

Research Article

Comparison on Lipid Profile Level and Prevalence of Hypertension Among Rural and Urban Post-Menopausal Women

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ABSTRACT

Introduction: Many Study shows that approximately one in two women develops Coronary heart disease and one in three dies from it. The difference between modern lifestyle in urban areas and the traditional way of life in rural areas affect the population's health. As a result of several factors, including a lower level of estrogen, postmenopausal women are at increased risk for a number of health conditions, such as osteoporosis and heart disease. The U. S. Preventive Services Task Force. (USPSTF) strongly recommends routinely screening women 45 years and older for lipid disorders and treating abnormal lipid levels in persons who are at increased risk of Coronary heart disease`**Aim:** To compare lipid profile level and prevalence of hypertension among rural and urban postmenopausal women. **Setting and Participants:** In this comparative study 500 postmenopausal women in the age group of 45-60 years were randomly selected from rural and urban area (250 in each group) in Tamil Nadu, India. Rural subjects were selected from Somangalam region which is located in Kancheepuram district. Urban subjects were selected from Perambur region, Chennai. Subjects were personally interviewed regarding the intake of medicines for hypertension and blood pressure was also measured to know about the prevalence of hypertension. Blood samples were collected and tested in the laboratory for lipid profile levels using standardized methods. **Result:** By applying statistical technique (ANOVA) on lipid profile values, it was found that serum triglycerides, low density lipoprotein and total cholesterol were significantly higher in urban subjects than the rural subjects. The High density lipoprotein lipid level was significantly higher in rural than urban subjects. Percentage of prevalence of hypertension was also comparatively higher in urban subjects. **Conclusion:**The present study concluded that except HDL values , the mean Lipid profile level was comparatively higher above the normal levels among urban subjects.The prevalence of hypertension was comparatively more in urban postmenopausal women than the rural subjects

Key words: Rural and Urban Postmenopausal women, Hypertension,Lipid profile levels..

INTRODUCTION

During the transition to menopause, women may experience vasomotor, urogenital, psychosomatic, and psychological symptoms, as well as sexual dysfunction. The prevalence of each of these symptoms related to menopause varies across ethnic and socioeconomic groups, and between rural and urban women (Malacara, et al., 2002)¹. After menopause, a woman's risk for coronary artery disease increases. Cardiovascular diseases remain the first cause of death in women (Boudghene F et al., 2015)². Study also shows that approximately one in two women develops Coronary heart disease and one in three dies from it (Hoffman BL et al., 2015)³ Hypertension is by far the most important risk factor that affects women in the early postmenopausal years. About 30 to 50% of women develop hypertension before the age of 60 and the onset of hypertension can cause a variety of symptoms that are often attributed to menopause. (Wassertheil-Smoller S et al., 2000)⁴. In the Women's Health Study it was shown in almost 40,000 healthy women (≥45 years) that an elevated blood pressure

increases Cardiovascular risk and that hypertension is a strong predictor for the development of type II diabetes (Conen D et al., 2007)⁵. Despite the high prevalence of hypertension in middle-aged women, less than half of the patients receive adequate treatment, especially in the older age group when the risk of Coronary heart disease morbidity and mortality is highest. (Oparil S. 2007)⁶. This study aimed to compare the lipid profile level and prevalence of hypertension between rural and urban postmenopausal women.

MATERIALS AND METHODS

Quantitative approach was adopted for this Comparative study.The study was conducted in rural Somangalam village in Kanchipuram district. Somangalam is a Village in Kunnattur Taluk in Kanchipuram District of Tamil Nadu State, India. Around six villages are nearby Somangalam. Urban Perambur is a locality in the northern region of the metropolitan city of Chennai in Tamilnadu state, India. Free medical camps for women where organized in both the areas on Saturdays and

Sundays for a period of one month in each area. About 398 women in rural area and 431 women in urban area attended the camp among them 500 postmenopausal women age between 45-60 years were selected from rural and urban area (250 from each group) by random sampling method.

The independent variables included rural and urban postmenopausal women, and the dependent variable included lipid profile and hypertension. Inclusion criteria for the sample selection comprises of postmenopausal women age between 45-60 years. With the brief introduction of the study, informed consent was obtained from all the study participants. Participants had to be seated for at least 5 min before the measurement of Blood Pressure. Parameters were recorded twice on the left arm with five minutes interval between the two measurements, using sphygmomanometer. The average of the two measures was used. To define high levels of blood pressure the recent criteria recommended by the WHO were used; hypertension: SBP \geq 140 mm Hg and/or DBP \geq 90 mm Hg, or use of blood pressure lowering drugs. The blood samples from the subjects were collected after an overnight fast between 7-9.30 am by qualified personnel from reputed blood testing laboratory using standardised equipments and it was analysed for lipid profile levels.

Ethical Considerations

Permission to carry out this study was obtained from local authorities of that respective area. With brief introduction of the study, informed consent was obtained from all the study participants.

Data Analysis

The results of the variables were statistically analysed and compared using percentile and Analysis of Variance (ANOVA) to find out the difference between the two groups. (Clarke & Clarke, 1972)⁷. Data analysis and results are tabulated below.

Results On Serum Triglycerides

Table I shows the serum triglycerides results of rural and urban postmenopausal women

The mean value was 159.2 for rural group and 163.4 for urban group, respectively. The obtained 'F' ratio of 10.58 was higher than the table 'F' ratio of 3.86. Hence the serum triglycerides was significant at 0.05 level of confidence with degree of freedom 1 and 498 is 3.86 between the rural and urban groups.

The mean value of serum triglycerides of urban respondent was higher than the rural postmenopausal women and was statistically significant.

Results On Serum High Density Lipoprotein

Table II shows the serum High density lipoprotein results of rural and urban postmenopausal women

The mean value was 53.5 for rural group and 45.05 for urban group, respectively. The obtained 'F' ratio of 186.6 was higher than the table 'F' ratio of 3.86. Hence the serum high density lipoprotein was significant at 0.05 level of confidence with degree of freedom 1 and 498 is 3.86 between the rural and urban groups.

The mean value of serum High density lipoprotein of rural subjects was higher than the urban subjects and was statistically significant.

Results On Serum Low Density Lipoprotein

Table III shows the serum low density lipoprotein results of rural and urban postmenopausal women

The mean value was 132.2 for rural group and 137.7 for urban group, respectively. The obtained 'F' ratio of 10.29 was higher than the table 'F' ratio of 3.86. Hence the serum low density lipoprotein was significant at 0.05 level of confidence with degree of freedom 1 and 498 is 3.86 between the rural and urban groups.

Results On Total Cholesterol

Table IV shows the serum total cholesterol results of rural and urban postmenopausal women.

The mean value was 197.5 for rural group and 210.47 for urban group, respectively. The obtained 'F' ratio of 10 was greater than the table 'F' ratio of 3.86. Hence the total cholesterol level was significant at 0.05 level of confidence with degree of freedom 1 and 498 between the rural and urban groups. The mean value of total cholesterol of urban subjects was greater than the rural postmenopausal women and it was statistically significant.

Results On Prevalence Of Hypertension

Table IV shows the prevalence of hypertension among rural and urban postmenopausal women.

The above table shows the prevalence of hypertension was 39.2 percent (98 numbers) in rural postmenopausal women and 58.8 percent (147 numbers) among urban postmenopausal women. Hypertension was comparatively more prevalent in urban subjects.

DISCUSSION

The results of the present study revealed that prevalence of hypertension and lipid profile levels were comparatively more among urban postmenopausal women than rural subjects. The mean value of serum triglycerides level was higher than the normal value of \leq 160 mg /dl (Harrison, 1991)⁸ in urban groups. Whereas the mean value of serum triglycerides level in rural groups was within the normal range. There was significant difference between both the groups.

The normal value of serum HDL level is 40-60 mg /dl (Srilakshmi.B, 2011)⁹. Mean value of HDL in both the groups was within the normal range. Though both the groups had normal range of HDL values significant difference was observed between them.

The mean value of serum LDL level was higher than the normal value of $<$ 130mg/dl (Harrisons, 1991)⁸ in both the groups. Significant difference was also observed between both the groups.

Mean value of serum total cholesterol was greater than the normal value of $<$ 200mg/dl (Harrisons, 1991)⁸ in urban postmenopausal women. Rural subjects had borderline mean value just below the normal value. There was significant difference between rural and urban postmenopausal women in their total cholesterol level.

Researches also shows that Rural-urban differences in metabolic profiles are noted in most developing countries (Popkin BM, 2006)¹⁰. These differences may be due to demographic transition (shift to low fertility, low mortality, and higher life expectancy) and epidemiologic transition (from widely prevalent infectious diseases to a

Table 1: Computation of Analysis of Variance on Serum Triglycerides level among Rural and Urban Postmenopausal women (Scores in mg/dl)

Mean of Rural	Mean of Urban	SV	DF	SS	MS	OF	Table Value
159.2	163.4	B	1	2242.96	2242.96	10.58*	3.86
		W	498	105560.91	211.96		

* significance at 0.05 level of confidence

Table 2: Computation of Analysis of Variance on High Density Lipoprotein among Rural and Urban Postmenopausal Women (Scores in mg/dl)

Mean of Rural	Mean of Urban	SV	DF	SS	MS	OF	Table value
53.56	45.05	B	1	9048.3	9048.3	186.63*	3.86
		W	498	24145	48.483		

* significance at 0.05 level of confidence

Table 3: Computation of Analysis of Variance on Serum Low Density Lipoprotein among Rural and Urban Postmenopausal Women (Scores in mg/dl)

Mean of Rural	Mean of Urban	SV	DF	SS	MS	OF	Table value
132.23	137.76	B	1	3819.8	3819.8	10.29*	3.86
		W	498	184744	370.97		

* significance at 0.05 level of confidence

Table 4: Computation of Analysis of Variance on Total Cholesterol among Rural and Urban Postmenopausal Women (Scores in mg/dl)

Mean of Rural	Mean of Urban	SV	DF	SS	MS	OF	Table value
197.58	210.47	B	1	20775	20775	10*	3.86
		W	498	956919	1921		

* significance at 0.05 level of confidence

Table 5: Percentage Of Prevalence Of Hypertension Between Postmenopausal Women(Scores in percentage)

S.No	Health Problems	Rural women	
		Number	F
1	Hypertension	98	3

pattern of high prevalence of chronic life style related non communicable diseases), as these countries become more resourceful economically (socioeconomic transition, shift of people from the rural to the urban area). (Mosley WH et al 1994)¹¹. These factors are responsible for significant changes in dietary and physical activity patterns (nutrition and lifestyle transitions, and stress) leading to an increased burden of cardiovascular diseases (Misra A et al.,2008)¹² The study findings are consistent with study done by Martínez JA et al 2013 ¹³ among rural and urban postmenopausal women and concluded that Urban menopausal women had a higher prevalence of cardiovascular and osteoporosis risk factors than rural women. Berg, et al., 2004¹⁴ also demonstrated higher total cholesterol, LDL-C and triglycerides in menopausal transition and postmenopausal women. A similar observation was also made by Carr, et al., 2000¹⁵ in postmenopausal Caucasian.

Conway Joan M et al 1995¹⁶ study also shows that Total cholesterol was significantly higher in urban than in rural Subjects. The difference between urban and rural areas regarding the feeding habits could have an impact on lipid

metabolism. Urbanization usually involves varying degrees of modernization and westernization which have an impact on dietary habits. The urban environment entails important changes in lifestyles, economic activities, exposure to marketing and reference group influences. All these impinge on traditional diets and lead to shifts in food consumption patterns (Conway Joan M et al., 1995)¹⁶ Result of this study shows that prevalence of hypertension was more in urban subjects than rural postmenopausal women. The study findings are consistent with study done by Midha T et al 2009¹⁷ to know the prevalence of hypertension in a north Indian population and concluded that the prevalence of hypertension was 32.8% in the urban population and 14.5% in the rural population. Hirokawa K et al 2014¹⁸ study also concluded that Cardiovascular hyper reactivity could play a role in higher risks of cardiovascular diseases in postmenopausal women.

SUMMARY AND CONCLUSIONS

This comparative study on lipid profile level and the prevalence of hypertension between rural and urban postmenopausal women concluded that Lipid profile results-Triglycerides, HDL, LDL and Total cholesterol levels were significantly better in rural postmenopausal women than the urban postmenopausal women. The prevalence of hypertension was also higher among urban postmenopausal women. The difference between modern lifestyle in urban areas and the traditional way of life in

rural areas may affect the population's health. The difference between urban and rural areas regarding the feeding habits could have an impact on lipid metabolism. (Lissock CN et al.,2011)¹⁸. To improve postmenopausal health status regular health checkup,Lifestyle modification, Nutritional education and counselling are highly essential to prevent Cardiovascular diseases .

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CONFLICT OF INTEREST

The authors have no conflict of interest to declare.

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