# Age at Menarche and Factors That Influences It

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***Abstract***
***Background****: The age at menarche as well as other changes that occur during puberty are actually due to major and specific hormonal changes that occur in the body at puberty. The purpose of this study was to assess factors affecting the age at menarche in this environment, and obtain an actual reliable data on the age at menarche.*
***Methods****: A cross sectional study was carried out in Yenegoa, Bayelsa state. Random sampling method was used and Data were collected using a self-administered structured questionnaire on menstruation. This study investigated the age at menarche of 400 secondary school girls between the ages of 10-20 years. This research was carried out under the supervision of the research team. Data was analyzed using SPSS version 13.*
***Result****: results showed that a girl from a high socioeconomic class (SEC) had a mean menarcheal age (MA) of 12.84±1.07, middleSEC had 13.36± 1.30 and low SEC had 13.65±1.5. Girls exposed to rich diet from childhood had mean MAof 12.91±1.12, those of average diet 13.26±1.30, and those with poor diet 13.61±1.24. Girls exposed to stress factor had a meanMA of 13.20±1.22, those without stress factor had mean MAof 13.18±1.28.*
***Conclusion****: This study showed that parameters such as socioeconomic group, dietary type and developmental status have influence on the age at menarche, while stress factor had no influence on age at menarche.*
***Key:*** *Socioeconomic class, Stress, Diet.*

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## I. Introduction

The onset of menstruation (menarche) typically begins around the age of 12 and 16. However some girls will begin menstruating a few years earlier or later. Menstruation usually begins approximately two or three years after the first physical signs of puberty appears (such as breast buds or pubic hairs). Girls who do not begin menstruating at the age of 16, should be examined by a physician although in the majority of cases there is no course for concern.

The average age atmenarche ranges from 12 – 15 years among differentpopulations (Arteria and Hennerberg, 2000; Gharravi, 2009; Tunau*et al*., 2012; Adesina and Peterside, 2013; Al-Awadhi *et al*., 2013).Factors affecting the age of menarche include nutritional status, genetic, environmental conditions,socioeconomic status, and education (Gaudineau, *et al*.,2010).

Much work has been done in assessing the age of menarche and menstrual flow pattern in other parts of the world and even in various communities in Nigeria, but to the best of our knowledge this work has not been in Yenagoa, Bayelsa State.

## II. Materials And Methods

**Participants**

A total of four hundred (400) secondary school girls participated in this study. These are girls in junior secondary school one (J.S.S 1) to senior secondary school three (S.S.3). Girls between the ages of ten (10) and eighteen (18) were selected randomly from three secondary schools, the schools include: New total child academy secondary, Yenezue-gene; St Jude's Girls Secondary school, Amarata and Government Secondary School, Amassoma, all in Bayelsa state Nigeria.Consent was obtainedfrom theauthorities of the schools and the participants beforecommencement of the study

**Data collection**

The method of data collection in this study was a cross sectional random sampling,using awell-structuredself-administered questionnaire. This was possible because the girls started filling questionnaires immediately after they got it. Questionnaires were collected the same day it was distributed to avoid data

contamination. Adequate effort was made to clarify all questions they could not understand. The exercise lasted more than normal due to the attention given to students.

The questionnaire was divided into three sections, which includes: social history (age, weight, education level), parents' social history (occupation of mother and father, number of siblings, position in the family), personal history (age at menarche, menstrual flow pattern, dysmenorrhea, PMS, regularity of menstruation, stress factors, diet, child hood illness).

Data analysis
The data were analyzed using SPSS version 13. ANOVA and T-test were used to analyze the data. $P < 0.05$ was considered to show statistical significance.
Ethical approval was obtained from the Niger Delta University.

# III. Results

**Table 1:** shows the relationship between Age at Menarche and socioeconomic status

| Socio economic class | Menarcheal age Mean ±SD | Sample size | P-Value |
|---|---|---|---|
| High | 12.84±1.07 | 125 | 0.000 |
| Middle | 13.36±1.30 | 54 | |
| Low | 13.65±1.51 | 67 | |

From table 1, socioecononomic class influences age at menarche with a level of error of 0% and above (level of confidence 100%, p=0.000). Thus, the socioeconomic class has a very high significant effect on age at menarche.

**Table 2:** shows the relationship between Age at Menarche and developmental status

| Developmental status | Menarcheal age Mean ±SD | Sample size | t-value | p-value |
|---|---|---|---|---|
| Normal | 13.10±1.20 | 220 | 2.88 | 0.004 |
| abnormal | 13.80±1.26 | 28 | | |

From table 2, developmental status influences age at menarche with a level of error of 0.4% and above (level of confidence 99.6 %).

**Table 3:** shows the relationship between Age at Menarche and stress factor

| Stress factor | Menarcheal age Mean ±SD | Sample size | T value | P value |
|---|---|---|---|---|
| Present | 13.20±1.22 | 185 | 0.12 | 0.905 |
| Absent | 13.18±1.28 | 59 | | |

From table 3, stress factor has no influence on age at menarche with a level of error of 90.5 %.

**Table 4:** shows the relationship between age at menarche and childhood health

| Childhood health | Menarcheal age Mean ±SD | Sample size | T value | P value |
|---|---|---|---|---|
| Good (normal) | 13.23±1.29 | 117 | 0.45 | 0.656 |
| Poor (abnormal) | 13.16±1.17 | 128 | | |

From table 4, childhood health does not influence age at menarche. The level of error of 65.6 % (level of confidence 34.4 %).

**Table 5:** shows the relationship between age at menarche and dietary type

| Dietary type | Menarcheal age Mean ±SD | Sample size | P value |
|---|---|---|---|
| Rich | 12.91±1.12 | 124 | 0.003 |
| Average | 13.26±1.30 | 45 | |
| Poor | 13.61±1.24 | 77 | |

From table 5, dietary type influences age at menarche with a level of error of 0.03% and above (level of confidence 99.97%).

# IV. Discussion

In this study, we investigated factors that influence age at menarche in Bayelsa state. Socioeconomic class influenced age at menarche greatly, which is in agreement with Yadav and Choubey(2017); Elshiekh and Mohammed (2011). Similar finding was also reported by Wronka*et al*. (2005) and Berkey *et al*. (2000), where they reported an association between age at menarche and high intake of animal food in high socioeconomic family.

From the present study, we observed that girls exposed to a rich diet attained menarche earlier than their counterpart who were exposed to averageand poor diet respectively.This study is in agreement with the finding of Rihul and Lina (2015) and Pulungan (2009),they stated that the age at menarche is influenced by several factors, one of which is the nutritional status.Kusnitaand Damarati (2013) andSylvia and Saftarina (2013), also reported that girlswith less nutritional status will experience late menarche compared to girls with good nutritional status.

This study categorized girls with domestic responsibility or athletic responsibility at premenarcheal age as girls with stress factor and girls not exposed to these responsibilities as girls with no stress factor.In the present study, stress factor has no influence on age at menarche. This study is not in agreement with an investigation published in the British Journal of Cancer. From their research, it was stated that girls who spend thirteen or more hours in physical activities are more likely to have their first menstruation at later ages when compared with girls who spent few hours in physical activity (Henderson and Bimstein, 2001).

Again,our study categorized girls who had incidence of measles, convulsion or kwashiorkor or girls who were abused before they attained menarche as girls with poor childhood health and girls which did not experience these conditions as girls with normal childhood health. In the present study, childhood health had no influence on age at menarche.

This study also categorized developmental status of girls based on weight, height and age at development of signs of puberty (pubic hairs, breast). A statistical difference was observed between age at menarche and developmental status of girls.This study is in agreement with the findings of Al-Agha *et al*.(2015), they reported that menarcheal age and height are significantly related; the early onset of signs of puberty is associated with a shorter height than the target height.

# V. Conclusion

This study showed that parameters such as socioeconomic group, dietary type and developmental status have influence on the age at menarche, while stress factor had no influence on age at menarche.

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