Design and Recruitment of a Longitudinal Cohort Study of Growth and Puberty in Russian Boys

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Statement of Disclosure

All study authors have no actual or potential competing financial interests and the authors’ freedom to design, conduct, interpret, and publish this research is not compromised by any controlling sponsor as a condition of review and publication.

Background

Few longitudinal male cohort studies include serial assessments of growth and pubertal development.

Objective

- To describe the design and implementation of a longitudinal cohort study of Russian boys evaluated annually for growth, development, and puberty.
- To present serial anthropometric and pubertal measures and z-scores in this cohort from ages 8-18 yrs.

Study population at enrollment

Recruitment flow diagram for boys in Russian Children’s Study

Methods

- The study was approved by the Human Studies Institutional Review Boards of the Chapaevsky Medical Association (Chapaevsk, Russia); HSPH and BWH (Boston, MA, USA), and UMass Medical School (Worcester, MA, USA).
- Growth Outcomes: 23 anthropometric indices were measured at annual visits using NHANES III videos2 and Lohman4 references, as well as an additional 30 measures conducted biennially.
- Pubertal Outcomes: Puberal status was assessed by Tanner staging of pubic hair (P) and genitalia (G), and by measurement of testicular volume (TV) using an orchidometer.

Statistical analysis:

- Age-adjusted, standardized z-scores for height and BMI were calculated using WHO Growth Standards.
- Descriptive statistics were computed using Stata 13.

Consistency of techniques and staff

- For all study visits:
  - Same nurses (LS) for anthropometric measurements
  - Same physician (OS) for pubertal assessment
  - Same brand and model for measurement equipment

Results

Figure 1. Retention rate for FU, over 11 years, 2003-2014

Trends for WHO height and BMI z-scores

Figure 2. Trend for WHO standardized z-scores for height by age

Figure 3. Trend for WHO standardized z-scores for BMI by age

Trends for anthropometric and pubertal measures by age

Figure 4. Trend for segment lengths and circumference

Figure 5. Trend for skinfolds by age

Figure 6. Trend for testicular volume by age

In Summary

Large longitudinal cohort study of male growth, development, puberty and reproductive health.

Thus far we have collected data and samples for > 11 years, from ages 8-19 years with ongoing follow-up and data collection.

Preliminary descriptive analysis of anthropometric and pubertal measures by 8-18 years

Conclusions

To our knowledge, this longitudinal male cohort is the first to be followed for over ten years, from prepuberty to young adulthood with annual comprehensive assessments of growth and puberty.

Moreover, the study examinations were performed by the same physician and nurse throughout the duration of the study.

This cohort provides an excellent foundation for describing growth and pubertal development trajectories and evaluating associations with environmental exposures.

References


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