p=0.48$. Concerning owning a car, women who owns a car

presented an average of 1.75 and the ones that didn't own a car presented 1.60 with value $p=0.62$.

Women that are the only provider for their homes didn't present more to risk factors to develop CVD compared to the ones who share their expenses with another resident.

When asked about a number of diseases and the probability of death, by the Pearson correlation, it was found that there is a positive correlation between economic factor and knowledge about their heart health. It was observed that from the women that owns a house or a car, 63% believed that acute myocardial infarction (AMI) and stroke are the diseases responsible for females death compared to women that didn't own a car nor a house.

The research in question has also revealed that there is no correlation between level of education and level of belief about the influence of CVD on female deaths.

The main diseases women believe to have more probability to die were: accidents (traumas) 54%, in second place AMI, in third place stroke followed by gynecological diseases and depression. (Table 4)

Asthma was the disease with a lower chance of death, according to the research (85%,) followed by hepatitis/AIDS (83%) and tuberculosis (81%) with no significant differences statistically.

Table 4. Distribution of beliefs, diseases with higher probability of Death São Paulo, 2013.

Higher Probability of Death	N	%	P-value*
Accident (external causes)	54	54	Ref.
Myocardial Infarction	50	50	0.571
Stroke	40	40	0.047
Uterine Cancer	38	38	0.023
Depression	35	35	0.007
Breast Cancer	28	28	<0.001
Tuberculosis	19	19	<0.001
Hepatitis/AIDS	16	16	<0.001
Asthma	12	12	<0.001

*: two proportion equality test.

About medical specialty that women most look for, it was identified in this study that women aged between 46 to 55 choose a general practitioner (51.5%) followed by a gynecologist (33.3%). In the range of 56 to 65 years old, the most prevalent medical specialty chosen was also the general practitioner (71.4%). Compared to all other specialties this value is considered statistically significant.

Discussion

The cardiovascular diseases represent the major cause of mortality among men and women [1]. Recent studies have identified the risk factors to develop CVD as being the same to men and women, but the impact of SH or diabetes mellitus (DM) is higher in women than in men [2, 4, 5, 12-14]. The present study identified that in low-income women workers, the risk factor most likely to develop cardiovascular diseases was SH.

According to *InterHeart Study* data, SH contributes with about 35% of all cardiovascular events and around 45% of the non-diagnosed stroke cases in women, increasing the risk of CVD in four times when compared to normotensive women [15].

Studies indicate that above 55 years old, the percentage of women developing SH is higher than in males and affirms that certainly 80% of women will develop this pathology during menopause [4, 7-12].

About smoking, among the interviewed women, there was a prevalence of 26%, turning to be the second most prevalent risk factor. In the USA 21% of the women are smokers and recent data indicate that death risk caused by CVD increases 31% among women exposed to smoke at work or at home and that is considered the main modified risk factor of cardiovascular mortality [12].

Dyslipidemia (DLP) and diabetes mellitus, respectively, carried out the third and fourth places in the risk factor ranking that affected the interviewed women. Recent data from AHA (*American Heart Association*) show that 48% of North Ame-

rican women suffer from dyslipidemia - such data is much higher if compared to the 16% found in our research. Almost half of the North American women present dyslipidemia but only 31% of them have associated the cholesterol increase to a CVD cause and only 1% have associated the increase of triglycerides rate to a risk factor [12].

Only 5 % of the interviewed women in this study have mentioned regular physical activities, which is a worrisome data since medium intensity aerobics, practiced for 30 minutes minimum every 3 days per week may cause an impact to reduce the risks of cardiovascular events on the order of 30% to 40%. Not to mention that the protective impact that physical exercises cause to avoid CVD is higher in women than in men [12].

It was identified in this study the existence of a direct relation between the presence of more CVD factors in women and the advancing age. The information found were equivalent to international and national studies proving that from 55 years old and over, women present more risk factors and become more susceptible to CVD than men [4, 14-16].

When race category was analyzed, it was verified that White present more susceptibility to CVD. It is important to remember that there were no Indian or Eastern women. So, as the results were very close, it was considered that the obtained data didn't have statistically significant difference between subcategories. This way the study clashes with the data of a research held in the United States that proves the prevalence of two major risk factors among Blacks (48,7%) and a minor among Asians (25,9%). In this study, Blacks also presented a higher prevalence of hypertension and Whites presented more prevalence of hypercholesterolemia [13].

This research revealed the existence of a relation between a lower education level and a higher prevalence of risk factor to develop CVD among the interviewed. The subgroup of women that have studied from 5 to 8 years presented more risk factors

when compared to the subgroup of women that went to school from 9 to 11 years. The data corroborate another research [14], which demonstrates that North American women with less education also presented more CVD risk factors.

In order to evaluate the interviewed beliefs about what they most likely would die, it was presented to them a list of diseases and previously selected causes for them to choose the one with a greater chance. The most cited was external causes like an accident (54%) followed by myocardial infarction (50%) and stroke (40%). These results confirm data of a study held in USA in 2011 which affirms that a little more than a half of women believed that CVD are the main cause of death among them and less than a half know the values considered healthy of some risk factors like blood pressure and cholesterol [14].

The gynecological diseases like uterine cancer and breast cancer were in fourth and sixth places respectively in our research, behind diseases like infarction and stroke which are in second and third position. We can consider these result a great advance when analyzing a national survey carried out by the American Heart Association in 2003 in which it was revealed that 35% of women cited breast cancer as the major health threat while only 13% believed it was heart diseases, though heart diseases kill more than all the cancers combined [11, 13].

The diseases women believe they have least chance to die were asthma (85%) followed by hepatitis/AIDS (83%) and tuberculosis (81%). The opinion of these women confirm the epidemiological transition suffered by Brazil during the last decades, where infectious diseases as cited above are no longer a reason to worry for the population after the creation of vaccines and prevention methods, paving the way to make cardiovascular diseases the great villains of this century.

Women with a higher income believed that heart attack and stroke are important diseases among females and that they both might lead them to

die. It was found in an international literature the existence of a socioeconomic factor web running along with the increase of the cardiovascular disease risk development among women, not associated to knowledge. Women with annual family income less than 20 thousand dollars have presented a rate of five years free of cardiovascular events against 7 years of those with family income equal or higher than 50 thousand dollars per year [11, 15-16].

The authors affirm that the lack of financial resources available among low income families makes the access to health care difficult, leading to a underutilization of prevention and basic attention services which contributes to worsening diseases. Besides that, low income women reported they get sick more often during the year, which compromises their productivity and creates tension in the workplace. Reports show that the tension in workplace speed the cardiovascular diseases risk [11, 12, 16-18].

The other objective of this study was to analyze the correlation between level of education and beliefs of chance to die related to cardiovascular diseases in females. As a result, there was no relation obtained.

Literature ensures that [15-18] the lack of knowledge and consciousness among women about the threat that CVD are to their lives, can be considered as one of the main factors that cause a high mortality in this group.

This way it is necessary that women of all races and ages became aware of the importance of CVD and start to take notice about which risk factor prevail in the groups they belong. Also, the responsibility of the health professionals is not excluded in learning about the high risk that heart diseases affect females and its differentiated symptomatology since females are more likely to experience "atypical" symptoms.

Conclusions

Nowadays there is no doubt about the importance of studies related to cardiovascular diseases all over the world. The myth that they were predominantly male diseases fell not long ago when specialists and government agencies, like DATASUS, have released that CVD are the main cause of death of women over 55 years old. But many professionals and women themselves still believe that other diseases are more threatening to their health and leading them not to give the proper importance to CVD, as revealed in this study.

Analyzing the socioeconomic profile of low income women, we conclude that HAS and smoking are the main cardiovascular risk factor followed by DLP and DM, and all this factors are considered modifiable or potentially modifiable.

Comparing age and level of education with number of risk factor we conclude that the higher the age and the lower level of education, the higher the number of cardiovascular risk factor is, although there is no statistic significance. In relation to the economic level, we came to a conclusion that the greater the number of goods, the greater the amount of risk factors although without statistical significance. Concerning beliefs about possibility of death, we conclude that accidents (external factors) followed by AMI and stroke are the main causes women believed they had a greater chance of dying.

The results indicate a high prevalence of modifiable or potentially modifiable risk factors in this population, expressing this way the need to create campaigns aiming to aware women about cardiovascular diseases, thus making it possible to change the death scenario of this group

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