

Short Communication

Menarche age in Western Turkey

Aysegul Uludag¹, Yusuf Haydar Ertekin¹, Murat Tekin¹, Sule Yildirim² and AyseNurCakir Gungor^{3*}

¹Department of Family Medicine, CanakkaleOnsekiz Mart University, Turkey

²Department of Pediatrics, CanakkaleOnsekiz Mart University, Turkey

³Department of Obstetrics and Gynecology, CanakkaleOnsekiz Mart University, Turkey

***Corresponding author**

AyşeNurCakirGungor, Department of Obstetrics and Gynecology, CanakkaleOnsekiz Mart University, Faculty of Medicine, Canakkale/Turkey, Tel: 902862635950-1401; Fax: 902862180516; E-mail: dr_aysecakir@hotmail.com

Submitted: 26 October 2014

Accepted: 25 November 2014

Published: 27 November 2014

Copyright

© 2014 Gungor et al.

OPEN ACCESS

Keywords

- Menarche age
- Body mass index
- Puberty

Abstract

Introduction: Menarche is a part of puberty. Menarche onset is important and menarche age decreasing over the world. We aimed to investigate the age of menarche and also the effect of anthropometric measurements in menarche age.

Method: This cross sectional study was conducted in September- December 2013 in the center of Canakkale as a part of a School Health Project. We interviewed with female students aged 10-14 years in five secondary schools. We asked their age, the monthly income of their families, the menarche age, regularity of menstruation, length of cycle, duration of menstruation, and dysmenorrhea, and recorded the responses in the questionnaire. The height and weight of the students were measured as defined in the guidelines.

Results: The mean menarche age was 12.3 ± 0.8 [10.6-13.9] years. Regular menstruation was defined in 62.7% students. The prevalence of dysmenorrhea was 53.3%. The anthropometric measurements were related to the menarche age, with the exception of BMI. Length of students and menarche age was positively correlated.

Conclusion: The mean of menarche age was 12.3 ± 0.8 years, and decreased in comparison to the literature from Turkey. The anthropometric measures may be related to menstruation, but not BMI. The menarche age is positively correlated with height. That implies that the height increases until menarche occurs.

ABBREVIATIONS

BMI: body mass index

INTRODUCTION

The period of transition from childhood to adulthood defined as puberty, is characterized by increasing growth and sexual maturation [1]. In girls, the occurrence of the first menstrual cycle is defined as menarche and is considered a landmark event in female puberty. The onset of puberty depends on many factors. Specific factors that affect the onset include the gender, ethnicity, social culture, and the individual's genetic variant. The menarche age is 14.8 years in Ethiopia, 13.1 ± 1.1 years in Amman, 12.5 ± 1.28 years in Ghana, 12.31 ± 1.30 years in Croatia, and that of white American girls in North America ranges from 12.55 to 12.88 years [2-5]. In Turkey, the mean age of menarche is 13.12 years and has decreased in last 30 years [6, 7].

We aimed to discuss the menarche age in the Turkey and in the world. In recent years, obesity defined the factor in menarche age. Because of this, we aimed to investigate the menarche age in Turkish girls and also effect of anthropometric measurements in menarche age.

MATERIALS AND METHODS

In this cross-sectional study, we collected data in Canakkale, which is in the western region of the Turkey, in September-December 2013.

This study was conducted as a Project of School Health. There was academic staff from the University of Canakkale, Onsekiz Mart, Faculty of Medicine, in this project. In this article, a portion of the data about the menarche age and related factors were discussed.

After approval was obtained from the Ethics Committee of the CanakkaleOnsekiz Mart University and the local education directorate of the Ministry of Education, the study was conducted in secondary schools in Canakkale.

Menstrual status data were collected from 127 secondary-school students from the Canakkale area via self administered questionnaires that were conducted as face-to-face interviews. In questionnaire, we asked the students their age, the monthly family's income, the menarche age, regularity of menstruation, length of cycle, duration of menstruation, and dysmenorrhea. The height and weight of the students were measured.

In this study, the descriptive statistics were collected and a probit analysis was applied to estimate mean \pm SD age at menarche. The relationship with the menarche age and the anthropometric measurements were evaluated with the independent t-test. In the correlation analysis, tests used the Kendall Tau-b correlation test. The SPSS 18.0 program was used for statistical analysis.

RESULTS AND DISCUSSION

One hundred twenty seven students were included in the study, whose mean age was 12.2 ± 0.9 [10-14] years. Forty seven point two percent of the students have had their menstrual cycle and 52.8% have not. The school girls' demographic features are presented in (Table 1).

The mean of the menarche age was 12.3 ± 0.8 [10.6-13.9] years. Regular menstruation was identified in 62.7% students. The prevalence of dysmenorrhea was 53.3% among the girls in this study; and only 25% of them described the dysmenorrhea as very severe. The mean day of bleeding period was 5.2 ± 1.2 days [3-15 days]. Menstruation was significantly related to height, weight, waist and hip circumferences, but not with BMI. In (Table 2), the menarche related factors and the anthropometric measurements are discussed. Only the height of the students and the menarche age are positively correlated (Kendall tau-b $r=0.190$, $p=0.022$), while other anthropometric measurements had no correlation ($p>0.05$).

In this study, the mean age of menarche age was 12.3 ± 0.8 . The menarche age was lower than the previous studies from Turkey. In the study of Tekgöl et al [6], the menarche age was 13.12 years, which was lower than the menarche age 30 years earlier. In the studies that have been conducted in Holland with different ethnicity groups, the Turkish students' menarche age was lower than the others [7].

Table 1: Demographic variables of school girls.

	Without menarche (n=67)	with menarche (n=60)	t*	p**
Age	11.8 \pm 0.7	12.6 \pm 0.9	-6.139	.000
Monthly family income	1267.2 \pm 567.3	1844.6 \pm 2281.1	-1.242	.221
Height	149.8 \pm 8.1	157.4 \pm 6.5	-5.779	.000
Weight	46.1 \pm 12.6	51.9 \pm 11.3	-2.691	.008
Waist circumference	73.0 \pm 11.6	77.0 \pm 10.2	-2.068	.041
Hip circumference	83.8 \pm 10.7	89.8 \pm 11.9	-2.955	.004
BMI	20.3 \pm 4.2	20.9 \pm 4.2	-0.798	.427

*Independent t test

** $p<0.05$

Table 2: Menarche age related factors.

Anthropometric measurements (n=60)	Mean \pm SD	t*	p
Height	157.4 \pm 6.5	5.879	.000
Weight	51.8 \pm 11.3	2.692	.008
Waist circumference	77.0 \pm 10.1	2.068	.041
Hip circumference	89.8 \pm 11.9	2.955	.004
BMI	20.9 \pm 4.2	0.798	.427

* Independent t test

In the past centuries, menarche age has been gradually decreasing. In developed countries, the menarche age has declined, and in developing countries, the age at menarche has declined, as well. Menarche age in Holland was 13.05 years, Morocco was 12.60 years, and Italy was 12.4 (± 1.3) years [7, 8]. Menarche age was 12.5 \pm 1.28 years in Ghana and 14.8 years in Ethiopia and in India, mean age of menarche was 13.51 + 1.04 [2,4,9].

There are many factors influencing the menarche age. In a study that was conducted in Turkey 14 years ago, the menarche age was 12.82 ± 1.07 years and the menarche age of mothers of the participants was 13.6 ± 1.39 years. The mean age at menarche for the mothers was higher than that of the girls, which demonstrates that the mean age at menarche has decreased over time [10].

Environmental changes, improved nutrition, and resultant physical development owing to the rapid improvement of social and economic factors may have caused the menarche age to decrease. In Turkey, the menarche age was insignificantly lower in girls with higher socioeconomic status [11].

There have been many studies on the impact of height, weight, and body structure on menarche age [12, 13]. The relationship between the anthropometric measures and menarche age is important. Lee et al. [14] found that menarche age had positive relationship with height and an inverse relationship with BMI and waist circumference in late adolescent girls in Seoul [15]. We found that only the menarche height is positively correlated with menarche age; other anthropometric measurements were not.

CONCLUSION

The mean of menarche age was 12.3 ± 0.8 years, and is decreasing in comparison to the literature in Turkey. The anthropometric measures may be related to menstruation, but not BMI. The menarche age is positively correlated with the height. That means the height increases until menarche.

REFERENCES

- Gajdos ZK, Henderson KD, Hirschhorn JN, Palmert MR. Genetic determinants of pubertal timing in the general population. *Mol Cell Endocrinol.* 2010; 324: 21-29.
- Zegaye DT, Megabiaw B, Mulu A. Age at menarche and the menstrual pattern of secondary school adolescents in northwest Ethiopia. *BMC Womens Health.* 2009; 9: 29.
- Bata MS. Age at menarche, menstrual patterns, and menstrual characteristics in Jordanian adolescent girls. *Int J Gynaecol Obstet.* 2012; 119: 281-283.
- Gumanga SK, Kwame-Aryee RA. Menstrual characteristics in some adolescent girls in Accra, Ghana. *Ghana Med J.* 2012; 46: 3-7.
- Chumlea WC, Schubert CM, Roche AF, Kulin HE, Lee PA, Himes JH, et al. Age at menarche and racial comparisons in US girls. *Pediatrics.* 2003; 111: 110-113.
- Tekgöl N, Saltık D, Vatanser K. Secular trend of menarche age in an immigrant urban city in Turkey: Izmir. *Turk J Pediatr.* 2014; 56: 138-143.
- Talma H, Schönbeck Y, van Dommelen P, Bakker B, van Buuren S, Hirasig RA. Trends in menarcheal age between 1955 and 2009 in the Netherlands. *PLoS One.* 2013; 8: e60056.

8. Rigon F, De Sanctis V, Bernasconi S, Bianchin L, Bona G, Bozzola M, Buzi F. Menstrual pattern and menstrual disorders among adolescents: an update of the Italian data. *Ital J Pediatr*. 2012; 38: 38.
9. Dambhare DG, Wagh SV, Dudhe JY. Age at menarche and menstrual cycle pattern among school adolescent girls in Central India. *Glob J Health Sci*. 2012; 4: 105-111.
10. Kinik E. Physical and sexual development in adolescence. *KATKI PediatriDergisi*. 2000; 21: 720-738.
11. Ersoy B, Balkan C, Gunay T, Onag A, Egemen A. Effects of different socioeconomic conditions on menarche in Turkish female students. *Early Hum Dev*. 2004; 76: 115-125.
12. Clavel-Chapelon F1; E3N-EPIC group European Prospective Investigation into Cancer. Evolution of age at menarche and at onset of regular cycling in a large cohort of French women. *Hum Reprod*. 2002; 17: 228-232.
13. Hosokawa M, Imazeki S, Mizunuma H, Kubota T, Hayashi K. Secular trends in age at menarche and time to establish regular menstrual cycling in Japanese women born between 1930 and 1985. *BMC Womens Health*. 2012; 12: 19.
14. Lee SE, Yang JY, Lee JH, Kim HW, Kim HS, Lee HJ, et al. Relationship of age at menarche on anthropometric index and menstrual irregularity in late adolescent girls in Seoul. *Ann Pediatr Endocrinol Metab*. 2013; 18: 116-121.
15. Kim JY, Oh IH, Lee EY, Oh CM, Choi KS, Choe BK, et al. The relation of menarcheal age to anthropometric profiles in Korean girls. *J Korean Med Sci*. 2010; 25: 1405-1410.

Cite this article

Uludag A, Ertekin YH, Tekin M, Yildirim S, Gungor A (2014) Menarche age in Western Turkey. *J Family Med Community Health* 1(4): 1019.