



## **Factors Affecting Age of Onset of Menopause at Child Birth, Birth Control of Nigerian Women**

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### **Authors' contributions**

*This work was carried out in collaboration among all authors. Author OSO conceived the study, designed the protocol and coordinated the experiment while the manuscript writing, statistical analysis and data interpretation were performed by authors ZVZ and SF. All the authors read through and approved the final manuscript.*

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### **ABSTRACT**

**Introduction:** Menopause simply refers to the time when a woman stops having monthly period. There have been numerous systematic studies into the age at onset of menopause and the factors affecting it, in different parts of the world. However, the establishment of this age and factors affecting it in Rivers state has been scanty.

**Aim:** This research was therefore undertaken to ascertain the age at onset of menopause in women of Rivers state, residing in Port Harcourt and the effect of parity, age at last child birth and form of birth control on it.

**Methodology:** This study used data from over 380 postmenopausal women from populations in Port Harcourt, Rivers state. Different ages specified by the respondents through structural questionnaires were used. The data was collected and analyzed using the ANOVA method. It was used to obtain a percentage frequency which was presented in a table.

**Results:** The result shows the mean menopausal age among Rivers state women to be 49.1 years. It was also found that menopausal age was affected by subjects' parity, age at last child birth and form of birth control.

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**Conclusion:** The mean menopausal age of women of Rivers State, living in Port Harcourt has been found to be 49.1 years. This age has also been found to be positively affected by a woman's parity, age at last child birth and form of birth control.

*Keywords: Menopause; parity; women; post-menopausal; Port Harcourt.*

## 1. INTRODUCTION

Menopause also known as the change of life or climacteric simply refers to the time in a woman's life when her period stops. A period of life when fertility and sexual activity are in decline [1]. In some women, the menstruation stops suddenly, while in others, the menstrual flow decreases gradually during every cycle and finally stops. Menopausal age vary greatly from one woman to another and from one region or country of the world to another. The average age for women to have their last period is about 50 years. However, it is normal for menopause to occur any time from age 41 to 59 years [2]. Menopause that occurs before age 40 is called premature menopause. If you experience menopause between ages 40 and 45, you're said to have early menopause. About 5% of women go through early menopause naturally. Factors have been proposed to affect the timing of and symptoms associated with menopause. Among these factors are Socio-economic status, Nutrition, Culture, Parity (number of child birth), Age at last child birth, Menarche, Smoking. Smoking can cause menopause to begin up to two years, earlier, certain health conditions, type of occupation and Form of birth control. The current study specifically establishes the age at which women of Rivers state residing in Port Harcourt City attain menopause and how Parity, Age at last child birth and form of birth control (Use of oral contraceptives) affect the menopausal age among these women.

## 2. MATERIALS AND METHODS

A sample size of three hundred and eighty (380) post- menopausal women, aged between thirty-eight (38) years and seventy (70) years from various ethnic groups residing in Port Harcourt were used. The women were selected from Aluu, Choba, Rumuola, Elelenwo, Borokiri, old GRA, Rumuokurusi, Mile 4 diobu axis, Ogbounabali and Abuloma axes of Portharcourt. They were given one questionnaire each in other to obtain information about their menopausal age. This task of the distribution of the questionnaires was accomplished within two months. The women were interviewed in their homes, places of work,

hospitals and in the church. The questionnaire was designed to capture the women's background information like: age, marital status, symptoms and perception of menopause, number of children (parity), age at last childbirth, form of birth control, etc. The questionnaires were administered by the authors, who reside in different parts of Port Harcourt. A detailed explanation of the aim and importance of the study was done to the women, to enable us meet the target of the research. They were also assured that every information given would be handled confidentially. Some of the subjects were illiterates and the questions were interpreted to them to enhance their understanding.

## 3. RESULTS

All statistical analyses were performed using SPSS version 20.0 software package (SPSS Inc., Chicago, Illinois, USA). Analysis of variance (ANOVA) was used in calculating the result of this research study. If P (Probability) value is greater than the standard value (0.05), then the test is not significant. On the otherhand, if the standard value (0.05) is greater the P-value, then the test is significant.

The mean menopausal age of the women indicate that the women from Emouha have the highest menopausal age of 52.06 years, while those from Kalabari have the least menopausal age of 39.13 years (Table 1). The mean menopausal age of all the sampled tribes in Rivers state indicate that Rivers state women attain menopause at an average age of 49.1 years (Table 2).

The results of the mean menopausal age of the sampled women from the various tribes in Rivers State with different ages at last child birth indicate that the women who give birth to their last child at a very early age (30-35 years), attain menopause earlier than those women who give birth to their last child when they are a bit advanced in age (43-55 years). However, majority of the women (76.3%) from Rivers State give birth to their last child when they are between 36-42 years old while only a very small

number (8.9%) of the women give birth to their last child at an age between 43 years and 55 years (Table 3).

The results of the mean menopausal age of the sampled women from the various tribes in Rivers State with different forms of birth control indicate that the women who use contraceptives as their means of birth control attained menopause later in life than those who use withdrawal method, while those who use timing have the least menopausal age. The majority of the women (56.8%) adopts timing as their method of birth control, quite a number of them (34.7%) make use of contraceptives while only a few of them (8.4%) reportedly make use of withdrawal method (Table 4).

The results of the mean menopausal age of the sampled women from the various tribes in Rivers State with different number of children (Parity) indicate that the women with the largest number of children (6 to 20 children) tend to attain menopause later than those who have fewer number of children. The majority of the women (65.0%) have normal number of children (3 to 5 children) while only a few of them (5.3%) have a large number of children (Table 5).

#### 4. DISCUSSION

The table (Table 1) gives a summary of the statistics of the age at onset of menopause of the women from the various tribes in Rivers State. It shows that Emouha women have the

**Table 1. Mean menopausal age of sampled subjects from different tribes in Rivers State**

Tribe	Menopausal age (years)		
	Mean	Variance	Range
Ahoada	50.06±1.10	20.43	42 – 58
Andoni	48.35±0.70	15.24	40 – 54
Calabari	39.13±0.74	4.41	45 – 52
Emuoha	52.06±0.58	1.0	51 – 53
Etche	48.92±0.83	17.07	40 – 54
Igbo	48.66±0.83	22.10	39 – 59
Ijaw	48.77±0.81	19.91	38 – 59
Ikwerre	48.90±0.35	15.62	40 – 56
Isiokpo	48.91±0.81	14.56	39 – 57
Ogoni	49.03±0.64	21.04	38 – 56
Okrika	47.83±0.87	17.97	39 – 55
Opobo	49.78±0.85	13.0	43 – 56

**Table 2. Summary of statistics of menopausal data for all the sampled tribes in Rivers state**

Age at Menopause (years)	Mean	Mean deviation	Mode	Median	Variance	Range	Standard deviation
	49.1	3.13	51	50	15.90	3.99	21

**Table 3. Age of onset of menopause in women with different ages at last child birth**

Age at last child birth (years)	Mean menopausal age	Variance	Range	Frequency	Percentage (%)
Early (30-35)	47.34±0.67	23.93	38 - 57	56	14.7
Normal (36-42)	48.82±0.23	15.84	39 – 59	290	76.3
Late (43-55)	51.18±0.35	6.93	43 - 56	34	8.9

**Table 4. Age at onset of menopause in women with different forms of birth control**

Form of birth control	Mean menopausal age	Variance	Range	Frequency	Percentage (%)
Timing	48.22±0.38	20.12	38 – 58	216	56.8
Contraceptives	49.44±0.23	13.31	39 – 59	132	34.7
Withdrawal	48.37±0.96	24.93	38 – 59	32	8.4

**Table 5. Age of onset of menopause in women with different number of children (Parity)**

No. of children	Mean menopausal age (years)	Variance	Range	Frequency	Percentage (%)
Low (1-2)	48.17±0.40	20.35	38-56	113	29.7
Normal (3-5)	49.07±0.23	13.97	39-58	247	65.0
High (6-20)	51.38±0.73	15.60	40-59	20	5.3

highest mean menopausal age (52.0±0.58 years), while Okrika women have the least mean menopausal age. The variation in the menopause age among the various tribes may be due to nutritional, genetic and socio-economic factors. Studies found consuming a high amount of oily fish, fresh legumes, vitamin B-6, and zinc delayed natural menopause. However, eating a lot of refined pasta and rice was linked to earlier menopause.

The second table (Table 2) shows that the mean menopausal age of all the respondents (post-menopausal women of Rivers state residing in Port Harcourt city) is 49.1 years. This is very similar to the result obtained by other researchers [2-4].

The result of the relationship between menopausal age and age at last child delivery is presented in Table 3. The result shows that there is a significant correlation between the two parameters, such that the later the age at last child delivery, the later the menopausal age. This result agrees with that obtained by other researchers [3]. In most studies, older age at last child delivery was related to older age at menopause [4-6]. During perimenopause, reproductive hormones produced by the ovaries, primarily estrogen and progesterone, begin to fluctuate. Although estrogen and progesterone levels drop during menopause, levels may be higher or lower than usual for lengths of time during perimenopause [7]. Prolonged breastfeeding can prevent follicle depletion and preserve ovarian function, causing a delay in the attainment of natural menopause.

The forth table (Table 4), shows the result of the relationship between the various forms of birth control and the mean menopausal age. It is observed that a greater number of the women use timing as their birth control method while the least method applied the use of withdrawal method. The statistical analysis shows that there is a statistically significant relationship between the menopausal age and the form of birth control ( $P < 0.05$ ). It was specifically observed that those who used oral contraceptives as their form of

birth control attained menopause later than those who used withdrawal or timing methods. This result is similar to that obtained by other researchers [8], in the establishment of the predictors of the onset of natural menopause in African American women, in which earlier onset of natural menopause in African American women was inversely associated with oral contraceptive use. Women who ever used oral contraceptives were more likely to have a later age at menopause. Other studies to establish the effect of oral contraceptive use on menopausal age, found either a delaying effect of contraceptive use on age at menopause, no significant relationship with the menopausal age [9] or no effect at all. One mechanism through which long lasting use of oral contraceptives may delay age at menopause is through its suppression of follicle stimulating hormone (FSH) concentration. Since oral contraceptives also suppress FSH concentrations, long lasting use of oral contraceptive may also delay age at menopause. High dose oral contraceptives strongly suppress FSH concentrations because of their high doses of oestrogens and progestins, while other types of oral contraceptives containing lower doses of oestrogen and progestins, suppress FSH in a more moderate way [10]. Since this study has confirmed that use of high dose oral contraceptives delays age at menopause, it is also likely that use of high dose oral contraceptives delays the end of fertility.

The result of the relationship between parity and menopausal age is presented in Table 5. The statistical result revealed a significant relationship between menopausal age and parity, such that the more the parity, the later the menopausal age. Our findings are consistent with previous studies that have established the association between parity and age at natural menopause [2]. It has been found that Nulliparous women are more likely to enter menopause at an earlier age than multiparous women and that the more children a woman has given birth to, the later she will enter menopause. To fully understand the mechanism by which parity lengthens the menopausal age, it is instructional to rehearse the physiology of

menopause. Menopause occurs when a woman's ovaries run out of functioning eggs. At the time of birth, most females have about 1-3 million eggs, which are gradually lost throughout a woman's life. By the time a girl's first menstrual period reaches, she has an average of 400,000 eggs. By the time of menopause, a woman may have fewer than 10,000 eggs. A small percentage of these eggs are lost through the normal ovulation (the monthly cycle) while most die off through a process called atresia, which is not well understood.

Normally, ovulation is triggered by a hormone called LH (luteinizing hormone). As one approaches menopause, the remaining eggs become more resistant or unresponsive to FSH, and one's ovaries dramatically reduce their production of estrogen, a hormone whose loss is believed to be the cause of many of the symptoms associated with menopause [11].

This lack of response of the ovaries to FSH may be due to a decline in the number of primordial follicles, which become precipitous at the time of menopause. The ovaries therefore no longer secrete progesterone and oestrogen (17 $\beta$ -oestradiol) in appreciable quantities [12-14]. The uterus and the vagina gradually become atrophic. The exact way in which the number of children (parity) lengthens menopausal age is not clearly known, but it has been said that parity is a FSH-suppressing factor (one secretes very little or no amount of FSH during pregnancy, resulting in lack of ovulation). The suppression of FSH will lead to the conservation of ovarian follicles and then lengthens the age at onset of menopause [15].

## 5. CONCLUSION

Based on this study, it is therefore concluded that women of Port Harcourt city, Rivers State, Nigeria, do attain menopause at an average age of 49.1 years. This age is within the generally accepted menopausal age range of 45-55 years. The Age at menopause was found to be significantly affected by parity, age at last child birth and use of oral contraceptives as a form of birth control. Menopausal age increases in a direct proportion with increase in parity, age at last child birth and use of oral contraceptives.

## CONSENT

As per international standard or university standard written patient consent has been collected and preserved by the author(s).

## ETHICAL APPROVAL

All authors hereby declare that this experiment has been examined and approved by the appropriate ethics committee of the university of Port Harcourt and have therefore been performed in accordance with the ethical standards laid down by the University.

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## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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