

# Awareness about early menarche and its associated problems among female medical students of a tertiary care hospital in Chennai, Tamil Nadu

## Abstract

**Context:** In many developing countries, the age of menarche is declining due to various factors. Early pubertal development or early menarche among girls could be associated with higher risks of poor health, so it is important to bring awareness and gain knowledge about early menarche and its associated problems

**Aim:** To assess the awareness and knowledge about early menarche and its associated problems among female medical students.

**Settings and Design:** Cross-sectional study was done among the 1st year, 2nd year and 3rd year girls studying in a medical college in Chennai.

**Methods:** This study was conducted among 232 participants. A convenient sampling method was used. A pretested semi-structured questionnaire was used to assess the knowledge and awareness about early menarche and its associated problems.

**Statistical Analysis Used:** Data was entered in an excel spreadsheet and analysed using SPSS software version 16, statistical analysis was done using the Chi-square test.

**Results:** Out of 232 participants 33.7 % had good knowledge about early menarche and its associated problems. There was a significant association between the year of study and the level of knowledge of the participants. 42.35% were aware that “early menarche can lead to breast cancer and ischemic heart disease”.

**Conclusion:** Thus, this study helps us to bring more awareness about early menarche and its associated problems. and to prevent it by gaining knowledge about the factors resulting in early menarche.

**Keywords:** early menarche, awareness, breast cancer.

## INTRODUCTION:

The first menstrual bleeding is referred to as menarche. Age at menarche plays a significant role in a girl's life as early puberty can predispose to many problems in the future life. In recent times it was seen that there is a secular trend in the declining of age at menarche. And in a study conducted in India<sup>[1]</sup>, Korea<sup>[2]</sup>, Mexico<sup>[3]</sup> and Thailand<sup>[4]</sup> showed evidence of a decline in the age at menarche. In some studies, it had been seen that young adolescents are not ready to face puberty and menstruation<sup>[5]</sup>. And also the prevalences of cardiovascular disease<sup>[6]</sup>, breast cancer<sup>[7]</sup> and psychosocial problems<sup>[8]</sup> were higher among adolescents with early menarche. Also, the incidence of preeclampsia and eclampsia were higher in those girls who had attained menarche earlier<sup>[9]</sup>. It has been seen that in many low and high-income countries attainment of menarche leads to early marriage among girls when compared to

high-income countries<sup>[10]</sup>, due to early marriages the adolescents can undergo complications such as early pregnancies, abortions and stress which may affect the quality of their life. Though in many developed countries the awareness about menstruation and puberty were adequate, the amount of knowledge related to precocious puberty and its risk factors were very little. Hence the management of risk factors can lead to good quality of life in adolescents. So the present study was conducted to assess the awareness and knowledge about early menarche and its associated problems among female medical students of a tertiary care hospital in Chennai, Tamil Nadu. And also in the present study the attitude of the adolescents towards early puberty and its associated complications were discussed.

#### METHODS AND MATERIALS:

This cross-sectional study was done among female medical students in a tertiary care hospital in Chennai, India. Students who were willing to participate were included in the study. Those who were not willing to participate were excluded. Informed consent was obtained from all the participants of the study. The study duration was about 6 months. Ethics clearance from Institutional Ethics Committee (IEC) was applied for and obtained. A total of 232 participants were studied. A convenient sampling method was used. The participants were assured that participation was voluntary, and confidentiality would be maintained. The questionnaires were given after describing the purpose of the study. A pretested semi-structured questionnaire was devised and validated. The first part of the questionnaire covered the socio-demographic details. The second part of the questionnaire included questions about their awareness and knowledge about early menarche and its associated problems. After obtaining the data, it was entered in an excel spreadsheet and analysed using SPSS software version 16, statistical analysis was done using the Chi-square test.

#### RESULT:

The present study was conducted among female medical students in a medical college. A total of 232 girls participated in the study. Among the participants 31.03% were from the 1st year, 28.01% were from the 2nd year and 39.6% were from 3rd year. The mean age of the participants was 21.2 years.

In this study, 90.3% and 9.6% of the participants were living in urban and rural areas respectively. According to modified BG prasad socio-economic classification, 95.3% were belonging to the upper class, 3.6% to the upper-middle-class and 0.5% to the lower class. 33.7% of the participants had good knowledge about early menarche and its associated problems, whereas 35.9% of them had fair knowledge and 30.2% of them had poor knowledge about early menarche and its associated problems. From Table, there is a significant association was found between grade and the level of knowledge among the participants in this study.

Figure 1 locality



Figure 2 socioeconomic class

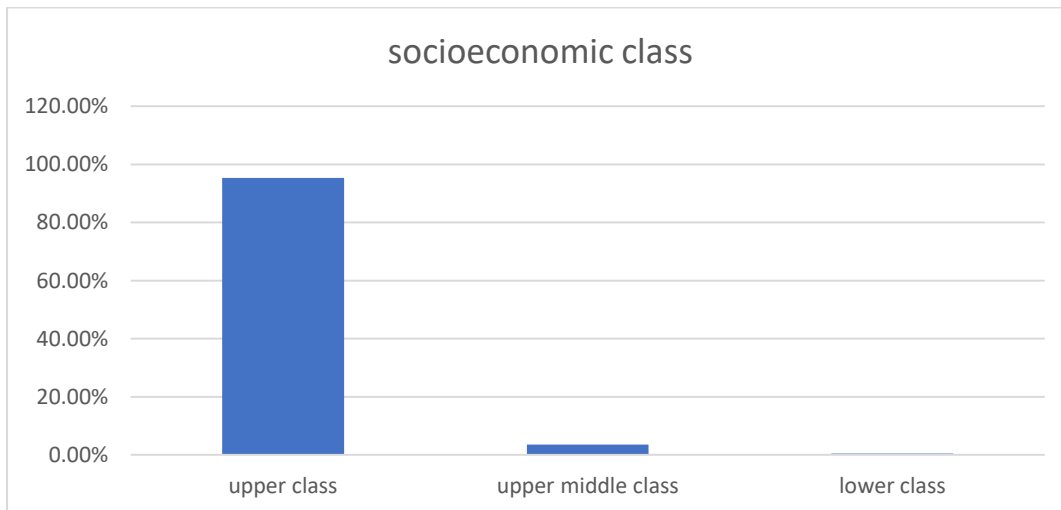
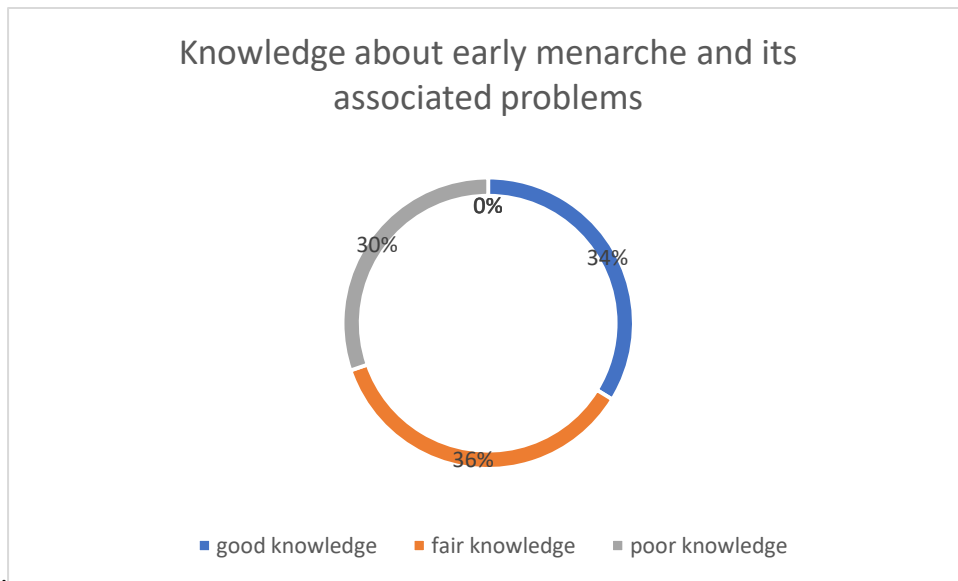


Table 1 Epidemiological profile

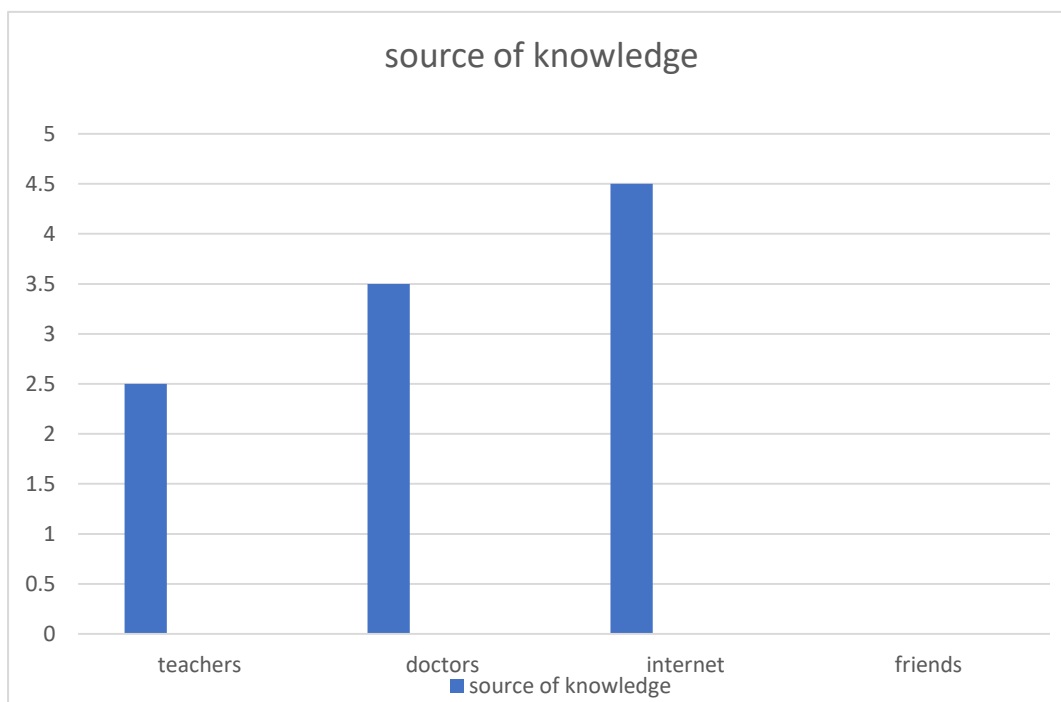
|                      | Good knowledge<br>n=78, 33.7% | Fair knowledge<br>n=83,35.9% | Poor knowledge<br>n=71,30.2% | Total<br>n=232,100% | p value  |
|----------------------|-------------------------------|------------------------------|------------------------------|---------------------|----------|
| 1 <sup>st</sup> year | 22(29.16%)                    | 10(13.8%)                    | 41(56.9%)                    | 72 (100%)           | <0.00001 |
| 2 <sup>nd</sup> year | 27 (40%)                      | 15(23.07%)                   | 24 (36.9%)                   | 65(100%)            |          |
| 3 <sup>rd</sup> year | 46 (48.9%)                    | 32 (34.8%)                   | 15 (16.3%)                   | 92 (100%)           |          |

Figure 3 Knowledge about early menarche and its associated problems



Among the participants, 68.24% stated that “attainment of menarche less than 8 years of age as early menarche”. The level of awareness among the participants was 66.1%, while 33.8% did not have prior knowledge about early menarche and its associated problems. Knowledge from mothers (31.83%) and from teachers (20.2%) were the predominant sources of knowledge about early menarche and its associated problems. 10.9% from doctors, 1.2% from the internet, 0.57% from friends have gained their knowledge about the problems associated with early menarche.

Figure4 source of knowledge



Among the participants, 42.35% were aware that “early menarche can lead to breast cancer and ischemic heart disease” while 52.36% agreed that “early menarche can lead to psychosocial health problems like anxiety disorders and risky sexual behaviours”. 37.2% of the participants agreed that “menarche is influenced by genetic factors”. 28.3% of the participants knew that “early puberty can lead to short stature”.

Among the participants, 54.68% answered that “obesity influences the onset of menarche”. 38.7% of the study subjects were aware that “conditions like hormonal disorders and tumours of the pituitary gland and adrenal gland leads to precocious puberty”. 36.4% of the study subjects agreed that “sedentary lifestyle and intake of high-fat diet leads to early menarche”. 27.3% of the participants agreed that “early menarche can predispose to diabetes mellitus”. For the question “will you attend any awareness program about early puberty and problems related to it?” 78.23% of the participants answered “yes”.

## DISCUSSION:

The first menstrual bleeding is referred to as menarche, and age at menarche is the most significant period of a girl’s life, and it involves a complex process of physical and emotional development. Early menarche can lead to problems such as anxiety/depression, substance use and suicidal behaviour in adolescents and it can also cause diseases like breast cancer and ischemic heart disease in the future. And evidences also suggests that early menarche may lead to early fusion of the epiphyseal growth plates resulting in short stature which may affect the future of the adolescent. This project represents the awareness and knowledge about early menarche and its associated problems among the female students of a medical college.

In the present study, the level of awareness about early menarche and its associated problem was 66.1% . 31.83% of the participants obtained knowledge from mothers and it was similar to a study conducted by Venkatraman Chanra-Mouli et al<sup>[11]</sup> in which the information about menarche was majorily obtained from mothers and female family members. In the present study 42.35% were aware that “early menarche can lead to breast cancer and ischemic heart disease”, While in the previous study conducted by Canoy et al<sup>[12]</sup>, the risk of coronary heart disease incidents was highest in the groups that had early menarche and in a study conducted by Gold berg et al<sup>[13]</sup> women with early menarche had a 30% greater risk of breast cancer compared with women without early menarche. In the present study 28.3% of the participants knew that “early puberty can lead to short stature” similarly in a study conducted by Sol kang et al<sup>[14]</sup> 22.3% participants had early menarche and the prevalence of short stature was higher among them compared to the participants without early menarche

Around 52.36% of the participants agreed that “early menarche can lead to psychosocial health problems like anxiety disorders and risky sexual behaviours”, similar result was seen in the study conducted by Mobolaji Ibitoye et al<sup>[8]</sup> it stated that early menarche leads to early sexual initiation, early pregnancy and sexually transmitted infections. And in a study conducted by Fang Deng et al<sup>[15]</sup> higher frequency of depression, anxiety and behavioral problems were seen in the participants with early menarche.

In the present study 36.4% of the study subjects agreed that “sedentary lifestyle and intake of high fatty diet leads to early menarche”, While in the study conducted by Balaji ramraj et al<sup>[16]</sup> the incidence of early menarche was higher among the participants with sedentary lifestyle. Around 27.3% of the participants agreed that “early menarche can predispose to diabetes mellitus” in another study conducted Baek et al<sup>[17]</sup> the prevalences of dysglycemia, prediabetes, and diabetes were higher in middle-aged Korean women who had early menarche when compared to women who had menarche at mean age. Among the participants 54.68% answered that “obesity influences the onset of menarche”. In another study conducted by Jannatul malitha et al<sup>[18]</sup> it revealed that significantly heavier and taller girls attained menarche earlier than the other girls. 78.2% of the participants answered “yes” for the question “will you attend any awareness program about early puberty and problems related to it?” and so from the above answer it is observed that though the knowledge about early menarche was adequate among the participants they had a positive attitude towards acquiring knowledge about the topic.

## CONCLUSION:

Therefore the study assessed the awareness and knowledge about early menarche and the complications associated with it among the female students of a medical college. From the study, we observed that though the knowledge about early menarche was moderate the attitude towards being aware of the condition was more and so many awareness programs can be conducted. In this way, we can prevent adolescent girls from early menarche and its associated problems.

## REFERENCES:

1. Pathak PK, Tripathi N, Subramanian SV. Secular trends in menarcheal age in India-evidence from the Indian human development survey. *PLoS One*. 2014 Nov 4;9(11):e111027.
2. Yoo JH. Effects of early menarche on physical and psychosocial health problems in adolescent girls and adult women. *Korean journal of pediatrics*. 2016 Sep;59(9):355.
3. Marván ML, Catillo-López RL, Alcalá-Herrera V, Del Callejo D. The decreasing age at menarche in Mexico. *Journal of pediatric and adolescent gynecology*. 2016 Oct 1;29(5):454-7
4. Noipayak P, Rawdaree P, Supawattanabodee B, Manusirivithaya S. Factors associated with early age at menarche among Thai adolescents in Bangkok: A cross-sectional study. *BMC women's health*. 2017 Dec;17(1):1-6.
5. Coast E, Lattof SR, Strong J. Puberty and menstruation knowledge among young adolescents in low-and middle-income countries: a scoping review. *International journal of public health*. 2019 Mar 1;64(2):293-304.
6. Lee JJ, Cook-Wiens G, Johnson BD, Braunstein GD, Berga SL, Stanczyk FZ, Pepine CJ, Bairey Merz CN, Shufelt CL. Age at Menarche and Risk of Cardiovascular Disease Outcomes: Findings From the National Heart Lung and Blood Institute-Sponsored Women's Ischemia Syndrome Evaluation. *Journal of the American Heart Association*. 2019 Jun 18;8(12):e012406.
7. Collaborative Group on Hormonal Factors in Breast Cancer. Menarche, menopause, and breast cancer risk: individual participant meta-analysis, including 118 964 women with breast cancer from 117 epidemiological studies. *The lancet oncology*. 2012 Nov 1;13(11):1141-51.
8. Ibitoye M, Choi C, Tai H, Lee G, Sommer M. Early menarche: A systematic review of its effect on sexual and reproductive health in low-and middle-income countries. *PloS one*. 2017 Jun 7;12(6):e0178884.
9. Ganchimeg T, Ota E, Morisaki N, Laopaiboon M, Lumbiganon P, Zhang J, Yamdamsuren B, Temmerman M, Say L, Tunçalp Ö, Vogel JP. Pregnancy and childbirth outcomes among adolescent mothers: a World Health Organization multicountry study. *BJOG: An International Journal of Obstetrics & Gynaecology*. 2014 Mar;121:40-8.
10. Sommer M. Menarche: a missing indicator in population health from low-income countries. *Public health reports*. 2013 Sep;128(5):399-401.
11. Chandra-Mouli V, Patel SV. Mapping the knowledge and understanding of menarche, menstrual hygiene and menstrual health among adolescent girls in low-and middle-income countries. *The Palgrave handbook of critical menstruation studies*. 2020:609-36.
12. Canoy D, Beral V, Balkwill A, Wright FL, Kroll ME, Reeves GK, Green J, Cairns BJ. Age at menarche and risks of coronary heart and other vascular diseases in a large UK cohort. *Circulation*. 2015 Jan 20;131(3):237-44.
13. Goldberg M, D'Aloisio AA, O'Brien KM, Zhao S, Sandler DP. Pubertal timing and breast cancer risk in the Sister Study cohort. *Breast Cancer Research*. 2020 Dec;22(1):1-1.

- 14.Kang S, Kim YM, Lee JA, Kim DH, Lim JS. Early menarche is a risk factor for short stature in young Korean females: an epidemiologic study. *Journal of clinical research in pediatric endocrinology*. 2019 Sep;11(3):234.
- 15.Deng F, Tao FB, Wan YH, Hao JH, Su PY, Cao YX. Early menarche and psychopathological symptoms in young Chinese women. *Journal of women's health*. 2011 Feb 1;20(2):207-13.
- 16.Ramraj B, Subramanian VM, Vijayakrishnan G. Study on age of menarche between generations and the factors associated with it. *Clinical Epidemiology and Global Health*. 2021 Jul 1;11:100758.
- 17.Baek TH, Lim NK, Kim MJ, Lee J, Ryu S, Chang Y, Choi Y, Park HY. Age at menarche and its association with dysglycemia in Korean middle-aged women. *Menopause (New York, NY)*. 2015 May;22(5):542.
- 18.Malitha JM, Islam MA, Islam S, Al Mamun AS, Chakrabarty S, Hossain MG. Early age at menarche and its associated factors in school girls (age, 10 to 12 years) in Bangladesh: a cross-section survey in Rajshahi District, Bangladesh. *Journal of physiological anthropology*. 2020 Dec;39(1):1-9.