ORIGINAL ARTICLE

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Prevalence of cardiovascular risk factors in postmenopausal women: A rural study

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ABSTRACT

Aim: The present observational, cross-sectional prospective study was conducted during the period of 1 year in one of the rural health centers to study prevalence of conventional cardiovascular disease risk factors (CVRFs) in postmenopausal women.

Materials and Methods: Five hundred consecutive postmenopausal women were screened for detailed information regarding common menopausal symptoms, the presence or absence of conventional CVRFs. Physical activity was measured, and dietary lifestyle was also assessed. Use of hormone replacement therapy (HRT) and other drugs were also noted. Knowledge regarding their menopause was also evaluated.

Results: Mean age at menopause was 49.35 years, Mean number of menopausal symptoms was 6.70 ± 5.76, and mean duration since menopause was (MDSM = 4.70 years)). Fatigue, lack of energy (70%), cold hand and feet, rheumatology-related symptoms (60%) cold sweats, weight gain, irritability, and nervousness (50%), palpitation of heart, excitable/anxiety (30%) each were common complaints. Hypertension was diagnosed or a person was a known hypertensive (56%). Diabetes was diagnosed or a person was known diabetic in 21%, and BMI was found to be 25 kg/m^2 in 78%. Truncal obesity with waist-hip ratio >0.8 in 68% females, whereas abdominal obesity with waist size >88 cm was in 60% women. Dyslipidemia was seen in 39%. It was defined by the presence of high TC (=200 mg/dL) in 30%, high LDL-c (=130 mg/dL) in 27%, low HDLc (<40 mg/dL) in 21% or high TG (=150 mg/dL) in 31%. Metabolic syndrome was present in 13% of cases. CRP was found positive in 12 out of 39 total evaluated women, and serum uric acid was found >6.5 mg/dL in 4%. Smoking (0.5%), alcohol (0%,), tobacco chewing (4%), and family history of premature heart disease (9%) were recorded. Lifestyle was active in 35%, hectic in 10%, and sedentary in 55% of postmenopausal women (PMWs). Only 5% of women were receiving HRT, 0.5% isoflavone-containing phytoestrogens, 0.4% tibolone, 24% anti-HT, 9% anti-diabetic, 8% lipid-lowering drugs, and only three patients were on anti-obesity along with dietary and lifestyle management. Out of 68 patients, who were advised for electrocardiography (ECG), 23 were found positive for ischemic changes on ECG and out of 12 women advised for treadmill test (TMT), only four were found positive for ischemic heart disease (IHD). Risk factor count of more than four was found in 11%. Over all 96% of women were affected by menopause or related problems. Only 9% were aware about their menopause, 3% for importance of lifestyle modification, weight and dietary management programs to ameliorate menopause or menopause-compounded CVRFs.

Conclusion: This study showed alarmingly high prevalence of most of the conventional CVRFs, especially diabetes, hypertension, dyslipidemia, obesity, and other risk factors in postmenopausal women from rural areas.

Key Words: Cardiovascular, menopause, risk factor

INTRODUCTION

The global burden of cardiovascular diseases (CVDs) is rapidly increasing. CVD is the leading cause of death in women around the world. Hypertension affects more men than women until 55 years of age, but after age 55, the percentage of women is higher. Estrogen deficiency has been linked to the rapid increase in CVD in women who have undergone natural or surgical menopause.[1] Every year, CVD claims the lives of females more than males. More than 450,000 women succumb to heart disease annually, and 250,000 die of coronary artery disease.[2] CVD risk increases after the menopause, which may be related to metabolic and hormonal changes.[3]

Menopause is a risk factor for CVD because estrogen

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DOI: 10.4103/0976-7800.66993

withdrawal has a detrimental effect on cardiovascular function and metabolism. The menopause compounds many traditional cardiovascular disease risk factors (CVRFs), including changes in body fat distribution from a gynoid to an android pattern, reduced glucose tolerance, abnormal plasma lipids, increased blood pressure, increased sympathetic tone, endothelial dysfunction, and vascular inflammation.[4-6]

Cardiovascular risk is poorly managed in women, especially during the menopausal transition when susceptibility to cardiovascular events increases. Clear gender differences exist in the epidemiology, symptoms, diagnosis, progression, prognosis, and management of cardiovascular risk. The key risk factors that need to be controlled in the perimenopausal woman are hypertension, dyslipidemia, obesity, and other components of the metabolic syndrome, with the careful control of diabetes. Hypertension is a particularly powerful risk factor and lowering of blood pressure is pivotal. Hormone replacement therapy (HRT) is acknowledged as the gold standard for the alleviation of the distressing vasomotor symptoms of the menopause, but the findings of the Women's Health Initiative (WHI) study generated concern for the detrimental effect on cardiovascular events. Thus, HRT cannot be recommended for the prevention of CVD. Whether the findings of WHI in older postmenopausal women can be applied to younger perimenopausal women is unknown. It is increasingly recognized that hormone therapy is inappropriate for older postmenopausal women no longer displaying menopausal symptoms. Both gynecologists and cardiovascular physicians have an important role to play in identifying perimenopausal women at risk of cardiovascular morbidity and mortality, and should work as a team to identify and manage risk factors, such as hypertension.[7]

Although studies[8,9] regarding CVRFs are available in Indian population. However, not much of the information is available regarding the prevalence of CVRFs in postmenopausal women. Hence, this study was undertaken to study prevalence of conventional CVRFs in postmenopausal women.

MATERIALS AND METHODS

This observational, cross-sectional prospective study was conducted during the period of 1 year in one of the rural health center. A total of 500 consecutive postmenopausal women (cessation of menstruation for 1 year) were screened by principal investigator with help of General physician in outpatient department for detailed information regarding common menopausal symptoms, the presence or absence of conventional CVRFs, namely hypertension, diabetes mellitus, dyslipidemia, obesity, metabolic syndrome, smoking, alcohol, tobacco chewing, and family history of premature heart disease; duration of these CVRFs and any treatment if taken for the same (wherever applicable). Height, weight, body mass index (BMI), waist circumference, waist-hip ratio (WHR), blood pressure, and measurement were performed in all. Biochemical tests including fasting and 2-h postprandial blood sugar estimation, fasting lipid profile, and serum uric acid were performed in all. CRP were performed in selected patients who could afford. Physical activity was measured by asking about both work-related and leisure-time activities, and dietary lifestyle was also assessed. Hypertension was diagnosed when systolic BP was $\geq$140 mmHg and diastolic BP was $\geq$90 mmHg or a person was a known hypertensive.[8] BMI was calculated as weight in kilograms divided by square of height in meters and overweight and obesity defined as BMI $\geq$ 25kg/m^2. Truncal obesity was diagnosed when WHR >9 in males, and >8 in females while abdominal obesity was diagnosed when waist size >102 cm in men and >88 cm in women as per the US National Cholesterol Education Program (NCEP) guidelines.[10] Dyslipidemia was defined by the presence of high TC ($\geq$200 mg/dL), high LDL-c ($\geq$130 mg/dL), low HDLc (<40 mg/dL), or high TG ($\geq$150 mg/dL) according to NCEP guidelines.[10] Metabolic syndrome was also diagnosed according to NCEP guidelines when any three of the five identifying risk factors [abdominal obesity, fasting glucose > 110 mg/dL or diabetes, BP $\geq$ 130/90 mmHg, low HDL-c (men < 40 mg/dL, women < 50 mg/dL), or high TG ($\geq$150 mg/dL)] were present.[10] Physical activity was measured by asking about both work-related and leisure-time activities.[11]

Use of HRT and other drugs were also noted. The same information was collected from the patients' case record sheets. ECG and TMT were advised only in few (wherever applicable). Knowledge regarding their menopause was also assessed.

RESULTS

Mean age at menopause was 49.35 years, mean number of menopausal symptoms was 6.70 $\pm$ 5.76, and mean duration since menopause was (MDSM = 4.70 years). Fatigue, lack of energy (70%), cold hand and feet, rheumatology-related symptoms (60%) cold sweats, weight gain, irritability and nervousness (50%), palpitation of heart, excitable/anxiety (30%) each were common complaints. Hypertension was diagnosed or a

person was a known hypertensive (56%). Diabetes was diagnosed, or a person was known diabetic in 21%. BMI = 25 kg/m^2 in 78%. Truncal obesity with WHR > 0.8 in 68% females, whereas abdominal obesity with waist size >88 cm was in 60% women. Dyslipidemia was seen in 39%. It was defined by presence of high TC (=200 mg/dL) in 30%, high LDL-c (=130 mg/dL) in 27%, low HDLc (<40 mg/dL) in 21% or high TG (=150 mg/dL) in 31%. Metabolic syndrome was present in 13%. CRP was found positive in 12 out of 39 assessed patients. Serum uric acid was found >6.5 mg/dL in 4%. The following conditions were noted: smoking (0.5%), alcohol (0%), tobacco chewing (4%), and family history of premature heart disease (9%). Lifestyle was active in 35%, hectic in 10%, and sedentary in 55% of PMWs. Five percentage women were receiving HRT, 0.5% isoflavone-containing phytoestrogens, 0.4% tibolone, 24% anti-HT, 9% anti-diabetic, 8% lipid lowering drugs, and only three patients were on anti-obesity along with dietary and lifestyle management. Out of 68 patients advised for ECG, 23 were found positive for ischemic changes on ECG and out of 23, 12 women were advised for TMT and only 4 were found positive for IHD. Risk factor count of more than four was found in 11%. Overall 96% of women were affected by menopause or related problems. Only 9% were aware about their menopause, 3% for importance of lifestyle modification, weight and dietary management programs to ameliorate menopause or menopause-compounded CVRFs [Tables 1–3].

Table 1: Demographic characteristics and clinical presentation

***N* = 500**	
Mean age at menopause	49.35 years
Mean number of menopausal symptoms	6.70 ± 5.76
Mean duration since menopause	4.70 years
Education status	
Literate	21
Illiterate	79
Lifestyle	
Active	35%
Hectic	10%
Sedentary	55%
Dietary lifestyle	
Vegetarian	73
Non-vegetarian	11
Mixed	6
Common symptoms	
Fatigue, lack of energy	70%
Cold hand and feet, rheumatic pain	60%
Cold sweats, weight gain, irritability, and nervousness	50%
Palpitation of heart, excitable/anxiety	30%
Affected by menopause or related problems	96%
Not affected	4%

Table 2: Cardiovascular risk factors in postmenopausal women

Hypertension	56%
Diabetes	21%
BMI ≥ 25 kg/m^2	78%
Truncal obesity with waist-hip ratio (WHR) > 0.8	68%
Abdominal obesity with waist size > 88 cm	60%
Dyslipidemia	39%
High TC (≥200 mg/dL)	30%
High LDL-c (≥130 mg/dL)	27%
Low HDLc (<40 mg/dL)	21%
High TG (≥150 mg/dl)	31%
Metabolic syndrome	13%
CRP positive	12/39
Serum uric acid > 6.5 mg/dL	4%
Smoking	0.5%
Alcohol	0%
Tobacco chewing	4%
Family history of premature heart disease	9%
Positive for ischemic changes on ECG	23/68
TMT positive	4/12
Risk factor count of more than 4	11%
Women aware about	0.9%
Their menopause	3%
Lifestyle modification, Wt, and dietary management program	

DISCUSSION

This study recorded mean age at menopause was 49.35 years, mean number of menopausal symptoms was 6.70 ± 5.76, and mean duration since menopause (MDSM) was (MDSM) 4.70 years. Fatigue, lack of energy (70%), cold hand and feet, rheumatic pain (60%) cold sweats, weight gain, irritability and nervousness (50%), palpitation of heart, excitable/anxiety (30%) each were common complaints. This was almost in the confirmation with the study conducted in past[12] in urban women (n = 117) from Jammu belonging to the middle socioeconomic strata where mean age at menopause was recorded as 47.35 years. The common symptoms recorded in that study were: fatigue and lack of energy (72.93%), headache (55.9%), hot flushes, cold sweats, cold hand, and feet 53.86% each, and weight gain (43.13%).

The results of this study differ largely from the results of the study by Kasliwal *et al.*,[8] in which patients had BMI > 25.0 kg/m^2 and 747/994 (75.2%) had BMI > 23.0 kg/m^2. Diabetes mellitus was present in

Table 3: Drug history

Women receiving HRT	1.5%
Isoflavone containing pytoestrogens	14%
Tibolone	0.4%
Anti-HT	24%
Anti-diabetic	9%
Antianginal	5%
Antiplatelet	2.5%
Lipid lowering drugs	8%
Anti-obesity drugs	0.6%
Of and on NSAINDs	67%
Multivitamins antioxidants	77%
Antacid, H2 blocker and PPIs	48%
Others	13%

55.2% women, hypertension in 71.6% women, and dyslipidemia in 93.9% women. Out of 913 patients, 213 (23.3%) had LDL > 100 mg/dL, 662/913 (72.5%) patients had low HDL, and 338/913 (37.0%) patients had elevated triglycerides. It was also found that 29.3% women had family history of premature CAD and 62.9% women had at least one family member having CAD (irrespective of the age of onset), and 1.7% women were current smokers and another 3.4% women had history of smoking in the preceding 1 year. Out of 913 patients, 876 (95.9%) had at least one of the five major CVRFs and only 4.3% women were free of all these risk factors.

Whereas, the present study shows lower rates of these risk factors probably because the study of Kasliwal *et al.*[8] was conducted in patients undergoing coronary artery bypass surgery with different demographic profile.

Although studies[8,9] regarding CVRFs are available in Indian population however, not much information is available regarding the prevalence of CVRFs in postmenopausal women. Thus, this study happens to be one of few studies to be conducted in postmenopausal women. The alarmingly high prevalence of CVRF in rural areas is an eye opener. However, the population selected in the study may not reflect truly the rural population as, Katra being religiously well known to cater larger floating urban population, thereby reflecting the influence of urban lifestyle in rural areas. Thus, comparative urban and rural population screening for CVRF from such population is highly warranted to comment on true prevalence of CVRF in rural population.

CONCLUSIONS

This study showed high prevalence of most of the conventional CVRFs, especially diabetes, hypertension, dyslipidemia, obesity, and other risk factors in postmenopausal women from rural areas. It is important to identifying these CVRFs in postmenopausal patients for an early treatment of these CVRF. Education/awareness of these CVSFs among doctors in rural areas as well as among postmenopausal women is need of the hour.

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Source of Support: Nil, **Conflict of Interest:** None declared.