Are age and initial BMI-SDS in obese children and adolescents associated with the BMI-SDS trajectories during and after the attendance of an inpatient weight-loss program (LOGIC-trial)?

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Conclusion

Our results suggest that the degree of overweight is an essential determinant for BMI-SDS trajectories in children and adolescents under and after termination of an inpatient weight loss program up to 1-year follow-up examination. Moderate overweight participants showed a stronger decrease in BMI-SDS values under treatment than severely obese participants. Age group at baseline had no significant effect on BMI-SDS trajectories. Long-term results are needed.

Introduction

A longitudinal observational study of obese children and adolescents, which took part on a 3-year behavioral treatment study to reduce their weight, showed, that treatment was less effective for the older moderately obese children. Several obese adolescents showed no reduction in BMI-SDS score at all after 1,2, or 3 years of behavioral treatment. The effect of behavioral treatment was more effective among 6 to 9 years old children than in the older age groups (Damaschke et al. (2012) Response of severely obese children and adolescents to behavioral treatment. Arch Pediatr Adolesc Med. 166(5):390–5).

Aim

The aim of this study was to investigate the impact of age and degree of overweight at baseline on the BMI-SDS trajectories under treatment (inpatient weight loss treatment) and after termination up to 1-year follow-up examination in participants of the LOGIC-trial.

Methods

Long-term effects of lifestyle intervention in Obesity and Genetic Influence in Children (LOGIC-trial)

Study participants

- 6 to 19 years old overweight and obese children, who are referred to the rehabilitation center Klinik Schönbrunn in Berenchegarten (Germany) by their local pediatrician to have an inpatient weight-loss treatment
- Criteria for attaining the inpatient weight loss program: overweight (BMI 90.97th percentile), obesity (BMI 97.99.5th percentile) or severely obesity (BMI > 99.5th percentile), repeated failure to accomplish weight-loss in outpatient therapies
- Exclusion criteria: obesogenic diseases and disorders such as the Prader-Willi Syndrome, Cushing Syndrome, early withdrawal from the inpatient program (< 3 weeks) → N=1.010 participants

Study design

- Intervention: focuses on a calorie restricted balanced diet, an increase in physical activity and behavioral counseling
- Duration of intervention: 4 to 6 weeks
- Baseline examination (To): (a) Clinical examination: age (yrs), gender, Tanner stage, BMI (kg/m²), BMI-SDS (Kemeyer-Hauschulz, 2001, waist circumference (cm); (b) Questionnaire: parental BMI (kg/m²), school education (years) and migration background (no vs yes)
- End of treatment (T1) and at 1-year Follow-up examination (T2): age, BMI-SDS

Statistics

- Variables: BMI-SDS at T0, T1, T2; gender; age group at T0 (7-11 yrs, 12-14 yrs, >15 yrs), BMI-SDS at T0: moderate overweight (<75th internal percentile), severely obesity (≥75th internal percentile)
- Handling missing longitudinal BMI-values and baseline covariates: Multiple Imputation (MI)
- Modeling of BMI-SDS trajectories: linear mixed effects models (piecewise linear spline with a knot at T1)

Disclosure Statement

The authors have nothing to disclose.

Funding and grant

* Funded by the non-profit organization Else Kröner-Fresenius-Stiftung (Germany)
** Sponsored by a grant from „Forum Wachsen“

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