

Temporal trends in sperm count: A systematic review and meta-regression analysis

Reported declines in sperm count remain controversial today and recent trends are unknown. A comprehensive meta-analysis is critical given the predictive value of sperm count for fertility, morbidity and mortality.

The objective of our study was to provide a systematic review and meta-regression analysis of recent trends in sperm count as measured by sperm concentration (SC) and total sperm count (TSC), and their modification by fertility and geography.

PubMed/MEDLINE and EMBASE were searched for English language studies of human SC published 1981-2013. 7518 abstracts and 2510 full articles reporting primary data on SC were reviewed following a predefined protocol. This meta-analysis included 244 estimates of SC and TSC from 185 studies of 42,935 men who provided semen samples 1973-2011. Data were extracted on semen parameters (SC, TSC, semen volume), years of sample collection and covariates [fertility group (Unselected by fertility vs. Fertile), geographic group [Western (North America, Europe, Australia and New Zealand) vs. Other], age, ejaculation abstinence time, method of semen collection, methods of measuring SC and semen volume, exclusion criteria and indicators of completeness of covariate data]. The slopes of SC and TSC were estimated as functions of sample collection year using simple linear regression and weighted meta-regression models and the latter were adjusted for predetermined covariates and modification by fertility and geographic group. Assumptions were examined using multiple sensitivity analyses and nonlinear models.

I will present unpublished (*) results of the simple linear regression model as well as the meta-regression model. I will also present results of these models when including only post-1995 studies to examine more recent trends. Data to be presented include effect modification by fertility group and geographic groups. Additionally, I will present results of sensitivity analyses which examine the influence of individual covariates and the impact of estimation of missing parameter values and deletion of studies with large standard errors.

This comprehensive meta-regression analysis reports on slopes in SC and TSC between 1973 and 2011, overall and within fertility and geographic groups. In the talk I will also discuss the public health importance of sperm count and recommendations for future research.

*As these are unpublished results, please do not quote.