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Original Article

Menarchial Age of Secondary School Girls in Urban and Rural Areas of Rivers State, Nigeria

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Abstract:

The menarchial age of 859 secondary school girls consisting of 508 from urban and 351 from rural area of Rivers State, Nigeria were determined, using questionnaires and interview method. Data collation revealed that 69.2% (243) of the rural population were menstruating, while 70.1% (356) of the urban population were menstruating. Mean ages of menarche were 13.19 ± 1.32 years and 14.22 ± 1.47 years for urban and rural areas respectively. A statistically significant lower mean menarchial age was observed in urban area girls, compared to their rural counterparts. Girls from families of high socio-economic class has significantly lower mean menarchial age in both urban and rural area. The mean age of menarche was significantly higher in girls involved in vigorous sporting activity in rural areas compared to their non-sporting counterparts. Urban school girls attain menarche earlier than those in rural area. High socio-economic class and vigorous sporting activity can be predisposing factors to low and high age of menarche respectively. There is need for redefinition of high socio-economic class in Nigeria.

Key Words: Menarchial age, School Girls, Urban, Rural, Sports, Socio-economic class

Introduction

Menarche is the onset of menstruation. It is one of the major events within the complex changes of puberty in girls. Menarche is believed to be influenced by many factors including socio-economic class^{1,2} and sports.³ Other factors attributed to influence menarchial age includes rate of physical growth. It has been observed that girls with faster physical growth and that were relatively overweight had faster onset of menarche.⁴ Genetic factors have been suggested to influence menarchial age. HLA linked genes have been noted to play important role in determining the age of menarche.⁵ However there is no significant association between the age of menarche and genetic markers such as ABO blood group, Rhesus factor, haptoglobulins,

esterase D and phosphoglucomutase.⁶ Information on the age of menarche is well documented in Nigeria, Europe and American girls. But most of the information in Nigeria was focused on the urban areas of northern and western Nigeria. There is still paucity of information on the menarchial age of Nigerian girls in rural areas, especially Rivers state, the eastern region of Nigeria where the quality of life depends much on the earning power of the citizens. This study is designed to bridge this gap in knowledge.

Materials and Methods

Study-Area:

By simple random sampling method, four secondary schools were selected. Two were from the urban area (Portharcourt), and other two from rural area (Etche). The two schools selected for each group consisted of one co-education school and another girls-only school respectively.

Subjects

This included all students from junior secondary I to senior secondary II of the selected schools, since the senior secondary III girls had graduated out as at the time of the study.

Method of data collation::

Using the retrospective method, about 900 questionnaires were distributed, according to the population proportion of the four schools. Of this, 41 were not properly answered, so we had 508 and 351 properly answered questionnaires from urban and rural schools respectively. The questionnaire was verbally interpreted in simple language and properly explained to avoid any form of misunderstanding and to facilitate accurate response by the subjects. The questionnaires were retrieved immediately after completion to minimise interpersonal communication amongst the subjects and to prevent the influence of peers on individual responses.

Ethical consideration::

The authorities of the secondary schools and the girls concerned were informed and

educated on the study to be carried out. Also, informed consent was obtained from all the girls and the school authorities before the study was carried out.

Statistical Analysis:
Means, standard deviations and simple percentage were determined. Z-score was used to test for significance level, since the sample size was large. In all cases a 5% level of error was assumed and 95% level of confidence accommodated with a critical value of 1.96 on a two-tailed distribution or a critical value of 1.64 on a one-tailed distribution.

Results

There was a statistically significant lower mean menarchial age in urban school girls compared to the rural school girls (Z-score =10.22, Table 1). In both urban and rural areas, school girls from high socio-economic class had significantly lower mean menarchial age compared to their counterparts from low socio-economic class (Z score = 13.89 and 7.68, respectively, Table 2). In the rural area, school girls involved in vigorous sport activity had a higher age of menarche compared to girls in non-sporting activity (Z = 9.75, Table 3)

Table 1: Mean menarchial age in urban and rural secondary school girls

	Urban	Rural	Z = score
Menarchial age (years)	13.19 ± 1.32	14.22 ± 1.47	10.22*

Values are mean ± S D; *Statistically significant

Table 2: Mean menarchial age (years) of high, middle and low socio-economic class school girls in the urban and rural areas

	High	Middle	Low	High Vs Low Z - score	Middle Vs Low Z - score
Urban area	13.06±1.35 (n =218)	13.08±1.27 (n =87)	13.70±1.18 (n =51)	18.89*	7.29*
Rural area	13.98±1.46 (n =61)	14.10±1.59 (n =49)	14.38±1.42 (n -133)	7.68*	-1.54 ^{NS}

Values are Mean ± SD; *Significant; NS = Not significant

Table 3: Relationship between menarchial age (years) and sporting activity

	Sporting	Non- sporting	Z-score
Urban	13.10 ± 1.27 (n = 284)	12.98 ± 1.40 (n = 224)	-1.12 Ns
Rural	14.61 ± 1.34 (n = 211)	14.09 ± 1.57 (n = 140)	9.75*

Values are Mean ± SD

Discussion

Data from the present study shows a statistically significant lower mean menarchial age (13.89 ± 1.37 years) for urban secondary school girls than the mean value for the rural school girls (14.22 ± 1.47 years). This is consistent with the observation of Lin et al⁷, that urban Chinese girls had a lower menarchial age than their rural counterparts. A number of factors may have contributed to this difference. Socio-economic factor was investigated in this

study and it was observed that school girls from a high socio-economic class had a statistically significant lower mean age of menarche compared to those in low Socio-economic class. Ikechebelu⁸ had earlier noted lower age of menarche in girls of high socio-economic status than those of low socio-economic class. It seems that the socio-economic status affects menarchial age, and this may account for the significant difference in menarchial age between urban and rural school girls, since 56.6% (133) of the rural school girls were within the low

socio-economic group while only 14% of the urban school girls were of low socio-economic group. The question of a proper definition of socio-economic status in Nigeria however arises, considering that there is little or no difference in menarchial age between girls in the middle and high socio-economic groups. In fact, in one of the schools studied, we discovered that girls in the middle class had a lower mean menarchial age than girls in the high social class. This clearly is a reflection of the discrepancy between social class and earning power in Nigeria today. Most Business men are placed within the middle class because of their educational attainment. They are generally richer and have more assets and therefore a better standard of living than the professionals (the so-called elites) who are classified as the high social class. This is reflected in the mean menarchial age of their daughters. It therefore implies that the classification of socio-economic status in the developed world, where educational attainment is almost concomitant with social well being, may not be applicable in Nigeria. Therefore, we suggest a redefinition of socio-economic status in Nigeria, based on earning power and assets such as cars and landed property, which better reflect the standard of living.

In this study there was similarity in the mean menarchial age of urban school girls involved in vigorous sports and those not involved. While in rural area, there was a significantly higher mean age of menarche for girls involved in active sports than those not involved. This corroborates an earlier report that active sports increase the age of menarche.⁹ This may be due to the release of androgen hormones (aldosterone) in sporting girls which is likely to delay menarche. Perhaps the similarity in the mean menarchial age of the urban school girls involved in vigorous sporting activity and those not involved in vigorous sporting is because most of the urban girls are in high socio-economic class. They are better nourished and therefore have a better ability to cope with the strenuous effect of vigorous sporting activity on the body physiology.

This may also contribute to the generally lower mean menarchial age of girls in urban area.

Conclusions

In conclusion, urban school girls had a lower mean age of menarche than rural school girls. Low menarchial age can be a reflection of high socio-economic status, while vigorous sports tend to increase menarchial age. There is need for redefinition of socio-economic status in Nigeria.

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