

## AGE AT MENARCHE AND MENSTRUAL PATTERN IN SECONDARY SCHOOLGIRLS IN SAGAMU

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### ABSTRACT

**Background:** Menarche is the first menstruation in the life of a woman. Menstrual pattern involves the length of bleeding, the length of the cycle and other associated events such as pain (*dysmenorrhoea*). Dysmenorrhoea has been identified as a reason for school absenteeism in girls.

**Objective:** To determine the mean age at menarche and pattern of menstruation in the sub-urban district of Southwestern Nigeria and to demonstrate the influence of pre-menarcheal education on the attitude of the respondents.

**Method:** Students in senior secondary classes were randomly selected from seven Secondary Schools in the town. The tool was a self administered simple questionnaire and analysis was done using SPSS 11.0 statistical package.

**Result:** The mean age at menarche was 13.8 ( $\pm 1.3$ ) and the range were 10 to 18 years. The mean length of the cycle was 26.9 ( $\pm 3.7$ ) and the range was from 14 days to 32 days. The duration of flow ranged from 1 day to 13 days with a mean of 4.6 ( $\pm 1.2$ ) days. Fifty three point four percent of the respondents had varying severity of dysmenorrhoea. There is a better perception of dysmenorrhoea in girls who had pre-menarcheal education ( $p=0.000$ ).

**Conclusion:** Mean menarcheal age of 13.8 ( $\pm 1.3$ ) days compared favourably with findings in recent studies and also agree with declining trends over the past decades. Pre-menarcheal education will improve perception of dysmenorrhoea and thus reduce school absenteeism resulting from it.

**Key Words:** Menarche, Menstrual Pattern, Schoolgirls, Sagamu.

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### INTRODUCTION

Menarche is the first menstruation in the life of a woman<sup>1</sup>. It is the culmination of transitional stage in a girl's development from childhood to adulthood.<sup>2</sup> It is an important and much valued event in the reproductive life of a woman<sup>2</sup>. As a dramatic pubertal event it is easily remembered even in later life of the woman.

Many factors, including genetics, medical and environment, social and sporting activities have been found to affect the age at menarche<sup>3-6</sup>. All over the world there is a gradual decline in menarcheal age in the last five decades, from 1950 to year 2000. This is attributed to the improvement in the standard of living in many nations of the world.<sup>7, 8</sup> Several studies in Nigeria reported the age at menarche to be between 13.2 years and 14.5 years<sup>2, 3, 9-12</sup>. However comparison between earlier studies<sup>10-12</sup> and later studies<sup>13-15</sup> shows declining trends in the mean age at menarche.

This study is intended to find the mean age at

menarche in this sub-urban district of the country and demonstrate if it agrees with the declining trend, describe the pattern of menstruation in the school girls and demonstrate the influence of premenarcheal education on the attitude of the respondents.

### SUBJECTS AND METHOD

One thousand and ninety-seven (1097) post-menarcheal school girls were recruited from seven middle grade schools in Sagamu, a sub-urban town in Remo division of Ogun State, south west of Nigeria. Students were randomly selected in the senior secondary schools and were interviewed using a simple questionnaire. Data were collated on present age, date of birth, date of onset of menarche, parents' educational status and occupations, pre-menarcheal counseling on menstruation, menstrual pattern such as cyclicality, cycle length, duration of flow, amount of blood flow and pain with menstruation. In addition pain subjectivity rating was carried out and was described as mild (when present but not incapacitating and not necessitating treatment), moderate (when present but not incapacitating but necessitates treatment) and severe (when present and incapacitating). The amount of flow was assessed as

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normal or moderate when the bleeding does not require changing the absorbent pads more than twice in the day and once at night; scanty or light when an absorbent pad is hardly soaked during the day and another at night; and heavy when bleeding demands changing the pads more frequently than three times during the day and twice or more overnight or bleeding is associated with passage of clots. The interviewers were six 500-level medical students who had been earlier trained on how to guide the students in answering the questions. The inquiry was conducted and supervised by the medical and nursing staff of reproductive health research unit of the hospital, spanning a period of three weeks.

Heights of the girls were measured on bare feet and weights were obtained using commercial scale, which had earlier been corrected to zero and with the girls in their school uniforms and empty pockets. The school uniform is of light cotton materials.

The data obtained were analyzed using the SPSS II.0 statistical package.

## RESULTS

Out of 1097 questionnaires administered 33 were excluded for insufficient data for analysis. One thousand and sixty four (1064) questionnaires were collected and analyzed.

The respondents ages ranged from 13 years to 21 years with a mean age of 16.01 ( $\pm 1.6$ ) years. The earliest age at menarche was 10 years and latest was 18 years. The mean age at menarche was 13.8 ( $\pm 1.3$ ) years. The mean weight and height of the respondents was 47.08 ( $\pm 8.0$ ) Kg and 158.8 ( $\pm 8.4$ ) centimeters respectively. The duration of flow ranged from 1 day to 13 days with a mean duration of 4.6 ( $\pm 1.2$ ) days. The lengths of menstrual cycle in the respondents ranged from 14 days to 32 days. The mean cycle length is 26.9 ( $\pm 3.7$ ) days

Table 1 shows distribution of age at menarche and menstrual characteristics in the respondents. Nine hundred and forty seven (89.8%) attained menarche between the ages of 12 and 15 years. Twenty nine (2.7%) attained menarche before the age 12 years and six (0.5%) attained menarche at very late age, that is at ages 18 years and above.

Cycle lengths less than 20 days occurred in 77 (7.3%) of the girls and none had cycle lengths of 36 days or more. Seven hundred and seventy eight (73.1%) of the girls had cycle lengths between 26 and 30 days. One thousand and fifteen (93.7%) had menstrual flow lasting from 2 to 7 days. The amount of flow was described as normal, light and heavy in 62.0%, 17.0% and 8.6% respectively. The menstrual cycle was described as being regular always and majority of the time in 563 (52.9%) of the respondents. One hundred and thirty five (12.7%) students had very

irregular and unpredictable menstrual cycle lengths. Mild, moderate and severe dysmenorrhoea was reported by 26.8%, 15.3% and 11.3% of the girls respectively. Dysmenorrhoea occurred always in 648 (60.9%) of the respondents.

Table 2 shows the distribution of sources of pre-menarcheal education or counseling. Five hundred and six (47.6%) students had no form of counseling prior to commencement of menstruation. Out of the 545 who had pre-menarcheal counseling, 353 received it from friends and peers. Pre-menarcheal counseling was provided by parents or guardians, relations and school teachers in 8.3%, 2.5% and 1.6% of the respondents respectively. Books or magazines, electronic and print media provided information in 5.6% of the respondents.

Table 1: Menstrual Characteristics in Secondary School girls in Sagamu.

Description	No.	%
<b>Age (years)</b>		
10 – 11	29	2.7
12 – 13	389	36.5
14 – 15	567	53.3
16 – 17	73	6.9
= 18	6	0.5
<b>Cycle length (days)</b>		
= 20	77	7.3
21 -25	163	15.3
26 – 30	778	73.1
31 – 35	46	4.3
= 36	Nil	Nil
<b>Duration of flow (days)</b>		
=1	3	0.3
2– 7	1015	95.4
= 8	46	4.3
<b>Description of amount of flow</b>		
Normal	657	62.0
Scanty (Light)	183	17.0
Heavy	92	8.6
No response	132	12.4
<b>Regularity of Menstrual cycle</b>		
Regular all the time	197	18.5
Regular majority of the time	366	34.4
Regular occasionally	283	26.6
Irregular (Unpredictable)	135	12.7
No response	83	7.8
<b>Description of Painful Menstruation (Dysmenorrhoea)</b>		
None	331	31.1
Mild	285	26.8
Moderate	163	15.3
Severe	120	11.3
No response	165	15.5
<b>Frequency of Dysmenorrhoea</b>		
Occuring all the time	60	5.6
Occuring most of the time	588	55.3
Occuring occasionally	251	23.6
No response	165	15.5

**Table 2: Pre-menarcheal Information and Source.**

Source	No.	%
None	506	47.6
Parents/Guardians Relations	88	8.3
School teachers	27	2.5
Friends and Peers	17	1.6
Books/Magazines/Media	353	33.2
Symposia/School debates	60	5.6
	13	1.2
<b>Total</b>	<b>1064</b>	<b>100</b>

**Table 3: Pre-Menarcheal Education and Description of Painful Menstruation.**

Description	Number	Pre-menarch. Education n(%)	No Pre-menarch. Education n(%)
None	331	253 (76.4)	78(23.6)
Mild	285	193 (67.7)	92 (32.3)
Moderate	163	82 (50.3)	81 (49.7)
Severe	120	17 (14.2)	103 (85.8)
No Response	165	13 (7.9)	152 (92.1)
	<b>1064</b>	<b>558 (52.4)</b>	<b>506 (47.6)</b>

**Table 4: Mean Menarcheal Ages in Nigeria (1950 1999).**

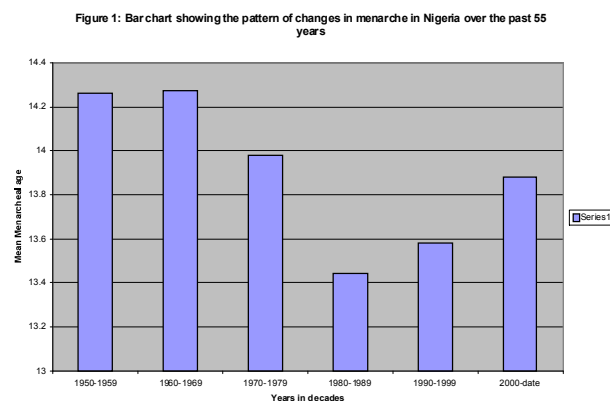
Author(s)	Year	Description of subjects & site	No. of Subjects	Menarche (±SD) (years)
Ellis	1950	Lagos (School girls)		
		(a) Igbo girls	200	14.22(1.6)
		(b) Yoruba girls	250	14.40
Wilson & Sutherland	1953	Pagans from Plateau	76	14.30(1.34)
		Northern Nig. Schl. Girls	172	14.40(0.61)
Tanner & O'Kaffe	1962	School girls in Eastern Nig.	366	14.30(0.16)
Akingba	1968	Countrywide study	1724	14.24(1.19)
Emmanuel	1975	Nurses in a Lagos Hospital	107	14.5
Oduntan, Ayeni & Kale.	1976	Urban Schl. Girls in Ibadan	2029	13.79(0.05)
		Rural Schl. Girls in Igbo-Ora	328	14.50(0.60)
Olatunbosun & Alade	1977	Nurses in a Teach. Hosp School of Nursing	202	14.05(1.36)
Sogbamu & Aregbesola	1979	School girls in Ondo	105	13.85
Marinho & Marinho	1979	School girls in Ibadan	575	13.20(1.00)
Uche & Okorafor	1979	Second. Schl girls in Enugu	1365	13.54(0.07)
Mathur & Toriola	1982	Successful Nig. Athletes	418	14.13
		Non-athlete Nig. Females	512	13.57
Modebe, O.	1987	Second. Schl girls in Enugu	2204	13.3(1.09)
Okonofua & Others	1987	Students of Univ. of Ife	200	13.45(1.45)
Fakeye	1988	Second. Schl. girls in Ilorin	305	13.5(0.9)
Fakeye & Fagbule	1990	Second. Schl. Girls in Ilorin	1054	13.6
E. A. Wright	1990	Second. Schl. Girls in Plateau		13.5(1.33)
Thomas, Chiboka & Okonofua	1990	Students of Univ. of Ife	768	13.4(1.4)
Dare, Oggunniyi & Makinde	1992	Second Schl girls in Ile-Ife	1054	13.98(1.30)
Fakeye & Adegoke	1994	Second. Schl girls in Ilorin	361	13.7(2.6)
Rehan	1994	Second schl girls in Northern Nigeria	5736	13.4
Ekele et al	1996	Second. Schl girls in Jos	331	13.2
Abioye-Kuteyi et al	2000	Second. Schl girls in Ile-Ife	352	13.94(1.31)
Present study	2005	Second. Schl girls in Sagamu	1064	13.82(1.26)

Table 3 demonstrates the perception of dysmenorrhoea as influenced by pre-menarcheal education. Out of the 558 of respondents that had any form of education 446 (79.9%) demonstrated good

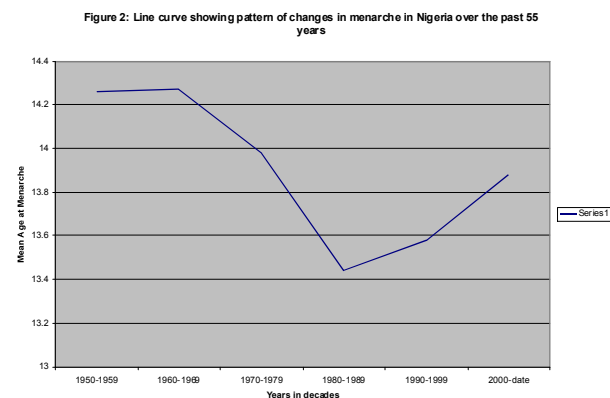
Perception and tolerance of pain that may be associated with menstruation, (p=0.000).

The values and trends of mean menarcheal ages in Nigerian studies are as shown in Table 4 and figures 1 and 2.

**Figure 1: Bar Chart Showing the Pattern of Changes in Menarche in Nigeria over the Past 55 Years.**



**Figure 2: Line Curve Showing Pattern of Changes in Menarche in Nigeria over the Past 55 Years.**



## DISCUSSION

The mean menarcheal age of 13.8 (± 1.3) years is comparable to values obtained by other authors, especially studies that evolved from similar semi-urban settlements of southwestern Nigeria and with comparable sample sizes<sup>3, 16 - 18</sup>. The average cycle length and duration of flow in this study agree with earlier studies<sup>13 - 16, 19, 20</sup>. Dysmenorrhoea is recurrent lower abdominal crampy pain experienced just before and/or during menstruation<sup>1</sup>. This is a common gynaecologic complaints of the adolescents. It occurred in 568 (53.4%) of our study group and account for 11.3% absenteeism in school. Similar studies in Ile-Ife, Ilorin and Egypt reported over 75% of subjects with dysmenorrhoea<sup>3, 17, 18, 22, 23</sup>. Pain is a subjective symptom and correlation

between these findings may be difficult to apply. Earlier studies by Sogbamu, Akingba and Marinho reported dysmenorrhoea in less than 50% of the study populations<sup>2, 10, 11</sup>. In this study 55.3% of the school girls had dysmenorrhoea most of the time. This is higher than finding by Fakeye and Adegoke in which 45.5% of the girls had dysmenorrhoea most of the time<sup>20</sup>.

Significant relationship between adequate preparation and positive reaction to menarche in adolescents has long been established by authors in the past.<sup>24</sup> A substantial proportion of girls in this study (47.6%) did not receive any form of pre-menarcheal education and would therefore be poorly prepared for the menstrual life. Over a quarter of the study population that received any form of education (33.2%) obtained them from friends and peer groups. No doubt the information would be inadequate and inappropriate. In this study parents were not of assistance in giving pre-menarcheal counseling to their girl children as only 8.3% of them received such parental advice. Pre-menarcheal counseling in schools is practically non-existent in this study as only 17 (1.6%) of the school girls claimed to have received any in schools. However, there is a significant relationship between pre-menarcheal education and better appreciation of dysmenorrhoea ( $p = 0.00$ ). Four hundred and forty six (79.9%) of 558 respondents who had pre-menarcheal information perceived dysmenorrhoea as a non-issue or at worst mild discomfort.

Relationships between menarche and weights and/or heights have been studied by many authors and these have given rise to "menarche-critical weight" hypothesis<sup>9, 25, 26</sup>. The mean weight and height of 47.1 Kg and 158 cm for the girls in this study compared favourably with 48 Kg and 160 cm reported by Frisch and Revelle in Caucasian girls and 47.8Kg to 48.8Kg and 156.4cm and 158.2cm reported by Fakeye in Ilorin and Diejomaoh in Benin, Nigeria<sup>9, 26, 27</sup>. Table 5 shows values of mean ages at menarche in comparable studies in Nigeria, beginning from the second half of the last century and the first five years of the current century. The trend is that of reducing age at menarche over the years. This trend is graphically represented in figures 1 and 2. That the age at menarche appears to be falling and probably stabilizing globally had earlier been suggested by Tanner et al and Brundiland et al respectively<sup>5, 8</sup>. The observations in these Nigerian values agree with these assertions. The first two decades in this table show values = 14 years and the last thirty to thirty-five years revealed values that stabilize between 13.5 years and 13.8 years. This reduction and stability may be explained by the improvement in the economy and standard of living in the country over the past four decades.

## CONCLUSION

The mean menarcheal age in this sub-urban district of southwestern Nigeria was found to be 13.8 ( $\pm 1.2$ ), the mean duration of flows and lengths of cycle were 4.6 ( $\pm 1.2$ ) days and 26.9 ( $\pm 3.7$ ) days respectively. This study demonstrates that pains or discomforts that may be associated with menstruation are better appreciated and tolerated by girls who had pre-menarcheal information. In order to reduce school absenteeism resulting from dysmenorrhoea parents and the school should play complementary roles in pre-menarcheal education of the adolescents.

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