

Determinants of Early Onset of Menopause: An Empirical Study of Chittagong District in Bangladesh

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Abstract Early onset of menopause results in the loss of fertility of women and creates many health complications. The aim of the study is to explore the determinants of the early onset of menopause of the women living in Chittagong district of Bangladesh. A total of 160 postmenopausal women over the age of 30 years participated in our cross-sectional study as respondents. In the study, the mean age of onset of menopause was observed to be 45.70 years. Chi-square test of association and binary logistic regression analyses were performed to reveal the predictors of early menopause. Crude odds ratio and adjusted odds ratio are obtained to find the likelihood of onset of menopause and to compare each category of the variable with the reference category. The result shows that age at marriage, use of contraceptives, regularity of period, type of food preferred, number of children in the family, and level of education of the respondents are significantly associated when crude odds ratios are obtained. On the other hand, adjusted odds ratio shows that use of contraceptives, regularity of period, level of education, and type of food preferred are significantly associated with early onset of menopause of the women of Chittagong district in Bangladesh.

Keywords Loss of Fertility, Early Onset, Menopause, Contraceptives

1. Introduction

Menopause is the transitional stage in the life of a

woman after which she may face different physical and psychosocial problems. A woman is under higher risk of increased cholesterol levels, heart disease, osteoporosis, stroke, weight gain, sleeping problem during and after menopause. Moreover, a woman loses the chance of becoming pregnant when she reaches this stage. The age of menopause may come at an earlier stage or it may occur at a later stage. Some woman may experience menopause before the age of 45 years, which is called early menopause and some may experience it at the age of 45 years and afterwards. The age of menopause varies from country to country or within the country area to area. There may be many socio-economic and demographic factors for this variation of the onset of menopausal at different ages. The stage may come even at the age of 55 years in some countries. We know that women in under developed countries suffer from malnutrition. The physical condition of the woman may lead to early menopause. The woman may have some physical symptoms of menopause like vaginal dryness, insomnia, emotional changes, night sweats, dry skin, dry eyes, or dry mouth. Some women may experience headache, weight gain, hair loss, joint or muscle aches and pains. Anxiety or depression may be symptoms of menopause. This study has special importance for the identification of risk factors for a woman to experience menopause at an earlier age. When a woman reaches the age of menopause she could be cautious in preventing health problems by changing dietary habits and taking exercise.

Many studies have investigated the determinants of menopause in different aspects. A study investigated the

existing relationship between age at menopause, the woman's menstrual and reproductive history, and her use of oral contraceptives [1,2]. Timing of menopause is an indicator of ovarian function and ageing. Both early and late age at natural menopause have been shown to be associated with adverse outcomes in post-menopausal women [3,4]. Since menopause terminates the fertility period for women and creates various health problems, we chose to investigate the factors affecting the onset of early menopause for the women in Chittagong district of Bangladesh.

The study focuses on Chittagong district in Bangladesh because this area is different from other parts of the country in terms of geographical location, cultural diversity, religiosity, and food habits.

2. Objectives of the Study

- i). The study aims to find out the mean age of onset of menopause and the women who experience early onset of menopause.
- ii). The study attempts to reveal the association of early onset of menopause with other socio-economic and demographic characteristics.
- iii). The study also investigates the factors affecting the early onset of menopause.

3. Methodology

A cross-sectional study was performed to reveal the factors influencing early onset of menopause in women who live in the Chittagong district of Bangladesh. A questionnaire was constructed to collect data from the women age 30 years and above. The data were collected from January 2020 to April 2020. Purposive sampling technique was adopted to collect data from the respondents. Before collecting data through questionnaire, an explanation was given to them regarding the research objectives, norms of research and maintenance of confidentiality of the respondents. Then oral consent was taken from the respondents and data were collected.

A total of 160 post-menopausal women who were all above 30 years of age took part in the study. Data were edited if any inconsistency was noticed during the insertion of data in SPSS. After screening data, analysis was performed. Descriptive statistics such as percentage and mean were calculated. Bivariate analysis was performed to reveal the association between early onset of menopause and other socio-economic and demographic characteristics. Binary logistical regression analysis was employed to reveal the predictors influencing early onset of menopause of the women in Chittagong district.

4. Results and Discussion

Table 1. Percentage distribution of respondents according to different characteristics:

Characteristics	Percentage (No. of respondents)
Education of the respondents	
Illiterate	26.2(42)
Primary	31.2(50)
Secondary	26.9(43)
Higher secondary	15.6(25)
Occupation of the respondents	
Housewife	85.6(137)
Unemployed	14.4(23)
Regularity of period	
Yes	82.5(132)
No	17.5(28)
Causes of menopause	
Natural	84.4(135)
Others	15.6(25)
Use of contraception	
Yes	53.1(85)
No	46.9(75)
Complication during pregnancy, delivery or postpartum	
Yes	48.1(77)
No	51.9(83)
Terminated pregnancy	
Yes	20.6(33)
No	79.4(127)
Types of food preferred	
Home made	88.1(141)
Junk	11.9(19)
Smoking habit	
Yes	9.4(15)
No	90.6(145)
Habit of exercise	
Daily	10.6(17)
3 days per week	6.2(10)
Occasionally	17.5(28)
Rarely	32.5(52)
never	33.1(53)

Table 1 represents the percentage distribution of respondents according to different socio-economic and demographic characteristics. It is observed from the table that 26.2 percent of the respondents are illiterate, 31.2 percent are primary educated, 26.9 percent are secondary educated and the rest 15.6 percent are higher secondary and above educated. When we study the occupation of the respondents it is observed that 85.6 percent of women are housewives, and the rest 14.4 percent are employed in a variety of jobs. Regular menstrual period is an important factor for giving birth to a child. It is revealed from the table that 82.5 percent women have regular menstrual period and the rest 17.5 percent do not have regular menstrual period. It is observed that 53.1 percent respondents are using contraceptive and the rest 46.9 percent do not use contraceptives for spacing or limiting births. It is found that 48.1 percent respondents face

complication during pregnancy and the rest did not face any complication during pregnancy or delivery or post-partum. The table shows that 88.1 percent respondents prefer home- made food but the rest 11.9 percent prefer junk food. Most of the women did not have a smoking habit. It is also observed that 33.1 percent respondents did not have regular exercise, while only 10.6 percent respondents take exercise daily.

Table 2. Mean score for the different socio-economic and demographic variables

Characteristics	Mean score
Age of the respondents	56.43
BMI	26.06
Income	44,300
Age at marriage	16.71
Age at first menstruation	12.63
Onset age of menopause	45.70
Age when first child was born	19.03
Age when last child was born	29.19
Number of children ever born	4.09

Table 2 shows that the mean age of the respondents is 56.43 years, the average body mass index is 26.06 and the average income is Tk. 44,300. The average age at first

menstruation or age at menarche is 12.63 years and the average age of the onset of menopause is 45.70 years. The mean age of the women when the first child was born is observed to be 19.03 years and the mean age when the last child was born is 29.19 years. The mean number of children ever born is 4.09.

Table 3 shows that 34.2 percent of women experience early menopause when their marital age is 16 years and latter but the comparable figure is 18.5 percent when the marital age is 16 years and before. The chi-square result shows that age at marriage is statistically significantly associated with the onset of age at menopause [5,6]. The result also shows that secondary educated women experience early menopause more than the other categories of illiterate, primary educated and higher secondary and above educated women. The table also shows that housewives experience earlier menopause than their employed contemporaries. This may be due to the better knowledge of the employed women about life style and food habits. It is observed that 28.3 percent respondents whose age at menarche is 12 years or more experience early menopause than those whose age at menarche is below 12 years. Contraceptive users reach an earlier menopause than those who did not use any contraception. The P-value shows that the use of contraceptives is statistically significant and associated with early onset of menopause.

Table 3. Test of association with early onset of menopause and other socio-economic and demographic variables:

Characteristics	Onset of menopause		Chi-square value	P-value
	Before 45 years of age	45 years and after		
Age at marriage				
16 years and before	18.5(15)	81.5(66)	5.065	0.024
More than 16 years	34.2(27)	65.8(52)		
Educational status			9.044	0.029
Illiterate	26.2(11)	73.8(31)		
Primary	20.0(10)	80.0(40)		
Secondary	41.9(18)	58.1(25)		
Higher secondary and above	12.0(3)	88.0(22)		
Employment status of the women			3.590	0.166
Housewife	27.0(37)	73.0(100)		
Employed	18.2(4)	81.8(18)		
Age at menarche			3.279(1)	0.070
Less than 12 years	6.7(1)	93.3(14)		
12 years and more	28.3(41)	71.7(104)		
Use of contraceptives			5.798	0.016
Yes	34.1(29)	65.9(56)		
No	17.3(13)	82.7(62)		
Regularity of period			30.349	<0.001
Yes	17.4(23)	82.6(109)		
No	67.9(19)	32.1(9)		
Types of food preferred			4.967	0.026
Home-made food	23.4(33)	76.6(108)		
Junk food	47.4(9)	52.6(10)	(1)	
Number of children			4.123	0.042
Up to 2 children	38.1(16)	61.9(26)		
More than two children	22.0(26)	78.0(92)	(1)	

Table 4. Determinants of onset of menopause of the women from logistic regression

Variables	COR (95% C.I.)	AOR (95% C.I.)
Age at menarche		
Less than 12 years (RC)	-	-
12 years and more	5.519 * (0.703-43.334)	4.649(0.498-43.378)
Use of contraceptives		
Yes (RC)	-	-
No	0.405 ** (0.192-0.855)	0.333 *** (0.110-1.003)
Education of the respondents		
Illiterate (RC)	-	-
Primary	0.705(0.265-1.870)	0.250 * (0.071-0.886)
Secondary	2.029 ** (0.811-5.074)	0.482(0.129-1.800)
Higher secondary and above	0.384(0.096-1.541)	0.066 *** (0.010-0.439)
Age at marriage		
16 years and below (RC)	-	-
Above 16 years	2.285 ** (1.103-4.733)	1.303(0.436-3.898)
Regularity of period		
Yes (RC)	-	-
No	10.005 *** (4.020-24.899)	11.075 *** (3.703-33.128)
Type of food preferred		
Home- made food (RC)	-	-
Junk food	2.945 ** (1.104-7.858)	2.749 * (0.803-9.408)
Number of children		
Up to 2 children (RC)	-	-
More than 2 children	0.459 ** (0.215-0.982)	0.647(0.239-1.751)

COR: Crude Odds ratio, AOR: Adjusted Odds Ratio, C.I.: Confidence Interval, * indicates significance at 10 percent level, ** indicates significance at 5% level, *** indicates significance at 1 percent level.

The women who go through with regular menstrual period are less likely to have the early onset of menopause than those who pass irregular period. The result shows that regularity of period is highly significantly associated with the onset age of menopause. Taking care of health and taking advice from the doctors will ensure better knowledge about menstruation regulation. It is also found that junk food takers experience an earlier menopause than those who take home-made food. This is because junk food creates many health problems like obesity, heart disease, digestive disorder, depression etc. The result is also significant at 5 percent level of significance. It is observed that 38.1 percent of the respondents who had up to two children experience early menopause and the comparable figure is 22 percent for the category who had more than 2 children. The chi-square test shows that there exists a statistically significant association of the number of children with the early age of onset of menopause.

It is observed from the above table that women who did not experience regular menstruation period are 11.075 times more likely (COR: 11.075; C.I. (3.703-33.128)) to have early onset of menopause than those who had experience regular menstruation period. The predictor is observed to be highly significantly associated with the onset of menopause of the women. One study shows that the interval until regular occurrence of menstrual cycles had a stronger impact on age at menopause than menarche itself [7].

When we assess the age at menarche it is found that women whose menstrual period started at the age of 12 years and after, are 4.469 times more likely to have the early onset of menopause than those whose age at menarche is started before the age of 12 years (AOR: 4.649 and C.I. (0.498-43.378)).

It is noted from the study that use of contraceptives is highly significantly associated with the early onset of menopause. The result shows that the respondents who did not use contraception are 77 percent less likely to have the early onset of menopause than those who use contraception. It is noticed from the adjusted odds ratio of food preference that the women who prefer junk food are 2.749 times more likely to have early onset of menopause than those who take home-made food. Food preference is observed to be significantly associated with the onset of early menopause of the women. It is evident from the COR that the number of children in the family is associated with the early onset of menopause. The adjusted odds ratio of the number of children in the family shows that women who have more than two children are 35 percent less likely to have the early onset of menopause than those who have 2 children or below two children. The study reveals that women who are educated appear to experience menopause later. The AOR shows that women who are primary, secondary and higher secondary and above educated are 75 percent, 52 percent and 93 percent less likely to have early onset of menopause than those who are illiterate. Evidence from a

study shows the similar result and it is observed on that study that educated women have a significantly higher menopausal age i.e. lower education level is associated with earlier onset of menopause than women with higher education level. [8,9,10].

COR shows that age at marriage is a strong predictor for the early onset of menopause. The AOR reveals that women having age at marriage above 16 years are 1.303 times more likely to experience early onset of menopause than those who got married at the age of 16 years or before.(COR: 1.303; C.I. (0.436-3.898))

5. Conclusions

The study shows that the mean age of the onset of menopause of the women in Chittagong district is 45.70 years. The age before 45 years is considered as the age of early menopause and the study reveals the association of socio-economic and demographic factors with the early menopause of the women.

Bivariate analysis shows that age at marriage, use of contraceptives, type of food preference, number of children in the family, and education of respondents are observed to be significant with the early onset of menopause. Moreover, age at menarche and regularity period of women are also found to be significant in the study. The significance is noticed through the P-value. The crude odds ratio shows what more likely or less likely one category is from the other category to have early menopause. It is found that the respondents having age at marriage more than 16 years are 2.285 times more likely to have early menopause than those whose age at marriage is 16 years and before. This is also supported by adjusted odds ratio and the result is 1.303 times more likely for the category of age at marriage more than 16 years than those of 16 years or younger. As per crude odds ratio, early onset of menopause is 5.519 times more likely for the category of 12 years or more of the age at menarche and the odds is 4.649 times more for the same category as per the adjusted odds ratio.

It is also revealed from the study that use of contraceptives, preference of junk food, having irregular period, and low educational background determines early onset of menopause for the women in Chittagong district in Bangladesh.

6. Recommendations

In order to avoid early onset of menopause, efforts should be made to prevent common health problems for women. Instead of taking junk food women should prefer home-made food that would be nutritious and caloric. Regular physical exercise is necessary to avoid various health problems. If any irregularity in menstruation cycle is observed during the early stage of the reproductive life span women should take help from the doctors and proper health care should be maintained as per the advice of the

doctors. Women should be properly educated and aware so that they can take proper care of health to avoid the early onset of menopause. The health planners can also take initiative to create awareness among the women regarding the possible factors that bring menopausal age early. Concerted efforts should be paid to address the modifiable causes of onset of menopause that will result in better health for women who live in Chittagong district of Bangladesh.

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