

Earlier mother's age at menarche is a risk factor of daughter's early menarche and short stature in young Korean female

; Epidemiologic study

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Introduction

- Early menarche has been also implicated in adverse health events in later life, including cancer, cardiovascular disease (CVD), and mortality
- Ong et al, suggested earlier age at menarche of mother might lead their offspring to shorter adult stature and obesity due to earlier completion of growth from the UK ALSPAC birth cohort

Purpose

- To investigate whether earlier mother's age at menarche is a risk factor of daughter's early menarche, obesity, and short stature in young Korean female

Subjects and methods

1. Subjects

We analyzed 761 pairs of mothers and daughters aged 16–30 years who had menarche age and anthropometrics data who participated 6th Korea National Health and Nutrition Examination Survey (KNHANES VI) (2013–2015)

2. Method

The ORs including 95% confidence interval (CI), of early menarche of daughter, short stature of daughter, and obesity of daughter were calculated before and after adjusting for age, and other confounders.

3. Statistical analyses

All statistical analyses were performed using SPSS 17.0 for Windows

Result

1. The characteristics of the subjects stratified by age at menarche of mother

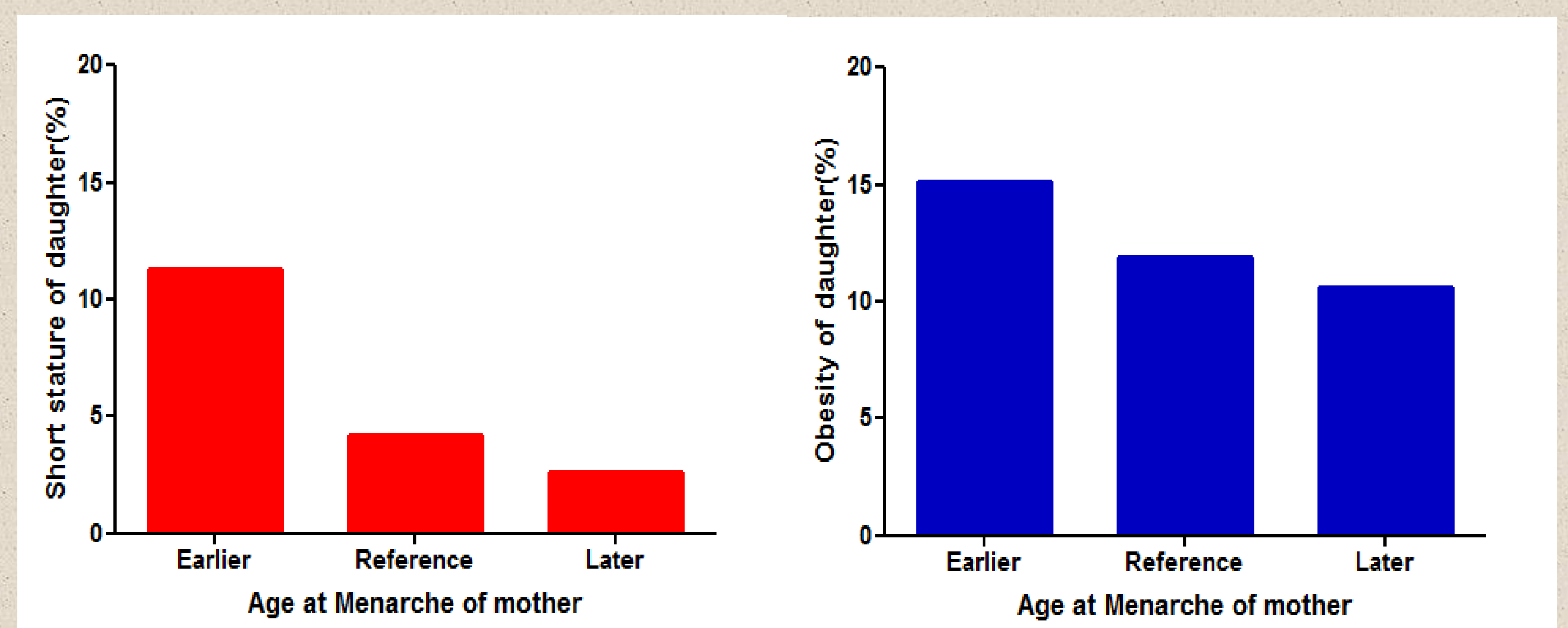
Characteristics	Age at menarche of mother (years)			P-value for Trend
	Earlier (< 13yr)	Reference (13-16yr)	Later (≥ 16yr)	
(n=761)	(n=106)	(n=504)	(n=151)	
Mother				
Age of menarche (years)	11.8±0.5	13.9±0.8	16.7±0.9	<0.001
Age at time of survey (years)	48.3±4.5	49.0±4.9	51.1±4.9	<0.001
Height (cm)	157.9±4.9	157.9±5.3	157.5±5.2	0.502
Weight (kg)	59.5±7.7	58.7±8.7	58.3±8.4	0.286
Body mass index (kg/m ²)	23.9±3.1	23.5±3.3	23.5±3.0	0.363
Short stature (%)	4.5	7.3	6.0	0.755
Obesity (%)	31.3	27.6	29.2	0.798
Household income				0.153
1Q (%)	5	6	5	
2Q (%)	18	23	27	
3Q (%)	32	32	33	
4Q (%)	45	39	36	
Daughter				
Age of menarche (years)	12.1±1.4	12.4±1.4	13.1±1.6	<0.001
Age at time of survey (years)	20.2±3.7	21.0±4.0	22.2±3.9	0.001
Height (cm)	160.5±6.4	161.7±5.4	162.9±5.9	0.001
Weight (kg)	56.6±9.5	55.7±9.1	55.5±9.3	0.411
Body mass index (kg/m ²)	22.0±3.5	21.3±3.2	20.9±3.3	<0.001
Short stature (%)	11.3	4.2	2.6	0.003
Obesity (%)	15.1	11.9	10.6	0.296
Early menarche (%)	35.6	25.8	13.3	<0.001

* Short stature is defined as <152cm. Early menarche is defined as menarche <12year of daughter

2. In multiple linear regression, **daughter's age at menarche** = mother's age at menarche x 0.180 + daughter's height x 0.054 - mother's height x 0.022 - daughter's weight x 0.022 + 5.422. ($R^2 = 0.104$; $P < 0.001$).

The prevalence of early menarche in daughter was higher in mother with earlier menarche compared with reference subjects (35.6% vs. 25.8%, $P < 0.001$).

3. The prevalence of **short stature and obesity** in daughter according to age at menarche of mother.



Mother with earlier menarche showed higher prevalence of short stature of daughters (earlier, 11.3%; reference, 4.2%; later, 2.6%, both $P < 0.05$)

4. The crude OR for short stature of daughter in mother with early menarche was 2.942 (95% CI, 1.400-6.184). The OR decreased to 2.593 (95% CI, 1.162-5.786) after further adjusting for age, short stature of mother, obesity of daughter and age at menarche of daughter.

Conclusion

- In this study, we found that earlier menarche of mother led to a higher risk of early menarche of daughter in young Korean female.
- We also found that earlier menarche of mother is independent risk factor of adult short stature of daughter. To our knowledge, this is the first study to show the association between earlier menarche of mother and adult short stature of daughter.
- This finding confirm the Ong's hypothesis that earlier age at menarche of mother might lead their offspring to shorter adult stature due to earlier completion of growth.
- Our supposed explanation is that mother's trait of a faster tempo of childhood growth with earlier menarche might be transgenerational inherited to daughter's trait.

References

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