1. Kongress der Fachgruppe Gesundheitspsychologie

Parental Numeracy and Children's BMI

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Introduction

- Numeracy is the ability to understand and use numbers in daily life
- Low numeracy skills have been associated with higher BMI in adult primary care patients (Huizinga, Beech, Cavanaugh, Elasy, & Rothman, 2008)
- Parents, as the nutritional gatekeeper, make decisions about their children's nutrition (Wansink, 2006)
- Weight-related information processing skills serve as basis for these decisions and require numerical abilities
- Weight related information processing skills examined in this study:
  - nutrition label comprehension
  - growth chart comprehension
  - portion size estimation

Methods

Procedure

- Computer assisted face-to-face interview with 321 nutritional gatekeeper with at least one child between 6 and 12 years at home during interview

Measures

Body weight of parent and child was measured

Nutrition label comprehension

- Estimating recommended amount of food with food pictures

Growth charts comprehension

- 7 items from growth chart survey (Ben-Joseph, 2011)

Numeracy

- If the chance of getting a disease is 20 out of 100, this would be the same as having a 2% chance of getting the disease.

5 items of Nutrition Label Survey (NLS, Rothman, 2008)

Fig. 1 Mediation model of the link between numeracy and BMI

Results

Hypothesis 1: Link between parents' numeracy and children's BMI

- Children with z-BMI ≤ normal weight
  - β = 0.126, P = 0.048
  - lower parental numeracy predicts lower z-BMI in these children
- Children with z-BMI ≥ normal weight
  - β = -0.299, P < 0.001
  - lower parental numeracy predicts higher z-BMI in these children

Hypothesis 2: Mediating role of weight-related information processing

Significant associations between higher numeracy and...

- better nutrition label comprehension (r = 0.26, P < 0.001)
- better growth charts comprehension (r = 0.33, P < 0.001)
- better portion size estimation skills (r = -0.08, P = 0.023)

No significant mediation effect

Fig. 2 Distribution of parental numeracy scores, separately for children's BMI

Fig. 3 Mediation model with weight-related information processing as latent mediator

Discussion

- This is the first study identifying low parental numeracy as a risk factor for over- and underweight in children
- Numerical abilities are important to process weight-related numerical information, such as estimate portion sizes, comprehension of nutrition label and growth charts
- The role of parental numeracy should be taken into account when developing strategies to prevent and treat malnutrition, as well as over- and underweight in children
- Future research should investigate possible mechanisms of the link between numeracy and BMI

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