

## Characteristics of menarche in adolescent girls in Sri Lanka

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## Abstract

**Introduction:** Menarche is an important biological milestone in girls. The age at attainment of menarche is important for implementing programmes to improve the life skills of girls.

**Objective:** To describe the characteristics of menarche, the factors influencing the onset of menarche and to describe the knowledge, beliefs and practices during menarche of adolescent girls in Sri Lanka.

**Methods:** This cross sectional study was conducted among girls 10-16 years of age in four schools situated in the Ragama Medical Officer of Health (MOH) area. Six hundred and sixty two girls were randomly selected and data were collected using a pre-tested, self-administered questionnaire.

**Results:** The median age of our sample was 13 years (range 10-16 years); the mean and median ages of attaining menarche were 12.53 and 11.48 years respectively. The mean BMI of girls who had attained menarche was 17.6 (SEM 0.22) Kg/m<sup>2</sup> and those who did not was 16.92 (SEM 0.32) Kg/m<sup>2</sup>. 47% of the girls had a menstrual cycle length of e" 29 days, 23.4% had irregular cycles and 59% reported that the duration of bleeding was 3-5 days. First borns reported a lower mean age at menarche (12.34 years) than the later borns (12.6 years) (p=0.02). Girls from single child families, who were from higher social categories (Categories 1 & 2) and whose parents were educated beyond O/L attained menarche earlier. 40.8% stated that menstrual blood is not dirty, 70% admitted that there was no prohibition of having cold or sour foods. The majority of the students had adequate knowledge regarding physical changes during menarche. Girls experienced negative emotions during menstruation.

**Conclusion:** The median age of attaining menarche is 11.48 years. Girls experienced negative emotions during menstruation.





## Introduction

The most evident sign of sexual maturity in girls is menarche, the onset of the first menstrual period. Menarche signifies the beginning of reproductive capabilities and the time when secondary sexual characteristics develop. Menstruation generally begins between the ages of 10 and 16. It is a visible physiological marker of the transition from childhood to adulthood (Padez 2003; Danker-Hopfe & Delibalta 1990; Sengupta, Gogoi & Chetry 1996; Soto caceres & Guevara 1988).

The ways in which menstruation is discussed and the language used to describe it reveal how a society views the event. Across cultures, women frequently talk about the physical and psychological implications of their menstrual cycles. The conversations are often minimal and the language reflects widespread discomfort with menstruating women and a universal reluctance to discuss the process directly (Artaria & Henneberg 2000; Soto caceres & Guevara 1988). Soto caceres & Guevara 1988).

Most societies greet the phenomenon of menarche with duality. Many cultures celebrate the onset of the girl's first menstrual period with a positive ritual that is quickly followed by the introduction of negative taboos about menstruation (Piya-Anant et al. 1997; Artaria & Henneberg 2000; Graham, Creed & Maclean 1981; Soto caceres & Guevara 1988).

The age at which a girl has her first menstrual cycle is determined by a combination of factors, including genetic makeup, general health, nutrient intake, and physical exercise. The age of onset is thought to be an indicator of the general health and well being of a culture or country because of its relationship to health and nutritional status. The traditions of a particular culture affect women's menstrual experience. Women in different countries and of varied socio-economic backgrounds do not always experience the physical or psychological symptoms of menstruation the same way (Padez 2003; Cameron & Nagdee 1996; Danker-Hopfe & Delibalta 1990; López Contreras et al. 1981; Henneberg & Louw 1995; Piya-Anant et al. 1997; Artaria & Henneberg 2000; Graham, Creed & Maclean 1981; Pawson 1977; Soto caceres & Guevara 1988).

The objective of this study was to describe the characteristics of menarche, the factors influencing the onset of menarche and to describe the knowledge, beliefs and practices during menarche of adolescent girls in Sri Lanka



## Methods

**Study design:** This study was a cross sectional study.

### **Study setting**

The study was conducted in schools situated in the Ragama Medical Officer of Health (MOH) area.

### **Study population**

The study population comprised girls ranging from 10-16 years resident in the Ragama MOH and attending schools in the area. The following four schools were selected.

1. Vihara Maha Devi Balika Vidyalaya, Kiribathgoda
2. Mahamaya Balika Vidyalaya, Kadawatha
3. Karunarathne Maha Vidyalaya, Mahabage
4. Basilika Maha Vidyalaya, Ragama.

### **Data collection**

Six hundred and sixty two girls, age ranging from 10 to 16 years were randomly selected from the four selected schools in the Ragama Medical Officer of Health area. Data were collected using a pre-tested, self-administered questionnaire. Demographic characteristics, age at attaining menarche, factors influencing the onset of menarche, beliefs and practices, physical changes and emotional symptoms in menarche were studied. The median age of attainment of menarche was calculated using probit analysis.

### **Definitions used**

**Puberty:** The period or age of sexual maturation and the development of secondary sex characteristics

**Menarche:** First menstrual period or onset of menstruation

**Menstruation:** Monthly bleeding at the beginning of each menstrual cycle

### *Ethical considerations*

Permission was obtained from the school principals and consent was obtained from the parents of the children. Ethical clearance was obtained from the Ethics Committee of the Faculty of Medicine, University of Kelaniya.

## Results

The median age of our sample was 13 years (range 10-16 years). The mean age of menarche calculated using the recall method was 12.53 (SEM 1.27) years. The median age of attaining menarche calculated by using probit analysis was 11.48 years (interquartile range 9.65-12.64) (Tables 1 and 2).

Age group	Menarche not attained	Menarche attained	Total
9-9.99	0 (0.0)	1 (100)	1
10.00-10.99	84	11	95
11.00-11.99	66	24	90
12.00-12.99	29	65	94
13.00-13.99	4	93	97
14.00-14.99	0 (0.0)	95 (100)	95
15.00-15.99	6	86	92
>16.00	0 (0.0)	98 (100)	98
Total	189	473	662



Percentile	Menarche attained Age (years)
0.25	10.56 (6.89-11.56)
0.50	11.48 (9.65-12.63)
0.75	12.41 (11.38-14.78)
0.90	13.24 (12.22-17.37)
0.95	13.74 (12.6-19.05)
0.99	14.68 (13.25-22.29)

The mean BMI of girls who had attained menarche was 17.6 (SEM 0.22) Kg/m<sup>2</sup> and those who did not was 16.92 (SEM 0.32) Kg/m<sup>2</sup>. In this sample, 47% of the girls had a menstrual cycle length of e" 29 days, 23.4% had irregular cycles and 59% reported that the duration of bleeding

was 3-5 days. There was no difference in the BMI of females having a period by age. The BMI of girls already having a period was higher than those who were not having a period.

First borns reported a lower mean age at menarche (12.34 years) than the later borns (12.6 years) (p=0.02). Girls from single child families attained menarche earlier (12.1 years) than those who were form multi sibling families (12.34 years) (p=0.035). Girls who were from higher social categories (Categories 1 & 2) attained menarche earlier (11.9 years) than those who were not (12.12 years) (Categories 3, 4 & 5) (p=0.027). Girls whose parents were educated more than O/L attained menarche earlier (12.11 years) than those who were not (12.3years) (p=0.02).

The majority had favourable practices and beliefs towards menstruation; 40.8% stated that menstrual blood is not dirty, 70% admitted that there was no prohibition of having cold or sour foods, 62% agreed that there was no problem in engaging in cooking, 40% thought that interacting with males was not a problem, 44.3% agreed that taking part in sports was not a problem and 56.5% agreed that involving in religious activities is not a problem (Table 03).

Regarding the physical changes associated with menarche, the majority of the students had adequate knowledge. Knowledge on breast development, body development and change in shape hips becoming wider, waist narrowing, skin on face breaking out, emergence of pubic and under arm hair and voice changes were correctly known by 92.3%, 85.8%, 79.5%, 57.5%, 83.3%, 91.8% and 45.8% respectively (Table 4). Showing a fairly good understanding of the physical changes on menarche



	Yes (%)	No (%)	Don't know (%)	Not answered (%)
Menstrual blood is dirty.	36.3	40.8	21	2
Avoid cold and sour foods.	18	70	10	2
Avoid cooking.	9	62	27	2
Prohibited from interacting with males.	17.8	40	40.3	2
Could not play.	37	44.3	16.8	2
Should not participate in religious activities.	34.8	56.5	6.8	2

	Yes (%)	No (%)	Don't know (%)	Not answered (%)
Development of breasts in females	92.3	2.5	1.8	3.5
Change of shape of female body	85.8	6.3	4.5	3.5
Widening of hips in females	79.5	11.5	5.5	3.5
Widening of hips in females	79.5	11.5	5.5	3.5
Skin on face breaking out	83.3	8.5	5.3	3.5
Emergence of pubic and under arm hair	90.8	4.3	2	3.5
Changes in voice	45.8	39	11.8	3.5



<b>Table 5: Emotional symptoms of menstruation</b>			
	Yes (%)	No (%)	Not answered (%)
Nervousness	29.5	66.3	4.3
Insomnia	19.5	76.3	4.3
Bad mood	11.5	84.3	4.3
Irritability	42	53.8	4.3
Personality becomes weak	12.5	83.3	4.3
Numbness in the body	15.8	80	4.3
Susceptibility to illness	13	82.8	4.3
Lack of interest	40.5	55.3	4.3
Uneasiness	23	72.8	4.3

## Discussion

In this sample, the median age of the girls was 13 years (range 10-16 years). The mean age of menarche calculated using the recall method was 12.53 (SEM 1.27) years. The median age of attaining menarche was 11.48 years (interquartile range 9.65-12.64 years). This early age of attaining menarche is quite similar with the available literature (Padez 2003; Cameron & Nagdee 1996; Danker-Hopfe & Delibalta 1990; López Contreras et al. 1981; Piya-Anant et al. 1997).

Studies have shown that there is no difference in the BMI of female pupils already menstruating and not menstruating. The BMI of those already having a period was higher than those not having had a period (Henneberg & Louw 1995; Piya-Anant et al. 1997; Artaria & Henneberg 2000). In this study the mean BMI in girls who had already attained menarche was 17.6 (SEM 0.22) Kg/m<sup>2</sup> and in those who had not it was 16.92 (SEM 0.32) Kg/m<sup>2</sup>. In this sample, 47% of the girls had a cycle length of e" 29 days, 23.4% had irregular cycles and 59% reported that the



duration of bleeding was 3-5 days. There was no difference in the BMI of female pupils having and not having attained menarche in each age category.

In our study, first borns reported a lower mean age at menarche than later borns ( $p=0.02$ ). Girls from single child families attained menarche earlier than those who were from multi sibling families ( $p=0.035$ ); girls from higher social categories ( $p=0.027$ ) and whose parents were educated more than O/L ( $p=0.02$ ) attained menarche earlier. These findings are similar to those of previous studies irrespective of whether they are from developed (Danker-Hopfe & Delibalta 1990; López Contreras et al. 1981) or developing countries (Piya-Anant et al. 1997; Pawson 1977). Cameron and Nagdee (1996) reported that there is no significant association between socioeconomic variables and menarchical age except for family size, in which girls with more than three siblings had significantly later menarchical ages than girls with three siblings among South African Indians.

In this study, the majority of girls had favourable practices and beliefs with regard to menarche. In Peru, most girls who attained menarche had false beliefs and practices (Soto caceres & Guevara 1988).

Knowledge with regard to physical changes associated with menarche was adequate; similar results have been reported in other studies with regard to breast development, body development and change in shape, hips becoming wider, waist narrowing, skin on face breaking out, pubic and under arm hair development and voice changes (Padez 2003; Danker-Hopfe & Delibalta 1990; López Contreras et al. 1981).

As reported in other studies (Padez 2003; López Contreras et al. 1981), we also found that most of the girls experienced negative emotional symptoms during menstruation such as having bad mood, irritability, personality becoming weak, body numbness, backache, blurred vision, susceptibility for illness, lack of interest and uneasiness.



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## References

- Artaria MD & Henneberg M (2000). Why did they lie? Socio-economic bias in reporting menarcheal age. *Ann Hum Biol*; 27(6):561-9.
- Cameron N & Nagdee I (1996). Menarcheal age in two generations of South African Indians. *Ann Hum Biol*; 23(2):113-9.
- Danker-Hopfe H & Delibalta K (1990) Menarcheal age of Turkish girls in Bremen. *Anthropol Anz*; 48(1):1-14.
- Graham GG, Creed HM & Maclean WCD. (1981). Determinants of growth among poor children: nutrient intake-achieved growth relationships. *Am J Clin Nutr*. 34(4):539-54.
- Henneberg M & Louw GJ (1995). Average menarcheal age of higher socioeconomic status urban Cape coloured girls assessed by means of status quo and recall methods. *Am J Phys Anthropol*; 96(1):1-5.
- López Contreras M, Tovar Escobar G, Farid Coupal N, et al. (1981) Comparative study of height and age at menarche according to the socioeconomic level in Venezuela. *Arch Latinoam Nutr*; 31(4):740-57.
- Padez C (2003). Age at menarche of schoolgirls in Maputo, Mozambique. *Ann Hum Biol*; 30(4):487-95.
- Pawson IG. (1977). Growth characteristics of populations of Tibetan origin in Nepal. *Am J Phys Anthropol*; 47(3):473-82.
- Piya-Anant M, Suvanichchati S, Bharschari M, et al. (1997) Sexual maturation in Thai girls. *J Med Assoc Thai*; 80(9):557-64.
- Sengupta S, Gogoi G, & Chetry HB (1996). Variation in menarcheal age of Assamese girls. *Indian Med Assoc*; 94(3):88-90.
- Soto caceres VA & Guevara S. (1988). Chiclayo, Peru: sexuality and family planning in women of different socioeconomic status. *Perspect Int Planif Fam*. (Special):29-32.