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A Cross Sectional Study to Evaluate the Prevalence of Symptoms of Menopause with Special Reference to Osteoporosis in Post Menopausal Women Attending Out Patient Department of a Teaching Medical Institute

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Abstract- Natural menopause is defined by the World Health Organization (WHO) as the “permanent cessation of menstruation resulting from the loss of ovarian follicular activity,”¹. The word is derived from the Greek men (month) and pausis (cessation). This cross sectional study was carried out on the women attending Out Patient Clinic of Gynaecology Department of a teaching medical institute. For this study, sample size of 373 patients was decided as per use of appropriate statistical calculations. An Osteoporosis specific score sheet was designed. A complete physical examination was conducted along with local examination for all patients which included per speculum and per vaginal examination. Special investigations were conducted for all patients to evaluate symptoms such as pap smear, breast examination and Bone Mineral Density. Bone mineral density was measured using DXA scan for the calcaneum bone.

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A Cross Sectional Study to Evaluate the Prevalence of Symptoms of Menopause with Special Reference to Osteoporosis in Post Menopausal Women Attending Out Patient Department of a Teaching Medical Institute

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Abstract- Natural menopause is defined by the World Health Organization (WHO) as the “permanent cessation of menstruation resulting from the loss of ovarian follicular activity,”¹. The word is derived from the Greek *men* (month) and *pausis* (cessation). This cross sectional study was carried out on the women attending Out Patient Clinic of Gynaecology Department of a teaching medical institute. For this study, sample size of 373 patients was decided as per use of appropriate statistical calculations. An Osteoporosis specific score sheet was designed. A complete physical examination was conducted along with local examination for all patients which included per speculum and per vaginal examination. Special investigations were conducted for all patients to evaluate symptoms such as pap smear, breast examination and Bone Mineral Density. Bone mineral density was measured using DXA scan for the calcaneum bone. We concluded that most common symptom associated with menopausal transition was night sweats followed by muscle and joint pain, psychosexual symptoms and irritability. Bone mineral density test concluded 34.3% of the population were suffering from osteoporosis while 34% were suffering from osteopenia. There is a statistical correlation between BMD and lifestyle pattern. BMD is significantly reduced in the population suffering from symptoms muscle and joint pain. BMD is inversely proportional to the age since menopause. There is an increased risk for fractures among patients who underwent oophorectomy. There is an inverse correlation between BMD and since menopause.

I. INTRODUCTION

Natural menopause is defined by the World Health Organization (WHO) as the “permanent cessation of menstruation resulting from the loss of ovarian follicular activity,”¹. The word is derived from the Greek *men* (month) and *pausis* (cessation). It is the culmination of some 50 years of reproductive aging—a process which unfolds as a continuum from birth through the menopause transition and ovarian senescence. The menopause transition represents a

period of dynamic changes in reproductive and non reproductive tissues. 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.

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 life².

All women have more or less similar hormonal changes with menopause. However, the experience of each women is unique and is influenced by age, cultural background, health, type of menopause (spontaneous or surgical), child bearing desires and relationships. Women may view menopause as a major change in their lives either positive such as freedom from troublesome dysmenorrhoea or the need for contraception or negative such as feeling ‘old’ or loss of child bearing possibilities. Other women may feel that the menopause brings a cessation of sexual pleasure.

A total of 130 million Indian women are expected to live beyond the menopause into the old age by 2015.³ Menopause is emerging as an issue owing to rapid globalization, urbanization, awareness and increase longevity in urban middle aged Indian women.

Menopause is a universal reproductive phenomenon but this reproductive landmark is not the same for all women in all cultures. The world population taken together shows a rough mean menopausal age of 40-50 years.⁴

As a first step towards the education of women on different aspects to menopausal symptoms and

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problems, one should have the insight of their problems and its preventive measures. Hence the need to assess the prevalence of menopausal problems and preventive health behaviors among selected groups of women is essential.

Menopause and osteoporosis are related to fragility fractures and constitute a major health problem, in terms of both individual suffering and financial costs. Age is also an important factor in the relationship between bone density and the absolute risk for fracture. Older women have a much higher fracture rate than younger women with the same bone density because of increasing risk from other factors, such as bone quality and tendency to fall.⁵ Because of the deprivation of estrogen after menopause, women are more vulnerable to bone loss than men and women with early menopause are particularly at risk.

II. MATERIALS AND METHODS

This cross sectional study was carried out on the women attending Out Patient Clinic of Gynaecology Department of a teaching medical institute. For this study, sample size of 373 patients was decided as per use of appropriate statistical calculations. These patients were selected by simple random sampling method. Post menopausal women beyond the age group 40 years attending the gynaecology out patient clinic were included in the study. Patients with age below 40 years or not attained menopause were excluded from the study. The study period was from January 2012 to August 2013.

Consent was taken from all the patients participating in the study. A broad Women Health questionnaire to identify mid life health problems was developed, which patients completed. This included complete history taking including age, parity, occupation, age since menopause, past medical surgical history and specific history concerning menopausal symptoms. Subjects were graded according to their socio economic status according to the Kuppaswami classification. Lifestyle was graded as sedentary and active according to the following definition. Sedentary people were defined in two ways (1) those expending less than 10% of their leisure time expenditure in activities involving > 4 metabolic equivalents. (2) Those who did not practice any leisure – time physical activity and who also were above the median in the number of hours spent sitting down during leisure time. Metabolic equivalents represent the ratio of energy expended during a physical activity to the metabolic rate sitting quietly, and are independent of body weight.

An Osteoporosis specific score sheet was designed. A complete physical examination was conducted along with local examination for all patients which included per speculum and per vaginal examination. Special investigations were conducted for all patients to evaluate symptoms such as pap smear,

breast examination and Bone Mineral Density. Bone mineral density was measured using DXA scan for the calcaneum bone.

Inferential statistics were given by Mann Whitney test & other tests of significance. Statistical analysis were executed to correlate between various variables. Sensitivity and specificity of each risk score were ascertained and cut off risk score for identifying osteoporosis and osteopenia were derived by comparing area under curve of each risk score on drawing receiver operational curve. Data was analysed by using SPSS Software version 16.0.

III. RESULTS

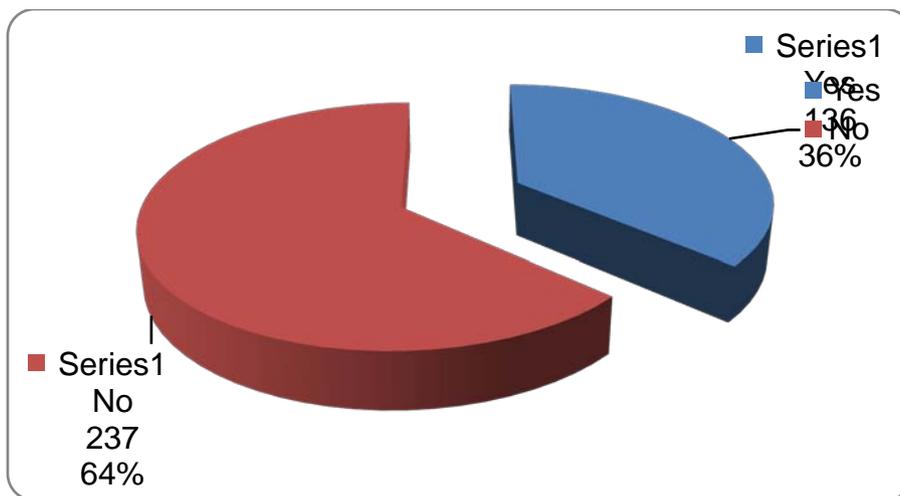
The mean age for menopause in our study was 46.21 years, median 45 years with standard deviation of 4.463. Range (39-60) years. The mean age of our population was 52 years range (42-90years)

In our study 7.2 % population had surgical menopause rest all attained natural menopause.

In our study 36.5 % population had a previous medical history which included 136 persons among the study group. Rest of the population had no significant past medical history.

Table 1 : Medical co- morbid conditions in the study population

		Count	Column N %
Medical history	Yes	136	36.5%
	No	237	63.5%
	Total	373	100.0%

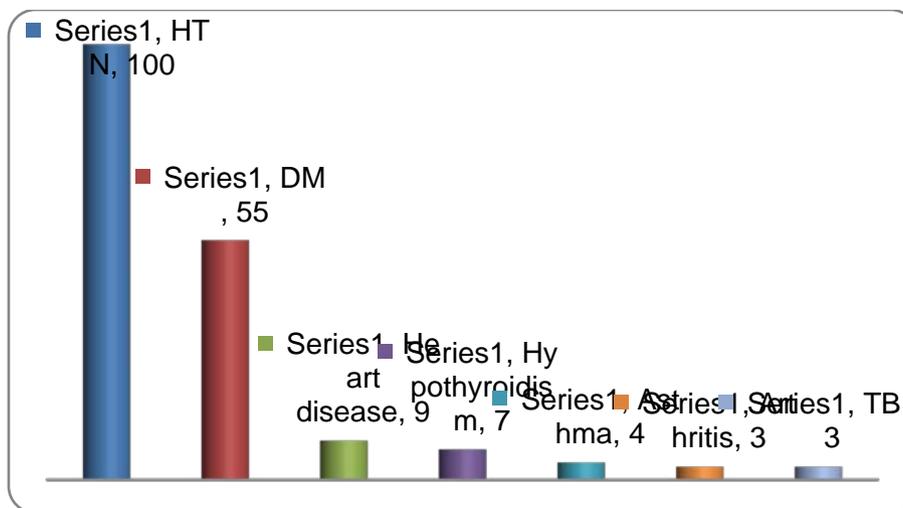


Graph 1: Medical co- morbid conditions in the study population

Table 2 : Co- morbid conditions associated with the study population

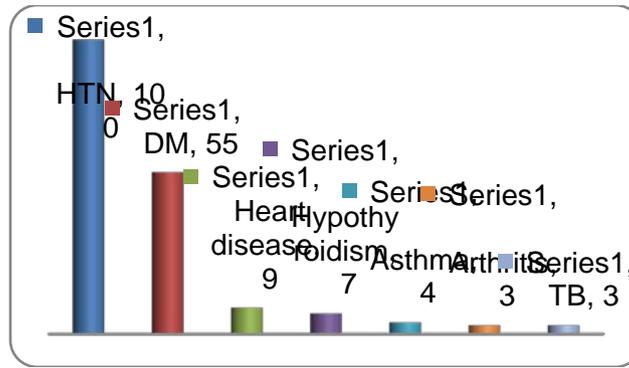
	Count	Column N%
HTN	100	73.53%
DM	55	40.44%
Heart disease	9	6.62%
Hypothyroidism	7	5.15%
Asthma	4	2.94%
Arthritis	3	2.21%
TB	3	2.21%

Percentages exceed 100% as more than one disease was present among study subjects.



Graph 2 : Co- morbid conditions associated with the study population

In the study maximum co-morbidity that was seen in population was hypertension (73.53%) followed by diabetes mellitus (40.44%) and least was seen to be arthritis (2.21%) and tuberculosis (2.21%).



Total 259 women experienced 383 vasomotor symptoms. 51.4% had hot flushes and 96.5% had night sweats.

Table 3 : Percentage of population having vasomotor symptoms

		Responses	Percent of Cases
Vasomotor ^a	Hot flushes	133	51.4%
	Night sweat	250	96.5%
Total		383	147.9%

Percentages may exceed 100%

Total 291 women experienced 444 psychological symptoms. 45.7% had sleep disturbances, 48.5% had lethargy and 58.4% had irritability.

Table 4 : Percentage of population having psychological symptoms

		Responses	Percent of Cases
Psychological	Sleep disturbances	133	45.7%
	Lethargy	141	48.5%
	Irritability	170	58.4%
Total		444	152.6%

Percentages may exceed 100%

Table 5 : Population having more or less than 3 symptoms

		Count	Column N %
More than three symptoms	>3 symptoms	194	52.0%
	<=3 symptoms	179	48.0%
	Total	373	100.0%

Total 365 women experienced 1460 all symptoms.

In our study 36.5 % population had a previous medical history which included 136 persons among the study group. Rest of the population had no significant past medical history.

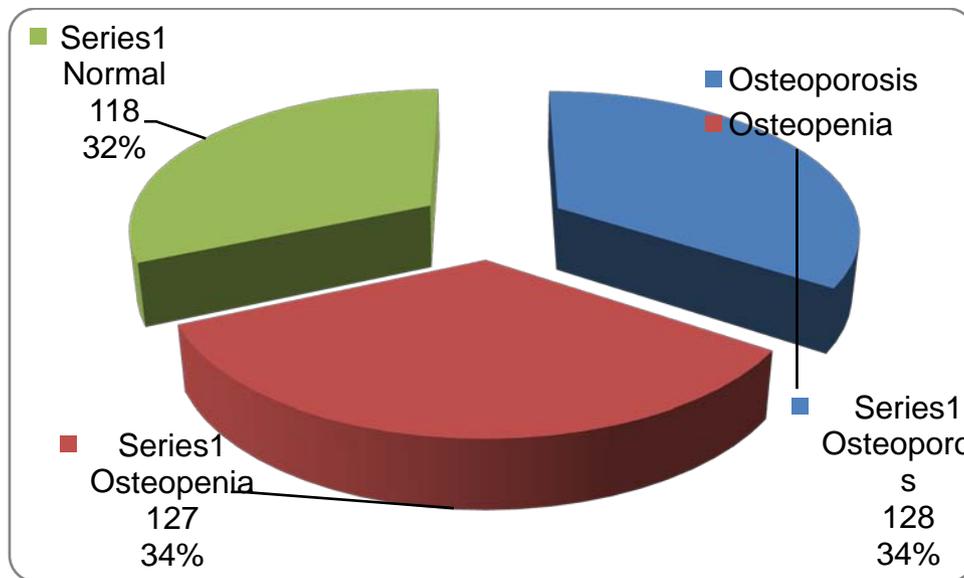
Table 6 : List of total number of affected population with symptoms

		Responses	Percent of Cases
All symptoms ^a	Hot flushes	133	36.4%
	Night sweat	250	68.5%
	Vulvovaginal	112	30.7%
	Stress incontinence	20	5.5%
	Burning micturition	45	12.3%
	Sleep disturbances	133	36.4%
	Lethargy	141	38.6%
	Irritability	170	46.6%
Psychosexual		174	47.7%

	Weight gain	91	24.9%
	Muscle /joint pain	191	52.3%
Total		1460	400.0%

Table 7 : Report of Bone Mineral Density examination

		Count	Column N %
BMD	Osteoporosis	128	34.3%
	Osteopenia	127	34.0%
	Normal	118	31.6%
	Total	373	100.0%



Graph 3 : Report of Bone Mineral Density examination

Bone Mineral Density test showed that 34.3% had osteoporosis while 34.% had osteopenia rest all were normal

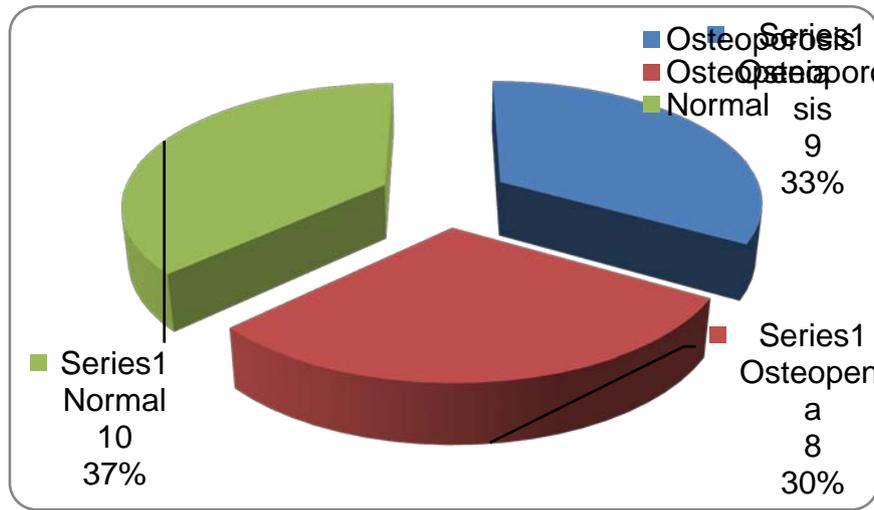
Table 8 : Result of mean and standard deviation for BMD

BMD	Mean	N	Std. Deviation
Osteoporosis	-2.8211	128	.22047
Osteopenia	-1.6451	127	.39867
Normal	.8191	118	.65153
Total	-1.2691	373	1.56976

This table shows that the mean for all osteoporotic patient BMD is -2.82 with standard deviation of 0.22 whereas for osteopenia the mean is -1.64 and standard deviation is 0.398 and for normal patients mean was 0.819 and standard deviation was 0.651.

Table 9 : Distribution of BMD among patients who underwent surgical menopause

		Count	Column N %
Post hysterectomy	osteoporosis	9	33.33%
	osteopenia	10	37.037%
	normal	8	29.62%



Graph 4 : Distribution of BMD among patients who underwent surgical menopause

Among the 27 patients who had surgical menopause 33.33% population had osteoporosis 37.03% had osteopenia and 29.62% were having normal BMD scores.

Table 10 : Correlation between age / BMD and age since menopause / BMD

		Age	Age Since Menopause
BMD	Correlation Coefficient	-.043	-.105 ⁺
	P value	.413	.043
	N	373	373

This table shows the correlation between BMD and age which is -0.43 which means age and BMD are inversely proportional coefficients. Similar results are seen between BMD and age since menopause which is

-.0105 which means they are inversely proportional coefficients. This is not statistically significant as p value is 0.413

Table 11 : Correlation between BMD and surgical menopause

Ranks				
	Surgical menopause	N	Mean Rank	Sum of Ranks
BMD	Yes	27	203.76	5501.50
	No	346	185.69	64249.50

This table is a correlation between surgical menopause and BMD where 27 subjects in the study group underwent surgical menopause, rest all had natural menopause. Among the 27 subjects who

underwent surgical menopause 10 had osteopenia 9 had osteoporosis and 8 were normal. When this data was analyzed using Mann Whitney test, it was found that it is statistically not significant as p value is 0.401.

Table 12 : Correlation between BMD and lifestyle

		LIFESTYLE			
		Active		Sedentary	
		Count	Column N %	Count	Column N %
BMD	Osteoporosis	94	34.6%	34	33.7%
	Osteopenia	97	35.7%	30	29.7%
	Normal	81	29.8%	37	36.6%
	Total	272	100.0%	101	100.0%

This is a correlation between BMD and lifestyle. Among the 272 patients who had active lifestyle 34.6% had osteoporosis and 35.7% had osteopenia while among the 101 patients who had sedentary lifestyle

33.7% had osteoporosis and 29.7% had osteopenia. When this data was entered and analysed by Chi Square test it was found to be not significant.

Table 13 : Correlation between BMD and symptoms of muscle and joint pain

		Muscle /joint pain			
		Absent		Present	
		Count	Column N %	Count	Column N %
BMD	Osteoporosis	38	20.9%	90	47.1%
	Osteopenia	63	34.6%	64	33.5%
	Normal	81	44.5%	37	19.4%
	Total	182	100.0%	191	100.0%

This table is a correlation between symptoms of muscle and joint pain and BMD. In our study group 90 patients who had muscle and joint pain were showed to have osteoporosis and 64 patients had osteopenia. On analysis of this data using Man Whitney test it was found that this was a statistically significant correlation as p value is 0.001

IV. DISCUSSION

The mean age at menopause observed in our study was 46.21 years. A wide range in mean age at menopause in Indian women from 40.32 to 48.84yrs⁶⁻¹⁵ and in developed countries from 48.0 to 51 yrs¹²⁻¹⁵ have been suggested in the past.

According to our study symptoms such as hot flushes, night sweats, vulvovaginal, psychosexual and muscle and joint pain were seen maximum in low socio economic group Chowta et al.,¹⁶ showed that the vasomotor symptoms were more common (89%) in the lower socioeconomic group, Genitourinary and psychological symptoms were common in the middle socioeconomic group which were similar to our results. In agreement to our study results, the results of Kaulagekar¹⁷ 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. Vasomotor symptoms such as hot flushes occurred in 36% of the population in our study group which were similar to studies conducted by Chowta et al in the year 2008 which had 42%. Urogenital symptoms such as stress incontinence were seen in as many as 5.4% of the study group. Comparable studies showed significantly higher population affected by similar symptoms. Psychological symptoms such as sleep disturbances were seen in 35.7% of the study population comparable to studies conducted by Chowta et al. Lethargy as a symptom was

seen in 37.8% of our study population. Other studies showed significantly higher population affected by this symptom. Muscle and joint pain occurred in 51.2% of the study population which were similar to results from other studies such as Chowta et al (48%).

Studies conducted by Siris ES¹⁸ in the year 2001 showed that the risk for fracture increased as time since menopause increased. Relative risk for time since menopause for 10–19 years was 1.18 (1.01–1.38), 20–29 years was 1.31 (1.12–1.54) and 30 years was 1.51 (1.26–1.81)⁹⁸In our study as well relative risk for fractures increases as age since menopause increases. This is because there is a inverse correlation between BMD and since menopause.

Lastly studies conducted by Tuppurainen M et al in the year 1995 showed that relative risk for fracture after Oophorectomy was 3.64 (1.01–13.04)¹⁹ In our population 27 patients underwent surgical menopause with oophorectomy. Among them 33% had osteoporosis and 37% had osteopenia. Therefore there is an increased risk for fractures among patients who underwent oophorectomy.

V. CONCLUSION

We found that the majority of the middle aged women in our study viewed the menopausal transition as a natural process, the nature of which is affected by both hormonal changes and by ageing. Each woman seems to experience a set of psychological and physical symptoms that are in some sense unique to her experience. Hypertension was the most common co-morbid condition seen along with menopause

Most common symptom associated with menopausal transition was night sweats followed by muscle and joint pain, psychosexual symptoms and irritability. Bone mineral density test concluded 34.3% of the population were suffering from osteoporosis while 34% were suffering from osteopenia. There is a statistical correlation between BMD and lifestyle pattern. BMD is significantly reduced in the population suffering from symptoms muscle and joint pain. BMD is inversely proportional to the age since menopause. There is an increased risk for fractures among patients who underwent oophorectomy. There is an inverse correlation between BMD and since menopause.

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