



## Risk assessment of Cardiovascular Disease among working women and men: A comparative study

Singh Shikha, Chakraverty Archana and Shankar Ravi

Department of Community Medicine, IMS, BHU, Varanasi-221005, UP, INDIA

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### Abstract

*Traditionally, heart disease has been confined to be a man's disease and when it comes to women's health issues the main focus used to be on menopause and breast cancer, leading women to believe that cardiovascular disease is not an important health issue for them. To assess the knowledge of cardiovascular diseases among selected subjects, 2) to know about their dietary and lifestyle pattern and 3) to find out the risk variation of CVD between selected working women and men subjects. This study was a cross-sectional study and carried out in Banaras Hindu University in Varanasi district. For this study total 200 subjects, 100 working women and 100 working men to age group (30-60 years) were selected by adopting purposive random sampling. The subjects were interviewed by risk assessment index (RAI), the study tool. The maximum women subjects (40%) was in 51-60 years age group while maximum men subjects (50%) were in 41-50 years age group. Majority of women (68%) did not know about the CVD where as high proportion of men (76%) were having knowledge of CVD. The rate of workplace stress was high among working men accounting 26% and familial stress was high among working women that is about 18%. From the scores calculated, 70% of working women and 60% of working men were in moderate risk of CVD and remaining 30% of women subjects and 40% of men subjects were in low risk of CVD. No subjects were found in high risk category. Both women and men were at equal risk of CVD. Programs for awareness and intervention of risk of CVD should be run by government and there should be no gender difference in using diagnostic and therapeutic procedures.*

**Keywords:** Cardiovascular disease, Working Women, Risk Assessment Index.

### Introduction

Cardiovascular disease (CVD) consists of diseases related to heart or blood vessels (arteries and veins). CVD is the leading killer disease worldwide, but rates vary greatly among countries. Published studies clearly show that CVD is no longer a "man disease"; this was reported in Framingham Study that almost two-thirds of sudden death occur among women without any history of heart related disease (Kannel 1986)<sup>1</sup>.

Previously, heart disease has been perceived only as a man's disease, where as women's health issues have paid particular attention on menopause and breast cancer, leading women to believe that cardiovascular disease is not an important health issue for them. Many of Australian women have fear of cancer, although they die of heart disease four times more than breast cancer. The major risk factors for developing heart disease are the same for both men and women and includes hypertension, hyperlipidemia cigarette smoking, diabetes, sedentary lifestyle, obesity, stress, age, heredity, and race<sup>2</sup>.

In World Health Report 2002 this was reported that cardiovascular diseases (CVDs) will be the largest cause of death and disability by 2020 in India and in 2020 AD 2.6 million Indians are estimated to die because of coronary heart

disease which constitutes 54.1 % of all CVD deaths. It appears that approximately half of these deaths are expected to occur in young and middle aged people (30-69 years)<sup>3</sup>.

In this modern era, Indian women is subjected to excessive stress both at home as well as at workplace. Due to this dual responsibility, under-resting and a higher level of frustration at workplace a lot of aggression occur and deteriorates their quality of life. Stress is the primary factor that causes heart problem (Parikh 2009). The effects of poor diet and lack of physical activity may show up individuals with raised blood pressure, blood glucose, blood lipids, overweight and obesity, which are known as "Intermediate risk factors"<sup>4</sup>. Hence, the present study is an effort to focus on the risk assessment of cardiovascular diseases among both working women and men.

**Objectives of the study:** i. To assess the knowledge of cardiovascular diseases among selected subjects. ii. To know about their dietary and lifestyle pattern. iii. To find out the risk variation of CVD between selected working women and men subjects.

### Materials and Methods

**Ethical Approval:** This work was done for the completion of Masters degree in Home Science and was approved by the

Ethical Committee of Department of Home Science BHU. Prior approval of participants was taken.

**Study Design** This was a cross-sectional study and performed in Banaras Hindu University. The time period of the study was 6 months (from Jan 2012 to June 2012). Working women and working men (sedentary workers) of Banaras Hindu University aged 30-60 years formed the universe of the study. A convenient sample of 200 participants was decided to be included. To meet the required sample, the individuals were contacted till the number sufficed. Study was conducted by individual-to-individual visit using purposive random sampling. 200 study subjects (100 working women and 100 working men) were selected. Selected working population consisted of lecturers, professors, librarians and hostel wardens.

**Eligibility Criteria:** i. Age 30-60 years. ii. Sedentary Workers. iii. Heart disease free.

**Exclusion Criteria:** i. Age < 30 years and > 60 years. ii. Suffering from heart disease (on medication). iii. Those who did not consent to participate.

**Study Tools:** i. Risk assessment index. ii. Height scale. iii. Weighing machine. iv. Measuring tape.

**Selection of study area and subjects** – The selected area for the present study was Varanasi in India based on the accessibility of the women and men subjects. The subjects selected were working women and working men between the age group of 30 and 60 years and purposive sampling method was used. A total of 100 working women and 100 working men were included for the study. The subjects were selected from the Banaras Hindu University campus, Varanasi.

**Formulation of a risk assessment index (RAI) for cardiovascular diseases:** A risk assessment index was formulated to find out the extent of risk for cardiovascular diseases among selected working women and men subjects. This index mainly consisted the risk factors namely age, family history, stress, physical activity, obesity, diabetes and dietary pattern. Based on that calculated scores the selected subjects were categorized as low, moderate or high risk for cardiovascular diseases.

**Appraisal of risk among selected subjects:** The subjects with scores 5-15 were grouped into low risk, 15-25 in moderate risk and 25-35 or above in high risk.

**Data Processing and Statistics:** The data obtained from the survey was introduced into the database developed for the study, using Microsoft Excel 2000. Frequencies and percentages were calculated. Results were presented in tables. Chi square test was applied to test the significance of difference between both the groups.

## Results and Discussion

**Results:** The overall background characteristics of subjects are shown in table 1. Among the total 200 selected subjects, 40% of working women and 50% of working men belonged to the age group of 51-60 years and 41-50 years respectively. 35% of working women and 30% of working men were in the age group of 30-40 years. There were significant difference in age observed between working women and men.

68% of working women were not aware of cardiovascular diseases while as high as 76% of working men were aware of cardiovascular diseases. With regards to knowledge of disease there was significant difference between both the groups.

Among the selected subjects the family history of the disease showed that 46% of working women and 58% of working men had no family history. 26% of working women and 20% of working men have familial tendency for CVD prominent among the relatives over the parent. Family history of the study subjects had no significant difference between both the groups.

Table 2 shows dietary and lifestyle pattern in subjects. More than half (66%) of working women and 52% of working men were non-user. 28% of working women and 24% of working men consumed a cup of coffee a day. While 24% of working men consumed 3 cups of coffee per day. There was a statistically significant difference observed between both the groups with respect to coffee consumption. Ghee was consumed ½ tsp. for every meal by 66% of working women and 60% of working men. 40% of working women and 34% of working men did not use ghee at all. No significant difference observed between both the groups.

About 18% of working women were suffering from familial stress and occupational stress was high among working men which were around 26%. 30% of working women and 42% of working men are in both familial and occupational stress. A significant difference was observed in study subjects with respect to their stress pattern.

92% of working women and 60% of working men preferred idli/dosa over poori/paratha. 40% of working men preferred poori/paratha from a fast food restaurant. There was found to be highly significant difference between both the groups. 54% of working women and 10% of working men preferred soft drinks. 46% of working women and 50% of working men preferred fruit juice and 40% of working men preferred carbonated beverages in summer afternoon. There was a highly significant difference was observed with respect to preference of drinks.

Table 3 shows symptoms of disease in subjects. 40% of selected working women were obese and comparatively low among working men which was around 14%. The difference was found to be highly significant between both the groups

with regards to obesity. 50% of working women and 72% of working men never had the problem of hypertension. 40% of working women and 28% of working men sometimes suffered from the problem of hypertension. There was significant

difference observed between both the groups. 14% of working women and 10% of working men had the problem of diabetes. No significant difference was observed between both the groups.

**Table-1**  
**Distribution according to background characteristics**

Parameters		Working women		Working men		Chi Square	Degree of freedom	P value
		No.	%	No.	%			
Age (in years)	30-40	40	40.0	30	30.0	21	2	<0.001
	40-50	20	20.0	50	50.0			
	50-60	40	40.0	20	20.0			
Knowledge of CVD	Yes	32	32.0	76	76.0	38.969	1	<0.001
	No	68	68.0	24	24.0			
Familial tendency	No family history	46	46.0	58	58.0	7.94	3	0.05
	Other relatives	26	26.0	20	20.0			
	Single parent	26	26.0	16	16.0			
	Both parents	2	2.0	6	6.0			

**Table-2**  
**Distribution according to Dietary and Lifestyle pattern**

Parameters		Working women		Working men		Chi Square	Degree of freedom	P value
		No.	%	No.	%			
Amount of coffee consumed/day	Non-user	66	66.0	52	52.0	12.8	2	<0.002
	1 cup/day	28	28.0	24	24.0			
	1-3 cup/day	6	6.0	24	24.0			
Amount of ghee consumed/day	No ghee at all	34	34.0	40	40.0	0.772	1	0.37
	½ tsp every meal	66	66.0	60	60.0			
Stress pattern	Relaxed and calm	32	32.0	16	16.0	8.23	3	<0.041
	Familial stress	18	18.0	16	16.0			
	Occupational stress	20	20.0	26	26.0			
	Both familial and occupational stress	30	30.0	42	42.0			
Exercise Duration	>1 hour	6	6.0	4	4.0	2.17	3	0.539
	½ hour	30	30.0	32	32.0			
	2-3 times a week	26	26.0	16	16.0			
	No exercise	38	38.0	28	28.0			
Items-in b/w meals	Fruits	76	76.0	64	64.0	3.429	1	0.0641
	Cakes/ pastries/deep fried items	24	24.0	36	36.0			
Preference of fast food	Idli/dosa	92	92.0	60	60.0	28.070	1	<0.0001
	Poori/parantha	8	8.0	40	40.0			
Preference of drinks	Carbonated beverages	-	-	40	40.0	70.4	2	<0.001
	Soft drinks	54	54.0	10	10.0			
	Fruit juice	46	46.0	50	50.0			

**Table-3**  
**Distribution according to symptoms of disease**

Parameters		Working women		Working men		Chi Suare	Degree of freedom	P value
		No.	%	No.	%			
Obesity	Yes	40	40.0	14	14.0	17.149	1	<0.0001
	No	60	60.0	86	86.0			
Hypertension	Never	50	50.0	72	72.0	16.1	2	0.0003
	Sometimes	40	40.0	28	28.0			
	Always	10	10.0	0	0.0			
Diabetes	Yes	14	14.0	10	10.0	0.758	1	0.38
	No	86	86.0	90	90.0			

**Discussion:** The present paper which aimed to explore the difference of cardiovascular disease risk among working women and men finds that women are at equal risk of heart disease as men. Frequently, women fail to recognize the personal relevance of heart disease. They tend to focus on reproductive health rather than general health issues and are more fearful of breast cancer, ovarian cancer and uterine cancer than that of heart disease (Walters, 1992; Pilote and Hlatky, 1995).

Increasing age is a risk factor for cardiovascular disease and after age of 55 years risk of stroke doubles every decade<sup>5</sup>. Before fifth decade of life, prevalence of heart disease in men is greater than in women, but in the sixth decade, prevalence almost equalizes and in coming decades it becomes greater in women.

Present study results suggest that women are less aware of heart disease than men. There was association of lower educational level with the incidence of coronary heart disease and stroke among women in Europe and the United States, but as far as we know, in Asia no studies have been done to find out associations between educational level and the incidence of cardiovascular disease among women<sup>6</sup>.

Family history is one of the major non-modifiable risk factor for cardiovascular disease. Family history alone is responsible for around 15% of all heart attacks. Usually family members share similar lifestyles and habits which may have an adverse impact on the heart disease risk (HHC 2009). Stress was associated with higher levels of an inflammatory marked called C-Reactive Protein or (CRP), which has been identified as an indicator for the later development of CVD (The Times of India, 2009).

In present study women found more obese than men. Obesity in women is obviously associated to intensifying of cardiovascular risk (Johansen et al., 1990; Reeder et al., 1992; Manson et al., 1990). The relationship of obesity to Coronary

Artery Disease risk in women may be due to body fat, synthesis of estrogen, and metabolism of lipoprotein (Keys et al., 1984).

Hypertension (elevated blood pressure) is one of the major modifiable risk factor for cardiovascular disease, cardiovascular events and death occurrence due to heart disease. The incidence of hypertension increases with age in both sexes; but hypertension occurs significantly more frequently in women (Heart and Stroke Foundation of Canada, 1995). The Framingham data showed that for coronary disease, hypertensive women and men have almost identical risk ratios: 2.2 for women versus 2.0 for men at 36 years' follow-up (Kannel, 1996).

Diabetes increases the CVD risk in women more than it does in men. In the Framingham Heart Study it was found that the impact of diabetes on cardiovascular mortality is relatively more in women than in men. This represented the doubling of overall risk as compared with men without diabetes and a fivefold increase in women.

### Conclusion and Recommendation

This study firmly suggest that not only men but women population is also at risk of CVD. Women are more vulnerable to CVD as they have dual responsibility both at home and at workplace. There should be no gender difference in using diagnostic and therapeutic measures. Further studies are needed to support the findings of the present study.

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