DOI: 10.7860/JCDR/2012/4910.2688

Original Article

Obstetrics & Gynaecology Section

The Quality of Life During and After Menopause Among Rural Women

POOMALAR G K, BUPATHY AROUNASSALAME

ABSTRACT

Introduction: The overall health and well-being of middle-aged women has become a major public health concern around the world. More than 80% of the women experience physical or psychological symptoms in the years when they approach menopause, with various distresses and disturbances in their lives, leading to a decrease in the quality of life. The aim of our study was to assess the quality of life and the impact of hormonal changes in perimenopausal and postmenopausal women and to correlate the prevalence of the symptoms with their duration since menopause.

Material and Methods: A cross- sectional study was done at Sri Manakula Vinayagar Medical College and Hospital, Puducherry, from January 2012 to April 2012. Five hundred women who were in the age group of 40-65 years, who came from rural areas to our hospital, were included in the study. The women who were receiving hormonal treatment and those who refused to participate in the study were excluded. The data such as the socio-demographic information and the menstruation status, which were based on the reported length of time since the last menstrual period and the experience of the symptoms, as were tested in the Menopause Specific Quality of Life (MENQOL) questionnaire, were collected from each patient. The women who were included in the study were divided into three groups as the menopause transition, early postmenopausal and the late postmenopausal groups. All the data which were gathered were analyzed by using SAS 9.2. The Chi square test and the relative risk and the confidence interval calculations were applied to compare the frequencies of the symptoms among the women with different menopausal statuses. A p-value of less than 0.05 was considered to be statistically significant.

Results: Mean menopausal age in the study group was 45 years. The most common symptom within study subjects were low back ache (79%) and muscle-joint pain (77.2%). The least frequent symptoms were increase in facial hair (15%) and feeling of dryness during intimacy (10.8%). Scores of vasomotor domain were significantly more in menopause transition group. Scores of physical domain were significantly more in late postmenopausal group.

Conclusion: The menopause related symptoms had a negative effect on the quality of life of the perimenopausal and the postmenopausal women. Such regional studies can help in creating awareness and in educating women on the early identification of the common menopausal symptoms.

Key Words: Menopause, Quality of life, Menopausal transition, Early post menopausal women, Late post menopausal women

INTRODUCTION

With the increase in the life expectancy, a woman spends almost a third of her life in menopause [1]. The transition from the reproductive to the non-reproductive stage is the result of a reduction in the female hormonal production by the ovaries. This transition is normally not sudden or abrupt, it tends to occur over a period of years, and it is a natural consequence of aging. However, for some women, the accompanying signs and effects that can occur during the menopause transition years can significantly disrupt their daily activities and their sense of well-being. Numerous physical and psychological symptoms have been attributed to the hormonal changes of menopause. The overall health and well-being of middle-aged women have become a major public health concern around the world. More than 80% of the women experience physical or psychological symptoms in the years when they approach menopause, with various distress and disturbances in their lives, leading to a decrease in the quality of life [2].

The aim of this study was to assess the quality of life and the impact of the hormonal changes in perimenopausal and postmenopausal women who were aged between 40-65 years, who came from rural areas and belonged to the middle and low socio-economic strata of Puducherry. This study will help in creating awareness about the possible problems which are caused by menopause, it can help in the early recognization of the symptoms and in the reduction of the discomfort and fears and it can enable the women to seek the appropriate medical care if necessary.

MATERIALS AND METHODS

A cross- sectional study was done at Sri Manakula Vinayagar Medical College and Hospital, Puducherry, from January 2012 to April 2012. Five hundred women were included in the study. This study was done in accordance with the ethical standards of the research committee. An informed written consent was obtained from each patient before this study was conducted. By considering the proportion of the menopausal symptoms as 50%, the design effect as 1 and a 95% CI, the minimum sample size is fixed at 384 (calculated by the Open Epi Software Version 2.3). The cluster sampling method was used. 500 women who were in the age group of 40-65 years, who came from rural areas to our hospital, were included

in the study. The women who were receiving hormonal treatment and those who refused to participate in the study were excluded. The women who were included in the study were divided into three groups, the menopause transition, early post menopause and the late post menopause groups. The women who were above the age of 40 years and were menstruating were classified as the menopause transition (MT) group, while the women whose last menstrual period occurred ≥12 months were categorized as the post menopause (PM) group. The postmenopausal women who attained menopause ≤5 years were classified as the early postmenopausal group, while those who had attained menopause >5 years were classified as the late postmenopausal group. The data such as the socio-demographic information, the menstruation status which was based on the reported length of time since the last menstrual period and the experience of the symptoms, as were tested according to the Menopause Specific Quality of Life (MENQOL) questionnaire, were collected from each patient. MENQOL consists of 29 items. Each woman was enquired about the symptoms in the previous six months and they were asked to indicate them on a 7 point scale which ranged from 0-not at all bothered, to 6- extremely bothered. For the analysis, the score became 1 for "No", 2 for "Yes" through to 8 for "Yes (extremely bothered)". All the data which were gathered were analyzed by using SAS 9.2. The mean symptom score was calculated by adding the symptom scores of all the women with positive symptoms and by dividing it by the number of women with positive symptoms. The Chi square test and the relative risk and the confidence interval calculations were applied to compare the frequencies of the symptoms among the women with different menopausal statuses. A p-value of less than 0.05 was considered to be statistically significant.

RESULTS

The study group consisted of 500 women, of which 135 were in menopause transition, 133 were in early post menopause and 232 were in late post menopause. The mean age of menarche was 14.58 years. The mean menopausal age was 45 years. Similarly, the mean menopausal age in the mothers and sisters of the study group was 45.17 years. In our study group, the menstrual pattern at the time of menopause was analyzed. It showed that the menstruation had stopped gradually in 165 (45.21%) women, that it had stopped abruptly in 66 (18.08%) women and that in 134 (36.71%) women, before menopause, heavy menstruation had occurred, for which treatment was required . The sociodemographic characteristics of the study population have been shown in [Table/Fig 1]. The average age at menopause varied among the different socioeconomic classes. The average age at menopause in the class III women was 47.5 years as against 43.3 years in the class V women [Table/Fig 2].

Vasomotor symptoms were found in 80% of our study group, psychosocial symptoms were found in 93.2%, physical symptoms were found in 99% and sexual symptoms were found in 82%. The prevalence of each menopausal symptom in the study group has been shown in [Table/Fig 3]. Overall, the most prevalent symptom was low back ache in 79% women and aching in the muscles and joints in 77.2% women [Table/Fig 3]. The least frequent symptoms were an increase in the facial hair in 75 (15%) women and a feeling of dryness during intimate encounters in 54(10.8%) of the women [Table/Fig 3].

[Table/Fig 4] shows the comparison of the post menopausal symptoms in the different age groups. In both the groups of women (≤ 50 years and > 50 years), low back ache was the most common symptom which was seen. Among the women who were ≤ 50 years, low back ache was prevalent in 76.64%. Among the women who were > 50 years, low back ache had occurred in 81.85%.

[Table/Fig 4] shows that there was no significant difference between the age and the prevalence of postmenopausal symptoms. Similarly, an analysis on the relationship between the postmenopausal symptoms and the income of the study population was done [Table/Fig 5]. This showed that the vasomotor symptoms were significantly less prevalent in those with a monthly income of ≤ Rs 5000, than in those with a monthly income of > Rs 5000. On the other hand, there was a slightly higher prevalence of other post menopausal symptoms in the low income group (but the difference was not statistically significant). In both the groups, low back ache was the most common menopausal symptom.

Age	n	%
40 -45	107	21%
46 –50	129	25.8%
51– 55	76	15.2%
56 –60	101	20.2%
61 - 65	87	17.4%
Education		
Illiterate	214	42.8%
Literate	286	57.2%
Socio Economic Status		
Class III	20	4%
Class IV	288	57.6%
Class V	192	38.4%
Marital Status		
Married	451	90.2%
Unmarried	10	2%
Widow	39	7.8%
Life Style		
Sedentary	134	26.8%
Active	366	73.2%
Menopause Status		
Menopause transition	135	27%
Early menopause	133	26.6%
Late menopause	232	46.4%
Dietary Pattern		
Vegetarian	28	5.6%
Mixed diet	472	94.4%
Intake of tea	411	82.2%
Coffee	317	63.4%
Alcohol	411	82.2%
smoking	4	8%
Tobacco	95	19%

[Table/Fig-1]: Sociodemographic charactaristics of study population.

The vasomotor symptoms and the sexual symptoms were more prominent in the menopause transition group than in the early and late postmenopausal groups. The psychosocial symptoms were

	No. of persons	Average age at menopause
Class III	23	47.5
Class IV	287	46.3
Class V	190	43.3

[Table/Fig-2]: Average age of menopause in different socio economic status.

		In menopause transition		Early Post Menopause group		Late post menopause group		All 3 groups	
		n= 135	Mean score	n= 133	Mean score	n= 232	Mean score	n= 500	Mean score
1	Hot fluses	86	2.93	60	3.3	113	3.15	255	3.17
2	night sweats	91	2.76	72	3.35	104	3.40	270	3.16
3	Sweating	88	3.03	70	3.39	87	3.54	248	3.30
4	Dissatisfaction with personal life	42	3.14	54	3.53	114	3.59	210	3.48
5	Feeling anxious or nervous	81	3.27	94	3.31	161	3.33	336	3.31
6	Experiencing poor memory	77	3.28	85	3.33	154	3.36	316	3.33
7	Accomplishing less than i used to	62	2.88	72	3.5	122	3.28	256	3.25
8	Feeling depressed, down, blue	67	3.46	74	3.41	143	3.64	286	3.52
9	Impatience with other people	78	3.37	72	3.39	138	3.52	290	3.43
10	Willing to be alone	42	3.07	39	3.10	71	2.9	152	3.01
11	Flatulence / gas pain	45	2.77	39	3.26	69	3.15	153	3.06
12	Aching in muscles and joints	100	3.6	103	3.56	181	3.82	386	3.68
13	Feeling tired or worn out	87	3.23	102	3.27	169	3.41	360	3.31
14	Difficulty in sleeping	66	3.32	64	3.55	118	3.79	250	3.58
15	Aches in back of neck or head	89	3.29	97	3.42	167	3.56	355	3.44
16	Decrease in physical strength	73	2.95	59	3.12	96	3.33	228	3.15
17	Decreased stamina	86	3.27	85	3.28	132	3.19	305	3.22
18	Feeling lack of energy	84	3.35	86	3.26	150	3.25	322	3.27
19	Dry skin	25	3.08	43	2.88	68	3.25	136	3.10
20	Facial hair	15	3	21	3.05	39	3.18	75	3.1
21	Weight gain	38	3.16	46	3.20	71	3.08	157	3.13
22	Changes in appearance, texture or tone of skin	33	2.70	43	3	65	2.85	141	2.85
23	Feeling bloated	45	3.09	41	2.98	95	3.15	181	3.09
24	Low back ache	108	3.62	102	3.79	183	3.78	395	3.73
25	Frequent urination	58	3.34	60	3.27	99	3.76	217	3.51
26	Involuntary urination while laughing or coughing	35	2.69	21	3.43	39	3.28	95	3.09
27	Change in sexual desire	121	1.28	47	1.53	116	1.37	286	1.36
28	Vaginal dryness during intimacy	18	2.66	15	2.4	21	3.29	54	2.83
29	Avoiding intimacy	49	1.63	58	1.54	157	1.37	264	1.45

[Table/Fig-3]: Prevalence of postmenopausal symptoms in study population.

age of study population	Vasomotor symptoms		Psychosocial symptoms		Physical symptoms		Sexual symptoms	
	present	absent	present	absent	present	absent	present	absent
>50 years	173	53	214	12	223	3	180	46
≤50 years	228	46	253	21	272	2	231	43
RR (95% CI)	0.919 (0.841 – 1.006)		1.025 (0.979-1.0737)		0.993 (0.976-1.012)		0.944 (0.869-1.026)	
x^2 value (p-value)	3.462 (0.063)		1.113 (0.291)		0.446 (0.504)		1.838 (0.175)	

[Table/Fig-4]: Prevalence of postmenopausal symptoms in relation to age in study population.

more prominent among the late postmenopausal women as compared to those in the menopause transition and early postmenopausal groups [Table/Fig 6]. Among all the postmenopausal com-

Family income of study population	Vasomotor symptoms		Psychosocial symptoms		Physical symptoms		Sexual symptoms	
	present	absent	present	absent	present	absent	present	absent
≤Rs 5000/ month	109	41	144	6	150	0	123	27
>Rs 5000/ month	292	58	323	27	345	5	288	62
RR (95% CI)	0.871 (0.781-0.971)		1.040 (0.9949-1.0876)		1.0144 (1.001-1.027)		0.9965 (0.9113-1.0896)	
x^2 value (p-value)	7.658 (0.006)*		2.349 (0.125)		2.164 (0.141)		0.0058 (0.939)	

[Table/Fig-5]: Prevalence of postmenopausal symptoms in relation to income in study population.

		Menopause transition (n=135)	Early post-menopausal group (n=133)	Late post-menopausal group (n=232)	X^2 value	P-Value
Vasomotor symptoms	present	118	106	178	6.244	0.044*
	absent	17	27	54		
psychosocial symptoms	present	120	124	224	8.41	0.015*
	absent	15	9	8		
physical symptoms	present	135	131	230	1.93	0.381
	absent	0	2	2		
sexual symptoms	present	126	96	190	20.7	<0.001*
	absent	9	37	42		

[Table/Fig-6]: Prevalence of postmenopausal symptoms in 3 subgroups of study population.

plaints, the physical symptoms were more prominent in all the 3 groups.

RR – relative risk, CI – confidence interval, x^2 – chi square

RR – relative risk, CI – confidence interval, * indicates that the difference is significant.

* indicates that the difference is significant

Rather than the ages of the study population, their duration since menopause was more associated with the prevalence of the menopausal symptoms.

DISCUSSION

Coping with menopause in the perimenopausal ages has always been a troublesome issue in every woman's life. There are several

scales to study the quantity of the troubles which a woman faces during that period. We evaluated the quality of life of the woman with menopausal symptoms by using the MENQOL questionnaire. MENQOL was developed in 1996 and it consists of four domains: vasomotor, psychological, physical and sexual. MENQOL has been applied in Europe [3], China and in some other developing countries [4, 5].

The age at menopause was found to be varied in different studies. In a regional survey which was done by Boulet et al, on approximately 400 women from each of the seven south-east Asian countries (Hong Kong, Indonesia, Korea, Malaysia, the Philippines, Singapore and Taiwan), the median age at menopause was found to be 51.1 years. This median age at menopause appeared to be within the ranges which were observed in the western countries [6]. In a population-based cohort of over 22 000 women from three regions of the US, the median age of natural menopause was found to be 50.5 years [7]. A review article which was written by Palacios et al showed that the median age at menopause in Europe ranged from 50.1 to 52.8 years, that in north America, it ranged from 50.5 to 51.4 years, that in Latin America, it ranged from 43.8 to 53 years, and that in Asia, it ranged from 42.1 to 49.5 years [8]. But a study which was done by Kapur et al., in the Haridwar district of Uttarakhand, showed that the recalled mean age at menopause was 45 years [9]. Similarly, in our study, the mean menopausal age was 45 years.

Kapur et al., reported that the women who belonged to the middle-class families had a later onset of menopause at 45.5 years as compared to the women of a poor socio-economic status, who had the onset of menopause at 42.1 years [9]. A study which was done by Wise et al also showed that adverse socio-economic conditions across the lifespan may be associated with an increased rate of entry of women into perimenopause [10]. Similarly, in our study, the class III women had attained menopause at 47.5 years as against 43.3 years among the class V women [Table/Fig 2]. This showed that the women from the lower socio-economic status had attained menopause at earlier ages. The frequencies of the menopausal symptoms in our study population were much higher than those which were found in several other studies [11-13]. A study which was conducted in Pune showed a loss of interest (in 93% women), pressure/tightness in the head (in 83% women), weight gain (in 67% women) and hot flushes (in 54% women) as the common symptoms in decreasing frequency [14]. A study which was done by Haines et al., on Asian women, showed body or joint aches/pains as the most prevalent symptom, which ranged from 76% in Korean women to 96% in Vietnamese women [15]. These results were similar to those of our study [Table/Fig 3]. Studies from Sydney and Holland had reported hot flushes in 63 % of the women [16,17]. In our study, 51% of the women reported hot flushes [Table/Fig 3]. Almost similar results were obtained from a study which was done in Pakistan, which reported hot flushes in 55 % of the women [18]. These diversities in the menopausal symptoms probably exist because women experience a reduction in the oestrogen levels in a wide variety of ways, with great inter-individual variations.

In a study which was done in UAE, 69% of the women reported physical symptoms, 58.7% reported psychosocial symptoms, 40% reported vasomotor symptoms and 37.9% reported sexual symptoms [19]. A study which was done by Sudhaa et al., showed that the mean number of postmenopausal symptoms were significantly higher in the > 50 years age group as compared to those in the ≤ 50 years age group [20]. Whereas in our study, there was no significant difference between the age and the prevalence of the postmenopausal symptoms [Table/Fig 4].

Chowta et al., [21] showed that the vasomotor symptoms were more common (89%) in the lower socioeconomic group, which was contradictory to our results [Table/Fig 5]. In agreement to our study results, the results of Kaulagekar [22] showed that the high-income group had reported more vasomotor symptoms (54 vs 49%). It also showed that the psychological symptoms were reported more (70%) among the low-income group than the high-income group (59%). This could be because of the several other stressors which were present in their living environment. The Study of Women's Health across the Nation (SWAN) results showed that most of the indicators of the low socioeconomic status, particularly the low educational level and the difficulty in paying for the basic necessities, were associated with a significantly increased reporting of almost all the postmenopausal symptoms (odds ratios = 1.15–2.05) [23]. Similarly, our study also showed a higher prevalence of most of the symptoms except the vasomotor symptoms in the low income group. But the difference was not statistically significant.

The study which was done by Kaulagekar [22] also stated that the overall reporting of the symptoms was lesser among the nonworking women (housewives) than among their working counterparts (76 vs 85%). This was perhaps because of the stress and the burden which were due to the dual roles which the working women had to play in their daily lives. Our study on rural women showed that the physical symptoms were more prevalent than the other menopausal symptoms. Whereas a study which was done by Bernis and Reher [24] showed that rural women had significantly higher levels of hot flashes (rural, 56%; semiurban, 43%; urban, 46%; chi2=6.717, P=0.035) or loss of sexual desire (rural, 51%; semiurban, 44%; urban, 41%; chi2=24.934, P=0.001). Conversely, the urban women were found to suffer more from psychological symptoms in their study. A study which was done by Doyel and Subha [25] showed that almost all the menopausal symptoms were significantly higher in the rural population than in the urban population. Because the rural women of this study group were mostly illiterate, they were less likely than the urban women to be aware of managing and/or preventing the menopausal problems. This could have been a probable explanation for the higher prevalence of the symptoms among the rural women than their urban counterparts.

Nisar and Sohoo showed that the post menopausal women had significantly high scores in the physical domain than the menopause transition group P<0.002, while the scores of the psychological domain were significantly high in the menopause transition group than in the postmenopausal group ($p < 0.003$). But a study which was done in Pakistan by Nisar et al reported vasomotor symptoms in 71% women, psychological symptoms in 96% and physical and sexual symptoms in 99% and 66% respectively [26]. These were comparable to our results. A study which was done by Rahman et al., showed that the urogenital symptoms were significantly higher in the postmenopausal group as compared to those in the menopause transition group. The psychological symptoms were significantly higher among the perimenopausal women as compared to those among the postmenopausal women [27]. In our study, the vasomotor symptoms and the sexual symptoms were more prominent in the menopause transition group than in the early and late post menopausal groups. The psychosocial symptoms were more prominent among the late post menopausal women as compared to those among the menopause transition and the early post menopausal women [Table/Fig 6]. But a study from Thailand showed many symptoms to be significantly related

to the menopause transition status (such as hot flushes, an upset stomach, insomnia, and urinary symptoms) and only night sweats and joint aches and pains were significantly associated with the post menopausal status [12].

CONCLUSION

The menopause related symptoms had a negative effect on the quality of life of the perimenopausal and the postmenopausal women. Such regional studies can help in creating awareness and also in helping in educating women regarding an early identification of the common menopausal symptoms.

REFERENCES

[1] Us Census Bureau 1996 Global aging into the 21st century-*The wall chart by US.*
[2] Whelan TJ, Goss PE, Ingle JN, Pater JL, Tu DS, Pritchard K, et al. Assessment of quality of life in MA.17: a randomized, placebo controlled trial of letrozole after 5 years of tamoxifen in postmenopausal women. *J Clin Oncol.* 2005; 23: 6931-40.
[3] Lemay DS, Jacques A, Legare H, Forest FJC, Masse B. The effects of flaxseed dietary supplement on lipid profile, bone mineral density, and symptoms in menopausal women: a randomized, double-blind, and wheat germ placebo-controlled clinical trial. *J Clin Endocrinol Metab.* 2005; 90:1390-97.
[4] Peeyananjarassri K, Cheewadhanaraks S, Hubbard M, Zoa Manga R, Manocha R, Eden J. Menopausal symptoms in a hospital-based sample of women in southern Thailand. *Climacteric.* 2006; 9:23-29.
[5] Limpaphayom KK, Darmasetiawan MS, Hussain RI, Burriss SW, Holinka CF, Ausmanas MK. Differential prevalence of quality-of-life categories (domains) in Asia women and changes after therapy with three doses of conjugated estrogens/medroxyprogesterone acetate: the Pan-Asia Menopause (PAM) study. *Climacteric.* 2006; 9: 204-14.
[6] Boulet MJ, Oddens BJ, Lehert P, Vemer HM, Visser A. Climacteric and menopause in seven south-east Asian countries. *Maturitas.* 1994; 19: 157-76.
[7] Nichols HB, Trentham-Dietz A, Hampton JM, Titus-Ernstoff L, Egan KM, Willett WC et al. From menarche to menopause: trends among US women born from 1912 to 1969. *Am J Epidemiol.* 2006; 164: 1003-11.
[8] Palacios S, Henderson VW, Siseles N, Tan D, Villaseca P. Age of menopause and impact of climacteric symptoms by geographical region. *Climacteric.* 2010; 13: 419-28.
[9] Kapur P, Sinha B, Pereira BM. Measuring climacteric symptoms and age at natural menopause in an Indian population using the Greene Climacteric Scale. *Menopause.* 2009; 16:378–84.
[10] Wise L A, Krieger N, Zierler S, Harlow BL. Lifetime socioeconomic position in relation to onset of perimenopause. *Epidemiol Community Health.* 2002; 56:851–60.
[11] Ho SC, Chan SG, Yip YB, Chang A, Yi Q, Chan C. Menopausal symptoms clustering in Chinese women. *Maturitas.* 1999; 33: 219-27.
[12] Punyahotra S, Dennerstein L, lehert P. Menopausal experiences of Thai women. *Maturitas.* 1997; 26: 1-7.
[13] Kaur S, Walia I, Singh A. How menopause affects the lives of women in suburban Chandigarh, India. *Climacteric.* 2004; 7: 175-80.
[14] Bagga A. Age and symptomatology of menopause: a case study. *Obs and Gynae Today.* 2004; 11(10):660-66.
[15] Haines CJ, Xing SM, Park KH, Holinka CF, Ausmanas MK. Prevalence of menopausal symptoms in different ethnic groups of Asian women and responsiveness to three doses of conjugated estrogens/medroxyprogesterone acetate: The Pan-Asia Menopause (PAM) study. *Maturitas.* 2005; 52: 264-76.
[16] Lu J, Liu J, Eden J. The experience of menopausal symptoms by Arabic women in Sydney. *Climacteric.* 2007; 10: 72-79.
[17] Greoneveld FP, Bareman FP, Barentsend R, Dokter HJ, Drogendi JK, Hoes AW. Vasomotor symptoms and well-being in the climacteric years. *Maturitas.* 1996; 23: 293-99.
[18] Qazi RA. Age, pattern of menopause, climacteric symptoms and associated problems among urban population of Hyderabad Pakistan. *J Coll Physicians Surg Pak.* 2006; 16: 700-03.
[19] Bener A, Rizk DE, Shaheen H, Micallef R, Osman N, Dunn EV. Measurement- specific quality of life satisfaction during menopause in an Arabian Gulf country. *Climacteric.* 2000; 3:43-49.
[20] Sudhaa S, Vishal RT, Annil M. Menopausal Symptoms in Urban Women. *JK Science* 2007; 9: 13-17.
[21] Chowta NK, Sebastian J, Chowta MN. Comparative study of menopausal symptoms in post menopausal and perimenopausal women. *Journal of Clinical and Diagnostic Research.* 2008; 2: 959-62.
[22] Kaulagekar A. Age of Menopause and Menopausal Symptoms among Urban Women in Pune, Maharashtra. *J Obstet Gynaecol India.* 2011; 61: 323-26.
[23] Ellen BG, Barbara S, Jennifer LK, Charlotte B, Charles M, Nancy R. Relation of Demographic and Lifestyle Factors to Symptoms in a Multi-Racial/Ethnic Population of Women 40–55 Years of Age. *Am J Epidemiol.* 2000; 152: 463-73.
[24] Bernis C, Reher DS. Environmental contexts of menopause in Spain: comparative results from recent research. *Menopause.* 2007;14: 777-87.
[25] Doyel D, Subha R. Menopausal problems among rural and urban women from Eastern India. *Journal of Social, Behavioral, and Health Sciences.* 2009; 3: 20-33.
[26] Nisar N, Sohoo NA. Frequency of menopausal symptoms and their impact on the quality of life of women: a hospital based survey. *J Pak Med Assoc*. 2009; 59:752-56.
[27] Rahman SA, Zainudin SR, Mun VL. Assessment of menopausal symptoms using modified Menopause Rating Scale (MRS) among middle age women in Kuching, Sarawak, Malaysia. *Asia Pac Fam Med.* 2010; 9: 5.

AUTHOR(S):

1. Dr. Poomalar G K
2. Prof. Bupathy Arounassalame

PARTICULARS OF CONTRIBUTORS:

1. Assistant Professor, Department of obstetrics and gynaecology, Sri Manakula Vinayagar Medical College Hospital, Puducherry, India.
2. Professor, Department of obstetrics and gynaecology, Sri Manakula Vinayagar Medical College Hospital, Puducherry, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:

Dr. G. K. Poomalar,
Assistant Professor, Department of Obstetrics and Gynaecology, Sri Manakula Vinayakar Medical College & Hospital, Madagadipet,
Pondicherry 605107, India.
Email: poomalarpragash@gmail.com
Ph: +919790572404

FINANCIAL OR OTHER COMPETING INTERESTS:

None.

Date of Submission: **Aug 03, 2012**
Date of Peer Review: **Aug 19, 2012**
Date of Acceptance: **Nov 10, 2012**
Date of Publishing: **Jan 01, 2013**