



# University of Nigeria

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<b>Author 1</b>	<b>NWOKOCHA, B. M.</b>
<b>Author 2</b>	<b>OKORO B. A.</b>
<b>Author 3</b>	
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Figure 1

Breast Developmental Stages

Socio-Economic influence on Sexual Maturation

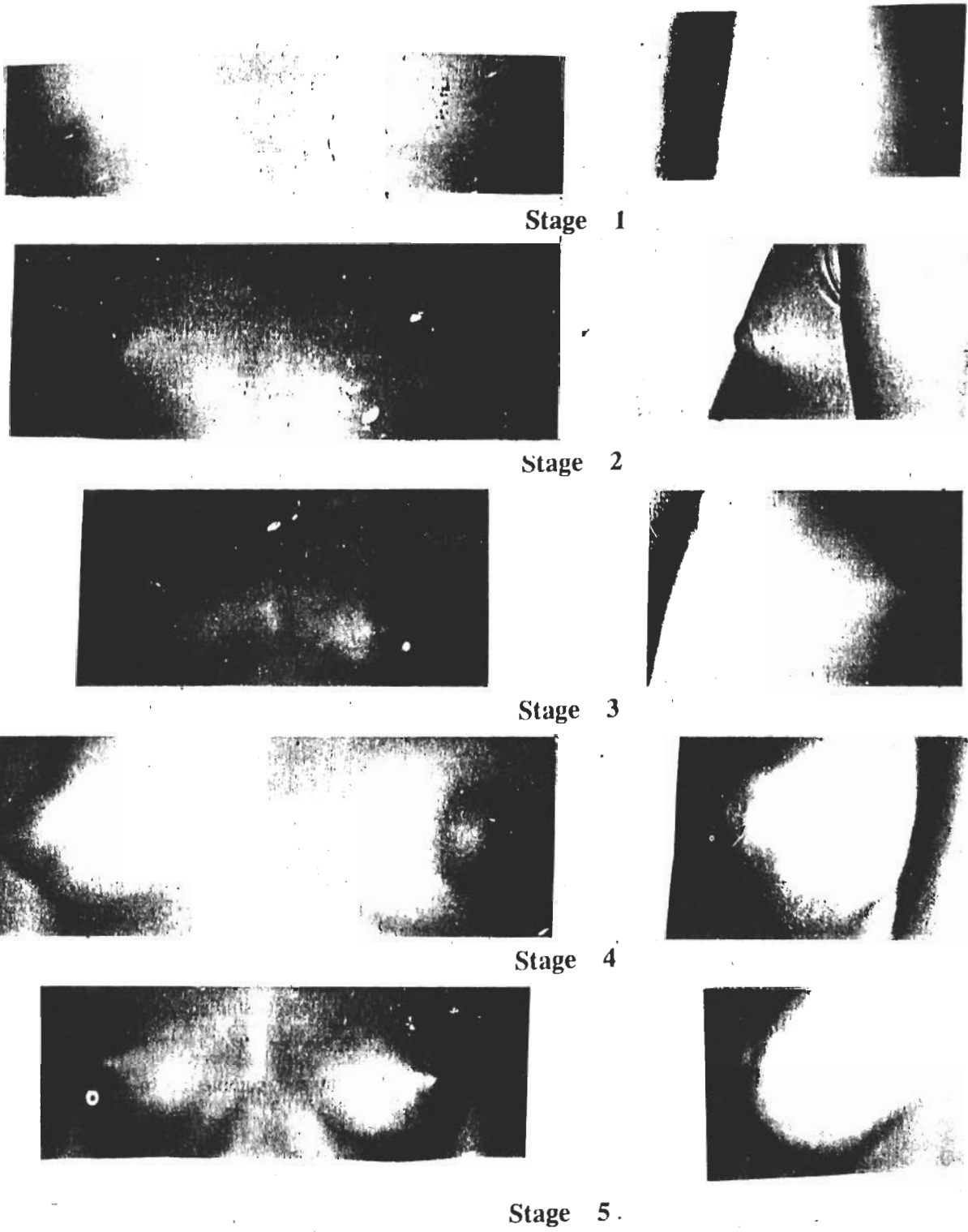


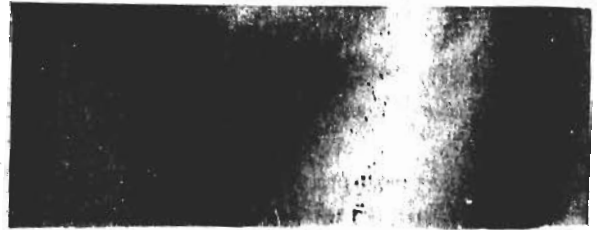
Figure 2

Pubic Hair Development





**Stage 4**



**Stage 5**

- University (eg. College of Education, School of Nursing, etc.).
2. No school or up to primary school education only. The social class is obtained by adding scores from A and B above which stratify the subjects into:-
    - Upper Class or Social Class I - score is 1 or 2 and represents the elites.
    - Middle Class or Social Class II - score is 3 and represent the middle class of nurses, clerks and technicians.
    - Lower Class or Social Class III - score is 4 or 5 and occupies the lowest rungs of our socio-economic ladder.

The sexual maturation was rated according to the standard by Tanner and Marshall<sup>16</sup> into 5 stages each of development of the pubic hair and breasts. (Each girl was examined and rated accordingly and the age recorded). See figures 1. & 2

**Breasts**

The breast development stages (B<sub>1</sub> - B<sub>5</sub>) are as follows:

- Stage 1 (B<sub>1</sub>) Pre-adolescent: elevation of papilla only.
- Stage 2 (B<sub>2</sub>) Breast bud stage: elevation of breast and papilla as small mound. Enlargement of areolar diameter.
- Stage 3 (B<sub>3</sub>) Further enlargement and elevation of breast and areola, with no separation of their contours.
- Stage 4 (B<sub>4</sub>) Projection of areola and papilla to form a secondary mound above the level of the breast.
- Stage 5 (B<sub>5</sub>) Mature stage: Projection of papilla only, due to recession of the areola to the general contour of the breast.

In cases of unequal breast development, the more advanced is recorded. As an incentive, the girls were taught the importance and method of examining their breasts monthly for early detection of the fairly common breast cancer.

**Pubic Hair**

The pubic hair stages (P<sub>1</sub> - P<sub>5</sub>) are as follows:-

- Stage 1 (P<sub>1</sub>) Pre-adolescent. The vellus over the pubis is not further developed than that over the abdominal wall i.e. no pubic hair.
- Stage 2 (P<sub>2</sub>) Sparse growth of long, slightly pigmented downy hair, straight or only slightly curled appearing chiefly along the labia.

**Stage 3 (P<sub>3</sub>)**

Considerably darker, coarser and more curled. The hair spreads sparsely over the junction of the pubes. It is at this stage that pubic hair is first seen in the usual type of black and white photograph of the entire body where special arrangements are necessary to photograph stage 2 hair.

**Stage 4 (P<sub>4</sub>)**

Hair now resembles adult in type but the area covered by it is still considerably smaller than in the adult. No spread to the thighs.

**Stage 5 (P<sub>5</sub>)**

Adult in quantity and type with distribution of the horizontal (or classically feminine pattern). Spread to medial surface of thighs but not up to linea alba or elsewhere above the base of the inverse triangle. When there is a spread to the thighs and anterior abdominal wall, they were still grouped as stage 5.

**Statistical Analysis:**

The method of statistical analysis employed is the Standard Normal Deviate (SND) - the Z test. convenient Value (C.V.) is  $\pm 1.96$ .

**Results:**

Of the 1506 subjects studied, 410 (27.22%) were in the upper class, 444 (29.48%) in the middle class and 652 (43.29%) in the lower class. The mean ages for development and completion of the pubic hair development are  $10.37 \pm 1.6$  years and  $15.47 \pm 1.49$  years respectively. For breast development, the onset and completion ages are  $10.88 \pm 1.85$  and  $15.66 \pm 1.42$  years respectively. Tables 1 and 2 show the effect of social class on the ages for these events. The mean menarcheal age is  $13.23 \pm 1.27$  years for the population studied. Table 3 shows the effect of social class on the menarcheal age.

**Discussion:**

The present study has demonstrated that SEC influences the age of sexual maturation including the age at menarche in Igbo girls in Nigeria. The higher the SEC the earlier the sexual maturation and vice-versa. The effect on the onset of the sexual maturation is mild but gets more obvious when the extremes of the SEC are compared i.e. between SEC I and II. By full maturation, the difference becomes quite marked and statistically significant ( $P < 0.05$ ).

Using the age at menarche as a representative parameter for sexual maturation, a number of studies

done among the Igbo girls over the years have demonstrated a continual reduction in age. Ellis<sup>16</sup> in 1950 recorded 14.20 years. In 1961, Tanner and O'Keffee<sup>17</sup> reported 14.0 years while Uche and Okoroafor<sup>18</sup> reported 13.40 years in 1979. The present study now reports 13.23 ± 1.27 years. These suggest improvement in the SEC and agrees with the secular trend of earlier maturation<sup>6</sup>. With development and modernization, the environmental influence on sexual maturation is stabilizing<sup>19</sup> such that the difference in ages, if any, is minimal. This is evidenced by the works of Young et al<sup>11</sup> in Florence, Italy and Jenicak and Demirijian<sup>12</sup> in Canada, both working in developed countries.

Wright<sup>8</sup>, Goyea<sup>10</sup> and Oduntan, Ayeni and Kale<sup>7</sup> working independently in the Northern and Western parts of Nigeria, had observed similarly that the age at menarche is significantly influenced by one's SEC. The present study now shows that the entire event of sexual maturation is significantly influenced by the individual's SEC. Oduntan, Ayeni and Kale<sup>7</sup> went on to identify one's SEC as being the key factor in the difference observed with the maturational age.

The secular trend of earlier maturation demonstrated by the earlier works on menarche cited in this study as well as this study have shown that improved socio-economic conditions reduce the age of sexual maturation. Also, because the secular trend in earlier maturation has continued in this society, one anticipates that the age of sexual maturation will get even lower until it levels off as in some developed countries<sup>12,19</sup>.

As these girls mature early sexually, they experience physical growth spurt<sup>2</sup> making them appear like adults. However, their cognitive development does not usually keep up with this physical appearance with the result that they are unable to handle a lot of undesirable experiences they are exposed to like early sexual activities which lead to unwanted pregnancies and subsequent abortion, early marriage, forced marriage, school drop-out, premature death, AIDS, STIs, etc. Izuora, reported the case of a 13 year old girl who was picked up in Enugu when suffering from complications following her third abortion<sup>20</sup>. They easily fall prey to certain societal ills like prostitution, armed robbery, political touting, etc.

Based on these, early and graded sex education is hereby advocated as this would go a long way in equipping these young people with what they need to prevent them from falling prey to these societal ills. This sex education should ideally start in the home and ensured at schools, even primary schools and emphasised by the media.

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**TABLE 1: EFFECT OF SOCIAL CLASS ON ONSET OF SECONDARY SEXUAL CHARACTERISTICS**

SOCIAL CLASS	PUBLIC HAIR		*t' STATISTICS C.V. = ± 1.96
	NO.	MEAN AGE (YR.)/S.D.	
Upper (U)	81	9.92 <sup>±</sup> 1.93	1.42* (P>0.05)
Middle (M)	84	10.40 <sup>±</sup> 11.59	0.79 <sup>+</sup> (P>0.05)
Lower (L)	58	10.66 <sup>±</sup> 1.74	-2.20 <sup>++</sup> (P<0.05)
COMBINED (c)	185	10.37 <sup>±</sup> 1.8	

\* Upper and middle classes  
+ Middle and lower classes  
++ Lower and upper classes

**TABLE 2: EFFECTS OF SOCIAL CLASS ON COMPLETION OF SECONDARY SEXUAL CHARACTERISTICS**

SOCIAL CLASS	PUBLIC HAIR		*t' STATISTICS C.V. = ± 1.96
	NO.	MEAN AGE (YR.)/S.D.	
Upper (U)	74	14.77 <sup>±</sup> 1.51	3.98* (P<0.05)
Middle (M)	79	15.65 <sup>±</sup> 1.24	2.19 <sup>+</sup> (P<0.05)
Lower (L)	78	16.09 <sup>±</sup> 1.26	5.84 <sup>+</sup> (P<0.05)
COMBINED(c)	231	15.47 <sup>±</sup> 1.49	

\* Upper and middle classes  
+ Middle and lower classes  
++ Lower and upper classes

**TABLE 3: EFFECTS OF SOCIAL CLASS ON MENARCHE**

SOCIAL CLASS	MENARCHE		*t' STATISTICS C.V. = ± 1.96
	NO.	MEAN AGE (YR.)/S.D.	
Upper (U)	138	12.77 <sup>±</sup> 1.38	-2.74* (P<0.05)
Middle (M)	184	13.27 <sup>±</sup> 1.80	-1.41 <sup>+</sup> (P>0.05)
Lower (L)	188	13.30 <sup>±</sup> 1.14	5.09 <sup>+</sup> (P<0.05)
COMBINED (c)	488	13.23 <sup>±</sup> 1.27	

\* Upper and middle classes  
+ Middle and lower classes  
++ Lower and upper classes

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