

Age, Weight and Height at Menarche Among School Girls in Zaria

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Abstract

Context: Age at menarche has been trending downwards in most communities and this period often coincides with the onset of coitus and the first pregnancy, especially in Northern Nigeria

Objectives: The aim of the study was to determine the current age at menarche of schoolgirls in Zaria and ascertain the biosocial and other factors that may be influencing it.

Materials and Methods: Girls from selected schools in Zaria were interviewed, using a structured questionnaire, to ascertain their age at menarche and obtain other socio-demographic information. Their weight and heights were also measured. The results were analyzed with a computer statistical package and tabulated

Results: Out of the 3,130 girls in the eight schools selected, 148 of them attained menarche in the preceding three months and they constituted the study group. The age of menarche ranged from 132 to 206 months (11.0 to 17.17 years). The mean menarcheal age ranged from 162.1 months for girls in Social Class I to 178.5 months for those in Class V.

Conclusion: Earlier onset of menarche in Nigerian school girls reinforces the need for appropriate family life and sexuality education to minimize the risk of reproductive health problems in these adolescents.

Key Words: Menarche, Anthropometric Measurements, Adolescence

Introduction

Secular trend in age at menarche has been reported globally and it implies sexual maturation at a much younger age than before.¹ The age at menarche in some cultures, including the Hausa/Fulani culture, is related to age at first coitus and marriage as many teenagers are expected to leave home for marriage before or at menarche.

As the age at sexual maturity is decreasing, earlier indulgence in sexual activity by teenagers is inevitable due to complex psychological and physical body changes that accompany sexual maturation. Studies have reported age at first coitus to be around 11-13 years for Nigerian females compared with 14-15 years for males.² Harrison reported that teenage girls under 15 years of age accounted for six percent of 22,774 deliveries in Zaria where early marriage is widely accepted and practised.³

Early indulgence in sexual activity may lead to teenage pregnancy, sexual transmitted disease including HIV/AIDS. This is as a result of poor knowledge, attitude and practice of safe sex by teenagers in the West African subregion.^{4,5} Majority of teenage pregnancies will be

unwanted and many will be terminated by unsafe abortion, with attendant high maternal morbidity such as post-abortal sepsis, infertility and chronic pelvic pain. Twenty-five to fifty percent of maternal deaths in West African countries are abortion related.^{6,7}

Wanted teenage pregnancies also bear high risks with attendant perinatal and maternal morbidity and mortality. Harrison reported 25% of maternal deaths among teenage pregnant females less than 15 years old in his study of 22,774 consecutive births.³

Female malignancies affecting the ovary, cervix and breast are related to early age of sexual maturity and indulgence in sexual activity.¹⁰⁻¹¹ Cancer of cervix is the commonest cancer of the female genital tract in Nigeria and its aetiology is related to early onset of sexual activity and other factors associated with unsafe sex.⁹ For these

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clinical reasons the knowledge of menarcheal age of any population is important. Of equal importance will be the knowledge of any shift in this age overtime.

The goal of the study is to determine the current age at menarche among in-schoolgirls in urban Zaria, in relation to their height and weight. The specific objectives were to determine the average age, weight and height at menarche of in-school girls in Zaria metropolis, determine any influence of biosocial factors such as ethnicity, religion and social class on the pattern of menarche and relate the information so obtained and its implication to the existing socio-cultural practice of early teenage marriage in the society.

Methodology

Before commencement of the study, a written approval was obtained from the zonal local education authority of urban Zaria. The study period lasted from 4th-24th February 2003. All the consenting girls in both public and private schools were approached individually and screened based on their date of commencement of first menstruation. Those whose menarche was within three months of the study were selected and a structured questionnaire served on them. Information on date of birth, date of first menstruation, ethnicity, religion and parent's occupation and highest level of education attained, were elicited. Social class was determined based on parent's educational status and occupation using Oyediji's method¹²

At the completion of the questionnaire by selected girls, their weight was measured in kilograms using a portable bathroom weighing scale, which was previously standardized with a linear scale. The girl's standing height was measured in centimeters in the upright position, with their two heels touching the calibrated wall.

Inclusion Criteria

All subjects of Nigerian nationality, who consented to participate in the study and attained menarche within three months of this study. All subjects whose date of first menstruation and date of birth could be ascertained, by certainty of the subject's

knowledge as well as from the school's records were also included in the study.

Exclusion Criteria

- * Non-Nigerians were excluded.
- * Girls for whom consent could not be obtained.
- * Those not sure of their date of birth, and such could not be confirmed by school records.
- * Those who could not remember their month of menarche or attained it more than three months before this study.

Results

A total of 3130 girls in all the eight secondary schools in Sabon-gari local government were approached individually following informed consent and were screened based on the date of commencement of first menstruation. A total of 148 girls attained menarche within three months of study and were interviewed. Out of this 120 girls were eligible and completed the questionnaires.

Their data was analysed with SPSS software version 6.0 and the results shown as follows. The age at menarche ranged between 132 months (11.0 years) to 206 months (17.17 years). The median age at menarche was found to be 169.25 months (14.01 years) while the mean age at menarche was found to be 170.53 months (14.21 years) with standard deviation of 15.05 and standard error of the mean as 1.37.

The height at menarche ranged between 138.00 to 169.00 centimeters with a median height of 156.00 centimeters. The mean height at menarche was calculated to be 155.68 centimeters with standard deviation of 6.09 and standard error of mean as 0.56.

The weight at menarche ranged between 36.50 to 71.00 kilograms with median weight of 48.00 kilograms. The mean weight at menarche was 48.52 kilograms with standard deviation of 6.26 and standard error of mean as 0.57.

Table 1: Distribution of the Pattern of Menarcheal Ages of Various Ethnic Groups

| Ethnic Group | No of Girls | Range | Median Age At Menarche | Mean Menarcheal Age | Standard Deviation |
|--------------|-------------|---------------|------------------------|---------------------|--------------------|
| Hausa 40% | 48 | 132.00-206.00 | 167.38 | 171.39 | 16.72 |
| Fulani 7.5% | 9 | 157.00-202.25 | 172.00 | 174.31 | 13.95 |
| Yoruba 15.8% | 19 | 134.50-194.00 | 170.75 | 169.84 | 15.68 |
| Ibo 10.0% | 12 | 133.00-191.00 | 173.00 | 171.10 | 15.88 |
| Others 26.7% | 32 | 136.75-193.75 | 168.38 | 168.37 | 12.35 |

Table 1 Shows distribution of ethnic group and pattern of menarcheal age. The mean age at menarche ranged between 168.37-174.31 months.

Table 2: Distribution of Religion and Age at Menarche (Months)

| Religion | No of Girls | Range | Median | Mean | Standard Deviation |
|--------------------|-------------|---------------|--------|--------|--------------------|
| Islam 55.8% | 67 | 132.00-206.00 | 169.50 | 170.94 | 16.12 |
| Christianity 44.2% | 53 | 133.00-196.50 | 169.00 | 170.00 | 13.71 |

Table 2 shows the mean and median age at menarche for both religions.

Table 3: Distribution of Social Class and Menarche (in Months)

| Social Class | No of Girls | Range | Median | Mean | Standard Deviation |
|--------------|-------------|---------------|--------|--------|--------------------|
| (I) 9.2% | 11 | 141.00-187.00 | 160.00 | 162.11 | 12.99 |
| (II) 15.8% | 19 | 136.75-186.00 | 168.75 | 166.62 | 12.07 |
| (III) 35.8% | 43 | 134.50-205.25 | 169.75 | 171.18 | 14.43 |
| (IV) 34.2% | 41 | 132.00-201.00 | 173.25 | 172.74 | 16.28 |
| (V) 5% | 6 | 158.75-206.00 | 175.38 | 178.50 | 18.00 |
| Total 100% | 120 | | | | |

Table 3 shows the average age at menarche for different social class.

Discussion

Menarche is a sign of attainment of sexual maturation among girls and a potential starting point of reproduction. Secular trend had been reported in different parts of the world and age at menarche tends to reflect the level of socio-economic development of a given society.¹³ Earlier studies on age at menarche among in-school girls in Northern Nigeria were carried out by Ellis (1950)¹⁴ and Wright¹⁵ (1990). Both studies were carried out in Plateau state and a secular trend was evident as well as the influence of socioeconomic class on age at menarche.

The age at menarche obtained in this study is higher than that quoted by Wright and lower than that of Ellis for Plateau state girls. The mean age at menarche for this population is also higher than that for south eastern and south western Nigeria, respectively^{16,17} The difference may be related to differences in genetic or socio-economic background of these societies.

The girls in this study weighed less than the group studied by Sogbanmu¹⁶ and similar to results obtained by Fakeye¹⁸. This study did not support a critical constant body weight at menarche as the range of body weight at menarche obtained is wide with wide standard

deviation suggesting individual differences as opined by Fakeye¹⁸ and Dare.¹⁹

The biosocial factors such as ethnic group, religion and social class were determined and their influences on menarcheal age were assessed statistically using Chi square. The influence of ethnic groupings on age at menarche was analysed using Chi-square and was found not to be significant (P-value 0.91213). The mean age at menarche for Moslem girls and Christian girls were similar. Chi square test for influence of religion on age at menarche showed no significance (P-value 0.57246). The difference in mean menarcheal age across the social class was found to be statistically significant (P-value 0.00026). For a given age at menarche, girls from social class I are taller and weighed more than those from social class II to V. Different authors remarked similar findings in terms of social class.^{20,21}

The age at which a woman attains menarche is related to her age of coital debut, age of first marriage and pregnancy in some African cultures including the Hausa/Fulani culture. In this cultural context, many teenagers are expected to leave home for marriage before or at menarche. Assuming that the age of sexual maturation continues to decline as demonstrated in this study, earlier indulgence in sexual activity by teenagers is very likely as a result of socio-cultural practice of early marriage, complex psychological and physical body changes that accompany sexual maturation.

Based on the pattern of weight and height at menarche shown in this study, about 30% of the girls weighed less than 45 kg and 25% of them were less than 1.52m tall. Among these it is obvious that full skeletal maturation is yet to be accomplished despite the overt sexual maturity. Teenage pregnancy before full skeletal maturity following early sexual indulgence is likely to be complicated by fetopelvic disproportion and low pre-pregnancy body weight, with attendant complications such as anaemia in pregnancy, prolonged labour, obstructed labour, increased risk of operative delivery (caesarean section and embryotomy), ruptured uterus, vesico-vaginal fistula. Preterm delivery and complications of

prematurity with high perinatal morbidity and mortality are also associated with pre-pregnant weight of less than 45 kilograms.^{3,8} Maternal mortality is higher among teenage pregnant females.

Harrison reported that teenage girls under fifteen years of age accounted for six percent of 22,774 consecutive deliveries in Zaria where early marriage is widely accepted and practiced. He also reported twenty-five percent of maternal deaths among teenage pregnant females less than fifteen years old in his series.³ As more girls attain sexual maturation earlier, these obstetric complications of teenage pregnancy may worsen and its incidence is likely to increase, as the cultural practice of early teenage marriage, does not appear to cease.

In other cultures where early teenage marriage is not practiced, early indulgence of teenage girls in sexual activity may lead to unwanted teenage pregnancies. Up to eighty percent of teenage pregnancies will be unwanted in such situations. About sixty percent of these unwanted pregnancies will end up as unsafe abortions.² Complications such as genital tract injury, post-abortal sepsis, infertility and chronic pelvic pain as well as maternal mortality are common outcomes. Abortion related deaths contribute twenty-five to fifty percent of maternal deaths in West African countries, including Nigeria.^{6,7} This situation is enabled by poor knowledge, attitude and practice of contraception by teenagers in this subregion.^{2,8} In the absence of teenage pregnancy, early indulgence in sexual activity by teenagers is associated with dangers and risk of sexually transmitted diseases including HIV/AIDS. The highest prevalence of HIV/AIDS in Nigeria was found among the age group 15-24 years (Federal ministry of health national sentinel survey of HIV in Nigeria 1999). This is related to the risk-taking behavior of adolescents as well as existing poor knowledge, attitude and practice of safe sex among teenagers in Nigeria and the West African sub region.^{2,4,5} Other reproductive health problems associated with early sexual maturation and indulgence in sexual activity by teenagers include the risk of developing breast carcinoma, liver cell carcinoma and other genital organ malignancies

such as ovarian carcinoma and carcinoma of cervix in later life as shown by many authors.^{10,11}

These reproductive health problems may worsen as long as adolescent sexuality and related problems remain unresolved. This situation calls for specific adolescent health intervention efforts, especially information on adolescent sexuality education and counselling on sensitive adolescent reproductive health problems. The establishments of suitable and accessible adolescent health care facilities to cater for the peculiar health needs of adolescents in Nigeria, which will in no small measure prevent and control adolescent reproductive health problems.

This study assessed only in-school girls, in secondary schools. This was not representative of all the perimenarcheal girls in the target population. The out of school girls were consequently not reached by this study. Their exclusion was occasioned by severe logistical

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constraints, which make reaching them in their seclusion (purdah) homes difficult and hazardous. Despite the period of three months, between onset of menarche and study period, there still exists the possibility of recall bias of date at menarche and date of birth by the girls.

This study's information on age at menarche will serve as a guide to parents, teachers, non-governmental and governmental agencies on the appropriate time frame for the introduction of family life education (also referred to as sexuality education) at home, in the community and in secondary schools. Beneficial family life education should be age dependent and gender specific, intended for perimenarcheal teenagers who are ready for such information, education and counselling services. These efforts will stimulate positive behaviour changes among teenagers, as they will be better informed, confident and armed with good negotiating skill, which will ensure smooth transition into adulthood.

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