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Original Research Article

Age of menopause and determining factors in rural Telangana

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ABSTRACT

Background: Menopause is the cessation of menstruation for one year at the end of reproductive life. The average age of menopause differs in different regions. Early menopause is a high risk for cardiovascular diseases, osteoporosis, and late menopause for breast, and genital cancers. As the age of natural menopause is affected by many factors and early and late menopause cause life-threatening diseases, the determination of the age of menopause is important for different geographical regions.

Methods: This prospective cross-sectional study was conducted in the outpatient department of Obstetrics and Gynecology, Mamata Medical College and General Hospital, Khammam, Telangana, India, over 09 months from 01 April 2024 to 31 December 2024. Women with natural menopause were asked pre-determined questions like name, age, occupation, education, etc. and answers were noted. Iatrogenic and premature menopause or unwilling women, were excluded. Descriptive statistical analysis and a p-value test were used to find the age of menopause and co-relation with determinants. Medcalc-24 was used for calculations. p-value < 0.05 was considered significant. The outcome was discussed critically and compared with other study reports.

Results: The average age of menopause was 47.05 +/- 04.39 years. A strong co-relation of the age of menopause with occupation (p-0.0002) and marital status (p-0.0003) was observed. The same co-relation with body weight (p-0.0232) and parity (p-0.0114) was significant. No significant co-relation was detected between the age of menopause and menarche or with education.

Conclusions: The age of natural menopause is an important indicator of health in postmenopausal women and varies in different geographical regions. It is required to formulate health strategies for a healthy postmenopausal life of women.

Keywords: Cancer, Menopause, Obesity, Occupation, Osteoporosis

INTRODUCTION

Menopause, a retrospective diagnosis, is the cessation of menstruation for one year at the end of reproductive life due to exhaustion of ovarian follicles.¹ It causes many physiological, psychological, and organic changes in a woman's body making her at risk of different pathological conditions. Early menopause is a high risk for abnormal lipid profiles, cardiovascular diseases, osteoporosis, and Alzheimer's disease.² Late menopause makes her prone to

breast, endometrial, and ovarian cancer.³ She needs counselling to take certain precautions and change her lifestyle, and regular screening for certain pathologies, as early detection and management is key to a healthy postmenopausal life.⁴ Premenopausal bilateral oophorectomized woman needs hormone replacement till the age of natural menopause. So, knowledge of the age at menopause is important for protecting women in the latter third of their lives. The average menopausal age is 51 years in industrialized countries and 43-49 years in developing

countries.² In India, it differs in Northern, Eastern, Southern, Western, and Central regions. The age of natural menopause is affected by factors such as age, race, heredity, urban or rural environment, occupation, socioeconomic status, literacy, age at menarche, menstrual cycle length, parity, and use of combined oral contraceptive pills.⁵ Post hysterectomy ovarian function in premenopausal women deteriorates earlier than their expected age of menopause. Because the average age of menopause is influenced by many factors and is significant for a woman's health, it should be studied across different geographical regions to improve postmenopausal health. The present study was conducted to determine the age of natural menopause and to find the co-relation between the determining factors and the age of natural menopause.

METHODS

This prospective, cross-sectional, observational study was conducted in the Gynecology Outpatient Department (OPD) of Mamata Medical College and General Hospital, Khammam, Telangana, over 09 months from 01 April 2024 to 31 December 2024, following approval from the institutional ethics committee. Postmenopausal women with natural menopause, attending the OPD, were selected randomly and enrolled after verbal consent. They were asked the predetermined questions, and the answers were noted. The questions included the identification of the patient, age, occupation, education, residence, socioeconomic status, age of menarche, marital status, parity, history of taking combined oral contraceptive pills, addiction, obesity at menopause, and age of menopause.

The sample size was calculated by Yamane's formula after finding the number of attendances of such women in the OPD in previous months, and was found to be 222.2 rounded up to 222. Some women could not answer the questions and were excluded from the study making the final study population 209. Data analysis by standard descriptive statistics, frequency table, and percentage for categorical variables, with mean, and standard deviation was calculated. Interventional analysis, by finding the p-value, was used to determine the co-relation of socio-demographic and obstetric factors on the age of menopause. p value<0.05 was considered a significant co-relation. MedCalc -24 was used as a tool for statistical calculations and analysis. The observation was discussed critically and with the findings of other studies. Women with menopause which was due to radiotherapy, chemotherapy or surgery, medical diseases, premature menopause (at <40 years of age), and women who could not answer the questions or were unwilling to be included in the study were excluded from the study.

RESULTS

All the women in the study were from a rural background. Most of them were illiterate, belonged to a low socioeconomic class, and were daily wagers. The age group of participants was from 42 to 82 years of age. Most

(85.65%) of women had an average weight during the menopausal transition. As the weight of the women in the perimenopausal period could not be found they were asked about it in terms of obese, average or slim. Only two of the women gave a history of occasional smoking, which was not considered for statistical analysis. The socio-demographic data of the women is presented in Table 1.

Table 1: Socio-demographic factors of the study population (n=209).

S. no.	Factors	Number	Percentage (%)
1	Education		
	Illiterate to primary	197	94.26
	Secondary and higher	12	05.74
2	Occupation		
	Housewife	81	38.76
	Daily wager	121	57.89
	Other work	07	03.35
3	Weight		
	Average	179	85.65
	Obese	30	14.35

Table 2: Obstetric factors related to menopause (n=209).

S. no.	Factors	Number	Percentage (%)
1	Age of menarche		
	≤ 13years	171	81.82
	>13 years	38	18.18
2	Marital status		
	Staying with husband	184	88.04
	Single	25	11.96
3	Parity		
	≤p4	180	86.12
	>p4	29	13.88
4	Breastfeeding (>1year)		
	Yes	104	49.76
	No	105	50.24

All the women were married. The widowed and divorced women were categorized together under single women. Except for 03 women, all were parous, and 29 (13.88%) of the study population were grand multipara (>p4). The majority (88.04%) were staying with their spouses.

All the parous women breastfed each of their babies. None of them had a history of using combined oral contraceptive pills. Obstetric data related to the age of menopause are presented in Table 2. The average age of menarche in the study population was 12.57±1.3 years, and the average age of menopause was 47.05±04.39 years. The number of

women attending menopause in different age groups is presented in Figure 1.

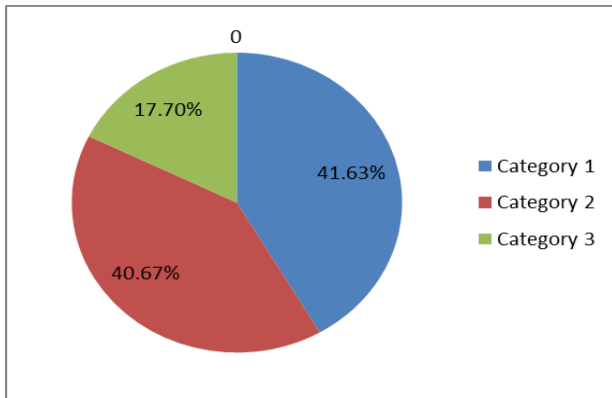


Figure 1: Percentage of women attending menopause in different age groups.

Category 1- 40-45 years, category 2- >45-50 years, category 3- >50 years at menopause. The correlation between determining factors and the age of menopause is presented in Table 3. Occupation and marital status showed a strong co-relation as determining factors of the age of natural menopause, with p-values of 0.0002 and 0.0003 respectively. Body weight and parity were found to have statistical significance with p-values of 0.0232 and 0.0114 though not very strongly significant.

Age of menarche as a determinant of age of menopause was not found to be significant. Most of the women, particularly the very old women, had difficulty remembering this age and only answered it by correlating with their age of marriage. No correlation was found between the level of education and the age of menopause. This may be explained by the unchanged environment of rural belonging and other factors.

Table 3: Correlation between determinants and age of menopause (n=32).

S. no.	Determinant	Mean age of menopause(years)	Standard deviation	95% CI	P value
1	Body weight				
	Average	46.35	04.14	0.2598 to 3.5002	0.0232
	Obese	48.23	04.32		
2	Education				
	Illiterate to primary	46.66	04.33	-1.5831 to 03.4231	0.4695
	Secondary and higher	47.58	03.01		
3	Occupation				
	Housewife	48.11	03.99	-3.3406 to -1.0794	0.0002
	Working	45.90	04.07		
4	Age of menarche				
	< 12 years	48.00	04.61	-3.5850 to 0.8450	0.2214
	>13 years	46.63	04.64		
5	Marital status				
	Staying with Husband	47.26	04.32	- 5.0240 to -1.4960	0.0003
	Single	44.00	03.11		
6	Parity				
	≤ p	46.55	04.09	0.4710 to 3.6690	0.0114
	>p4	48.62	03.81		

DISCUSSION

Postmenopausal women constitute a major proportion of society, with increased life expectancy. Globally, the life expectancy of a 60-year-old woman in 2019 could be on average 21 years longer.⁶ Their health care needs a proper knowledge of the average age of menopause in the region, as early and late menopause predisposes them to many pathological conditions increasing morbidity and mortality. Even if menopause occurs at the proper age, she needs many screening procedures, lifestyle changes, and nutritional supplements. Many factors affect the age of natural menopause. Ovaries have a fixed number of follicles at birth. Depending on the beginning and rapidity of the ovarian cycle they get exhausted and she attains menopause. Our study found the average age of menarche

to be 12.57±1.3 years. Regional variation of the age of menopause as observed in India is 47.3 years, 46.2 years, 45.5 years, 46.1 years, and 47.8 years in Eastern, Western, Northern, Southern, and Central India respectively in a PAN - India study.⁷ The present study found the average age of menopause as 47.05±04.39 years. Early menarche leads to early menopause.⁸ However our study did not find any such co-relation, which may be because a long interval of time between the event and data collection led to misinformation. A study by E K Bjelland et al did not find such a correlation between the age of menarche and the age of menopause.⁹ This study was conducted on rural women of low socio-economic status. As observed by studies, a rural woman in a developing country with low socioeconomic conditions gets her menopause earlier than a woman in opposite conditions and in lower altitudes.^{10,11}

Ahuja et al found a positive correlation between age of menopause and education and socioeconomic status which was explained by better nutrition and health care.⁷ Educated women experience menopause at a later age than illiterate women.¹² The Present study did not find a significant correlation in this point which may be explained by their unchanged environment, low economic status, and hard labor for their existence. A systematic review by Canavez et al found a weak association between lower education and earlier menopause (statistically significant in 45%).¹³ Obese women experience menopause later than women with average body weight.¹⁴ Zhu D et al in a meta-analysis of 11 prospective studies found a later age of menopause in obese women.¹⁵ We found a strong co-relation between obesity and a later age of menopause than it occurred in women with average body weight.

This is explained by the high estrogen level in obese women due to the peripheral conversion of androgen to estrogen. Most of the cross-sectional studies found a link between obesity and later age at menopause and some longitudinal cohort studies report no or a modest association.¹⁶ This discrepancy has been attributed to confounding factors, such as reliance on patients' recall of their weights. The present study found a significant difference in the age of menopause between low parity and grand multipara. Women with multi-parity experience menopause later than low parity. High parity, breastfeeding, and combined oral contraceptives prevent the reduction of the follicle pool in the ovaries leading to a longer reproductive life. The study by Christine R et al reported the inverse relation between parity and the lower age of menopause.¹⁷ They reported that higher parity has a lower risk of earlier menopause. Married women attend natural menopause at a later age than single women (unmarried, widowed, and divorced).¹⁸ Many studies have reported comparing married and widowed with unmarried and divorced, as she is practically single. The present study found a strong significance (p-value of 0.0003) of correlation between the age of menopause in a single woman and a woman staying with her husband.

Limitations

The study was based on verbal responses to the questions, which may not be accurate. It was a hospital-based study though all women were from rural Telangana.

CONCLUSION

The age of natural menopause is determined by multiple factors, which differ in different geographical regions. Knowledge of the correlation of such factors, the existence of some or many such factors in a particular region, and the average age of menopause in women in that region are important in formulating strategies for the provision of healthcare facilities and improving postmenopausal health.

The average age of menopause in this region in our study was 47.05±04.39 years. We found a strong correlation between occupation, marital status and age of natural menopause. There was a statistically significant correlation of a moderate degree between body weight and parity with menopausal age. Age of menarche and education did not show a significant co-relation with age at menopause.

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