

Determinants of Age at Natural Menopause in Shiraz

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Abstract

The mean age at natural menopause and its determinants among Shirazi women (southern Iran) was calculated. The data were obtained from a population-based cross-sectional study carried out in the year 2000. Interviews were carried out and observations made on 948 women who had incurred natural menopause. They were randomly chosen using postal zones housing sample framework of Shiraz.

Mean±SD age at menopause in the studied group was 48.3±5.3 (95% CI: 48.0-48.6) years with a median of 49.0 years. Arm circumference, height, weight, BMI, place of birth, handedness, ancestry, family background, level of education, level of daily physical activities, smoking habit, history of abortion, age at first marriage, age at first full-term pregnancy, menstrual cycle interval/duration, age at menarche, dysmenorrhea, mid-cycle spotting, were recorded. It was found that the number of pregnancies were not significantly related to age at menopause. Age at natural menopause significantly correlated with menstrual cessation pattern, age at last full-term pregnancy, consanguinity of marriage, place of birth, and use of hormones before menopause.

Iran J Med Sci 2002; 27(3):131-133

Keywords • Natural menopause • menstrual-reproductive factors • socio-demographic characteristics • age • principal component analysis (PCA)

Introduction

With having a life expectancy of nearly 70 years in Iran, women can now expect to live one third of their adult life beyond menopause.

Several studies show that the age at natural menopause is influenced by physical, socio-demographic and behavioral characteristics as well as the reproductive history.¹⁻⁴

Based on the postal code and using a randomized stratified cluster sampling, a total of 948 women who experienced natural menopause were selected and enrolled into the study between July and September 2000. Using a structured questionnaire, data regarding reproductive history, use of contraceptive hormones, personal medical history, general health status, socio-demographic information, etc. were obtained from each participant.

The mean age ±SD at menopause in our subjects was 48.3±5.3 (95% CI: 48.0-48.6) years with a median of 49. Nine percent of subjects had early menopause (<40 years), 58.5% of them had menopause between

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Table 1: Mean(SD) age at natural menopause (years) according to socio-demographic and menstrual/reproductive characteristics.

Variable	No(%)	Mean(SD)	p-value
Menstrual cessation			
Pattern			
Abrupt	448(47.3)	47.0(5.8)	0.000
Gradual	500(52.7)	49.4(4.6)	
Gravida			
0 ^a	27(2.8)	46.1(5.2)	0.002
1-4 ^{a,b}	202(21.3)	47.4(6.1)	
5-9 ^{a,c}	534(56.3)	48.4(5.2)	
10+ ^{c,d}	185(19.5)	49.1(4.7)	
Parity			
0 ^a	27(2.8)	46.1(5.2)	0.007
1-4 ^{a,b}	265(28.0)	47.7(5.8)	
5-6 ^{b,c}	559(59.0)	48.4(5.1)	
10+ ^c	97(10.2)	49.4(4.9)	
Age at last full-term pregnancy			
<25 ^a	48(5.2)	46.0(8.5)	0.001
25-29 ^{a,b}	113(12.3)	47.6(6.3)	
30-34 ^b	225(24.4)	47.9(5.3)	
35+ ^c	535(58.1)	48.9(4.6)	
Ever used hormone			
No	906(95.6)	48.4(5.2)	0.036
Yes	42(4.4)	46.1(6.6)	
Length of hormone Use (month)			
0 ^a	906(95.6)	48.4(5.2)	0.006
1-12 ^a	34(3.6)	47(6.3)	
13-59 ^b	5(0.5)	43.2(8.7)	
60+ ^b	3(0.3)	41(2.6)	

40 and 50 years of age while 32.5% developed late menopause (>50 years).

Arm circumference, height, weight, BMI, place of birth, handedness, ancestry, family background, level of education, level of daily physical activities, smoking habit, history of abortion, age at first marriage, age at first full-term pregnancy, menstrual cycle interval/duration, age at menarche, dysmenorrhea, mid-cycle spotting, and number of pregnancies were not significantly correlated to age at menopause. Age at natural menopause significantly correlated with menstrual cessation pattern, age at last full-term pregnancy, consanguinity of marriage, place of birth, and use of hormones before menopause (Table 1). Social class also was found to be an influencing factor on menopausal age ($p < 0.001$), which is in accordance with findings of others.³

Age at natural menopause (ANM) was found to be significantly related to menstrual cessation pattern (MCP), age at last full-term pregnancy (ALP), consanguinity of marriage (CTY), birth place (BPL), and hormone use before menopause (HOU) as tested and presented in the following multiple regression model:

$$ANM = 2.31 MCP - 1.16 ALP + 0.97 CTY - 0.87 BPL + 4.67 HOU$$

Using principal component analysis (PCA), 5 interrelated variables of father's level of education (FE), mother's level of education (ME), family social class (SC), women's occupation (WO), family income (FI) were reduced to three independent principal components as follows:

$$PC1 = +0.51FE + 0.49ME + 0.46SC + 0.41WO + 0.33FI$$

which represents cultural status

$$PC2 = -0.26FE - 0.14ME + 0.27SC - 0.45FO + 0.80FI$$

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which represents *economic status*

$$PC3 = -0.09FE - 0.48ME + 0.46SC + 0.60WO + 0.44FI$$

which represents *social class* and explained 86% of variations altogether.

Social class was identified as an influencing factor on menopausal age ($p < 0.001$), which is in accordance with findings of others.³

Smoking habit is shown in many studies as an independent contributing factor which decreases age at natural menopause.^{2,4} Nonetheless, a few studies as well as ours did not identify smoking habit as a determinant of menopausal age.^{5,6} This may be due to the fact that smoking habit is not culturally accepted among Iranian women and therefore is uncommon.

Several studies have shown a significant association between age at natural menopause and parity^{3,4}, which is in accord to what we found. It was found that age at menopause increased as age at last full-term delivery advanced, which is consistent with findings of others.¹ The subjects whose menstruation ceased abruptly had incurred natural menopause significantly earlier, which is in keeping with findings of an Egyptian study.¹

Acknowledgements

This work was supported by Grant No. 79-1143 from Shiraz University of Medical Sciences.

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