

AGE AT MENARCHE IN RELATION TO BODY MASS INDEX. DATA FROM THE HELLENIC NATIONAL ACTION PLAN FOR THE ASSESSMENT, PREVENTION AND TREATMENT OF CHILDHOOD OBESITY

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Introduction

Menarche is a very important milestone for women reproductive life. It is the result of multiple hormonal changes. A minimal amount of fat percentage is required in order for the pubertal process to be initiated. Improvement of the socioeconomic status over the last decades led to a decrease of the age at menarche. Furthermore, the increase of the prevalence of obesity is associated with the increase of the prevalence of precocious puberty.

Aim

The aim of the study is to correlate the age of menarche with BMI as well as the maternal age at menarche and their BMI

Materials and methods

This is a cross-sectional study conducted from 10/2012-12/2013. A pre-selected, representative elementary and high school cohort was derived, using stratification and PPS methodology. Parents responded to questionnaire and students were measured with high sensitivity methods (Ht 0.1cm, Wt 0.1kg, BMI was calculated). IOTF cut offs were used to classify the children. Data were analyzed for 12986 mothers and for 2272 adolescents for which age at menarche was available. All the variables used in the following analyses are binary (binomial, dichotomous) in nature. The menarche age of the subject and her mother is Normal vs Early (<12 years).

Results

Analyzing the whole group "early menarche" had 27.5 % of the girls as compared to 15.0% for the mothers (OR=2.1 95% CI=1.9-2.4). For the sample of 2272 girls with known age at menarche for the girl and the mother, "early menarche" had 32.9 % of the girls and 17.7% of the mothers (OR=2.395% CI=2.0-2.6). The correlation coefficient between the mother's and the daughter's age at menarche equal to 0.375 (p<0.01). The percentage with "early menarche" was 28.8 % for normal weight girls and 43.1% for overweight/obese girls (OR=1.9, 95% CI=1.6-2.3). "Early menarche" had 61.0% of the girls whose mother had early menarche as compared to 26.9 % of the girls whose mother had normal menarche (OR=4.395% CI=3.4-5.3). In both generations the OR of the association between age at menarche and BMI is of the same order.

Conclusions

By far the most significant association is the effect of the mother's age at menarche to the daughter's age at menarche. This generation has "early menarche" in higher proportion than their mothers. BMI is positively correlated with mother's BMI and negatively associated with age at menarche.

Table 1 Age at menarche

	Age at menarche	
	> 12 yrs	< 12 yrs
Normal BMI	71.2 %	28.8 %
Overweight/ obesity	56.9 %	43.3 %

Chi-square test, p<0.01. OR=1.9 (1.6-2.3).

Table 2 Age at menarche in relation to mother's age at menarche

	Age at menarche	
	>12 yrs	< 12 yrs
Mother's age at menarche > 12 yrs	73.1 %	26.9 %
Mother's age at menarche < 12 yrs	67.1 %	32.9 %

Binomial test p<0.01

Figure 1 Proportion of women with age at menarche < 12 yrs

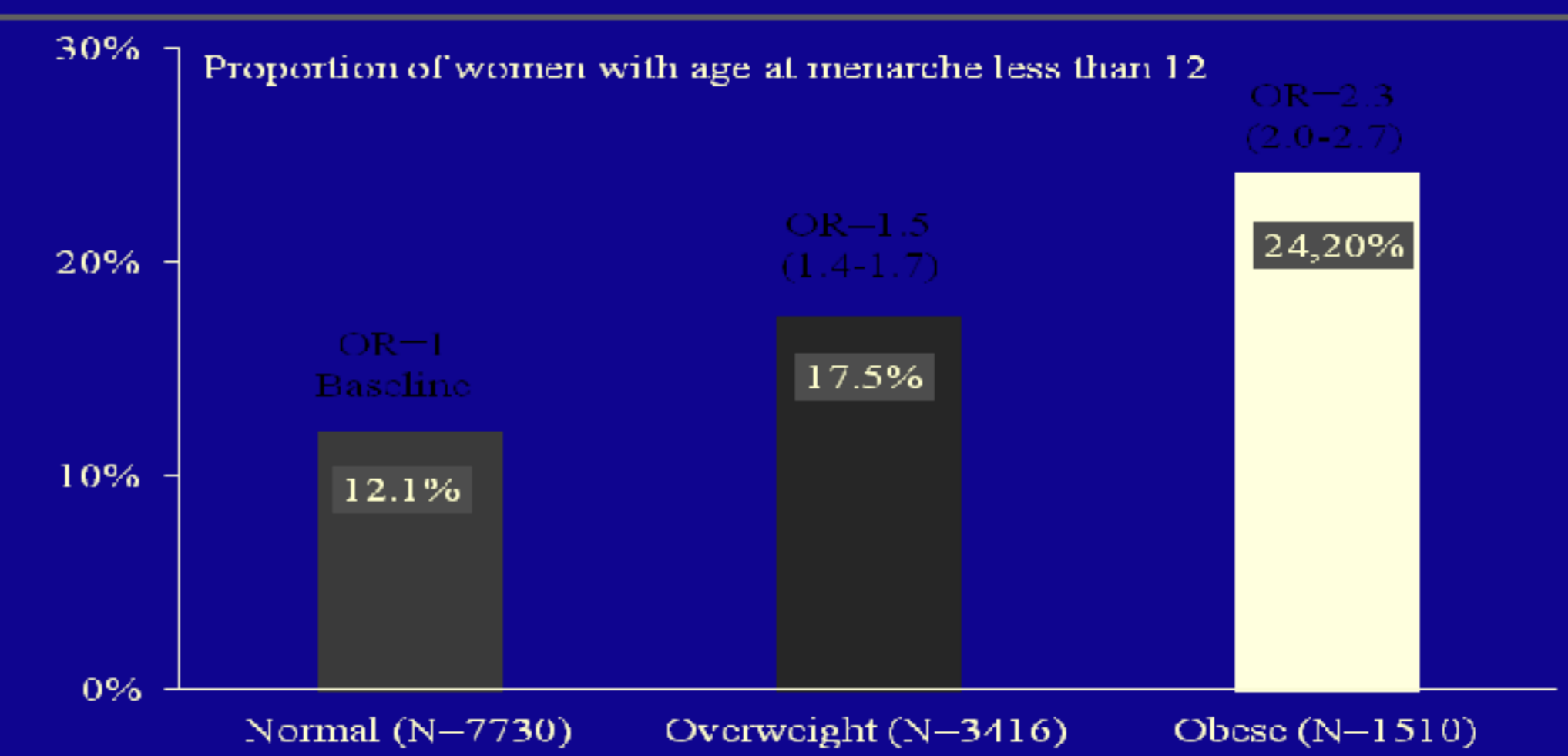
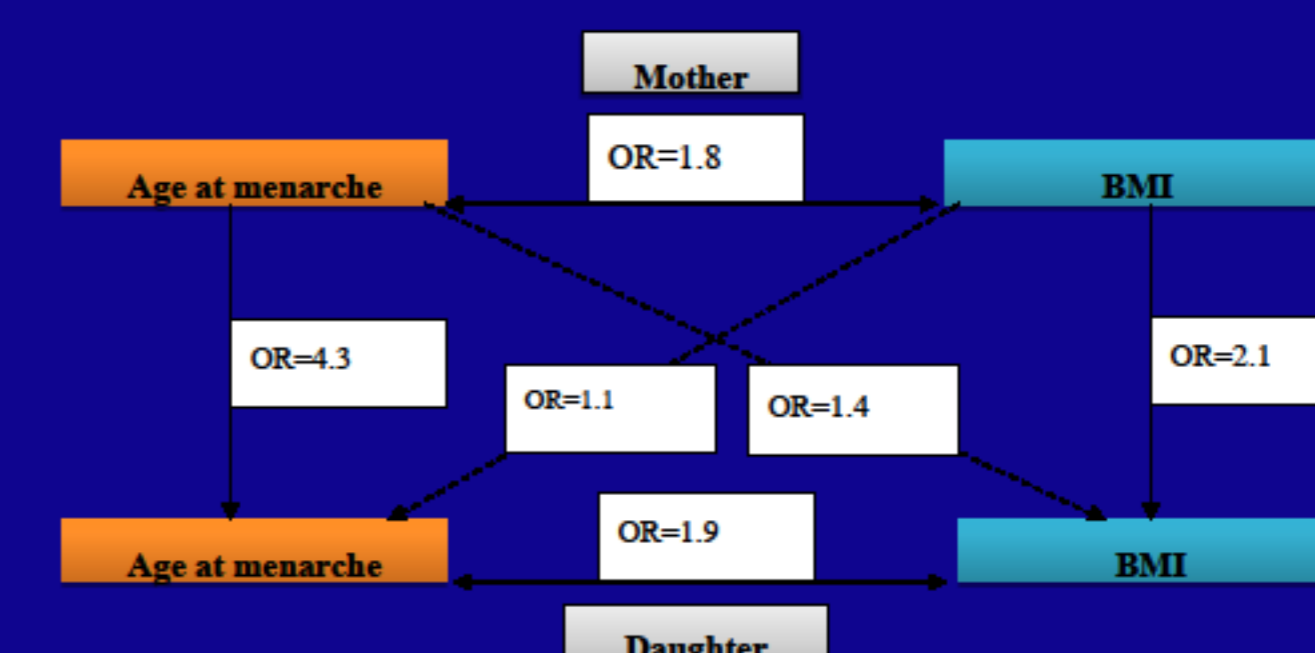


Figure 2 Associations between mother's daughter's BMI and age at menarche



This work was funded by an EU grant



Με τη συγχρηματοδότηση της Ελλάδας και της Ευρωπαϊκής Ένωσης