Meta-analysis suggests that menarcheal onset in daughters moderately correlates with age at menarche of their mothers

Yermachenko Anna (HK) [1], Dvornyk Volodymyr (HK) [2]

Context: Since late 80's, it has been assumed that some maternal traits, such as age at menarche (AAM) may be associated with the onset of sexual maturation in their offspring. Despite to be a proxy for ancestral transmission maternal AAM is generally incorporated into environmental factor pool. Recent studies provided evidence for relationships between some anamnestic and clinical traits of mothers and AAM of their daughters. However, some inconsistency as to the strength of this association still exists.

Objective: To assess the strength of association between mother’s and daughter’s AAM using a meta-analysis.

Methods: In total, 32 relevant articles were identified, 21 of which satisfied the inclusion criteria and were used in the analysis. A meta-analysis was performed by estimation the correlation coefficient for mother’s and daughter’s AAM. Analysis was performed using CMA software ver. 2.2.064 (Biostat, Inc., USA).

Participants: The aggregated samples included 11,763 mother-daughter pairs.

Intervention: Meta-analysis

Main Outcome Measure: A pooled correlation coefficient for association between mother and daughter AAM under the random-effects model.

Result: This meta-analysis found that daughter’s AAM moderately correlated with mother’s age at first menstruation (r=0.306, p<0.0001) that corresponds to approximately 6 months of difference between AAM of daughters and mothers. Heterogeneity I² was 94.7%, tau² = 0.021. The funnel plot was slightly skewed but Egger's test showed no publication bias. This analysis may be affected by recall bias, misclassification, confounding factors presented in the results of the original studies.

Conclusions: Despite the previously reported index of heritability of ~50% for phenotypic variation in AAM, we found that only 10% of variance may be explained by maternal AAM.

[1] The University of Hong Kong, [2] The University of Hong Kong