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Parametric survival analysis of menarche onset timing among Nigerian girls

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Abstract

Background: This study was a response to the dearth of information on the timing of menarche in low-income countries, and the need to update knowledge on the condition. It thereby enables the provision of adequate support to young girls during menarche. The study determined the timing and range of onset of menarche and identified the factors influencing the timing.

Methods: We used data on girls' sexual and reproductive processes from a nationally representative population survey of girls aged 15–24 years in Nigeria. Descriptive statistics, and survival analysis techniques were used for data analysis at $p = 0.05$.

Finding: A quarter of the respondents (26%) had commenced menstruation by age 12. Almost all, (90%) had experienced menstruation by age 17. Girls aged 20–24 years reported later menarche (time ratio 1.066, 95% CI: 1.045–1.087) compared to those aged 15–19 years. An increase of respondents age by one year resulted in 0.8% delay in onset timing. Significant differences were also found in the zone of residence among the sampled population. Compared with girls from the South East, the timing of menstruation was generally delayed among the girls from South-South

by 5%, North Central by 9%, South West by 10%, North East by 16% and 17% among girls from the North West.

Interpretation: There was a wide range in menarcheal age in Nigerian girls with a peak at 13–14 years and the possibility of a secular trend in the timing of onset. Early family life education is recommended.

Keywords: Reproductive medicine, Public health, Pediatrics

1. Introduction

Puberty is a critical time in the life of a woman. It is when many dynamic and sometimes complicated physical and biological developments occur [1], which are propelled by hormonal changes. There are obvious challenges in measuring most of these physiological changes; however, the commencement of menstruation, otherwise known as menarche, is accepted as the beginning of maturity among girls [2, 3]. Although the onset of menstruation is the last of all the secondary indicators of puberty as it usually starts about 27 months after breast budding and 18 months after pubic hair growth [4, 5], it nevertheless indicates sexual maturity in girls. Menarche is highly correlated with breast budding and is therefore adjudged to be an indicator of the early onset of puberty [4]. Literature is replete with the significance of onset of menstruation in a girl's life [5, 6] and its timely commencement is an indicator that all other puberty and reproductive changes are simultaneously taking place.

The scarcity of empirical information on the timing of menarche in low-income countries, provides a gap in knowledge that affects caregivers', caretakers' and clinicians' ability to manage this landmark period in the lives of young girls. Therefore, there is a need to update knowledge, address the dearth of information, and provide an agreeable report on the timing of menarche in Nigerian girls.

While reliable and empirical information on age at menarche is readily available in most high-income countries, this is not the case in many low-income countries where such information is often belated, not empirical and usually regional in outlook [7]. In many high-income countries, most girls experience menarche between age 10–14 years [7]. This estimate of 10–14 years of age was based on the findings of a study by Deligeoroglou et al. which reported that age at menarche ranges between 12 and 13 years in several nations of the world [8] despite global variations. For instance, Pinyerd et al put the onset of menstruation at an average age of 12.8 years (11–13 years) in the USA [6], while a slightly lower age at 12.4 years (SD = 1.3 years) was reported among Italian secondary school girls [2, 9]. Also, menarche occurred at age 12.1 years (SD = 1.2) among African-American girls and at age 12.9 years (SD = 1.20) among white girls in the USA [10]. A study among Chinese