

Food Liking, Ear Infections and Body Mass Index Among Preschoolers

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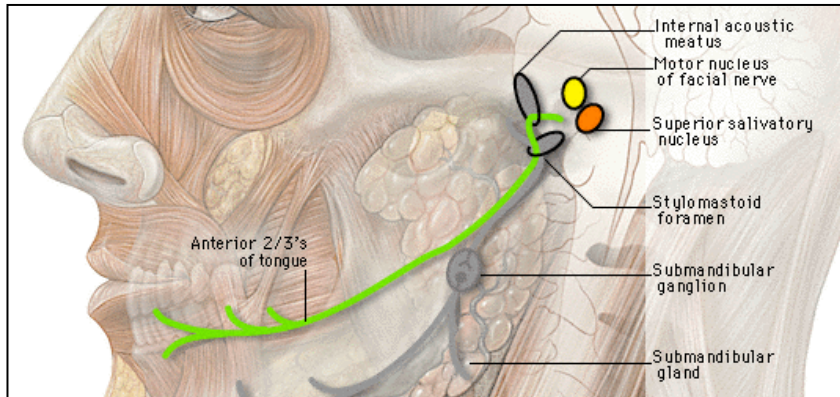


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Abstract

National overweight rates among preschoolers have grown from 5% in 1976 to 13.9% in 2004. Otitis media history (OM) has been linked to children's overweight risk from a small study (Tanasescu et al, 2000) and nationally-representative longitudinal study (Hoffman et al, 2006). We examined OM and dietary behaviors associated with overweight risk among 485 preschoolers (248 males, mean age=45±7 months) in two urban preschools. Most were Black (27%) or Hispanic (56%). From measured weight/height and age/gender-specific BMI percentile, 4% were underweight, 21% had overweight risk (85-95th) and 21% were overweight (≥95th). From parent-completed surveys, 70% had OM at least once and 31% were food neophobic. Sweet, salty or high-fat foods/beverages were liked most while vegetables were liked least. In analysis of variance, controlling for demographic variables (ANCOVA), food neophobic preschoolers had less liking for a vegetable/fruit (v/f) group than did non-neophobic preschoolers ($p<.001$); a parallel analysis for high fat/sweet/salty foods showed no effect of neophobia. In a liner dose response, vegetable/fruit liking fell as OM increased from none to ≥6 bouts ($p<.01$). In a 2-way ANCOVA, food neophobia and OM each explained variation in v/f liking; the interaction term was non-significant. Preschoolers who had OM exposure and food neophobia had lowest v/f liking. Reported liking for fat/sweet/salty foods but not v/f showed a small but significant association with BMI. Preschoolers with ≥6 OM bouts had highest BMI percentile. Food neophobia failed to explain difference in BMI percentile. In summary, OM and neophobia may limit preschooler's v/f liking, which increases current or future risk of being overweight. (American Diabetes Association Foundation funded).

Introduction



Programs that promote food and nutrition security among preschoolers

- HS programs evaluate nutrition risk via an annual nutrition assessment
- Participation in food assistance programs can decrease risk of overweight (Jones et al 2006) as shown locally in rural CT (Kinsely et al, 2006)

Otitis Media (OM) and Overweight Risk

- The chorda tympani (CT) branch of cranial nerve VII carries taste from the tongue tip to the brain
- This nerve passes through the middle ear (figure), making it vulnerable to damage by pathogens in middle ear infection
- Children with reported OM history show greater sweet intakes and lower vegetable intakes (Arsenault et al, 2003)
- Among children, greater OM history (Tanasescu et al, 2000) and clinically-evaluated OM severity (Kim et al, 2007) associates with greater overweight risk

Methods

Study Aims:

- To assess food liking, OM, and BMI of HS/SR children
- To assess SNAP participation among HS/SR families

Population:

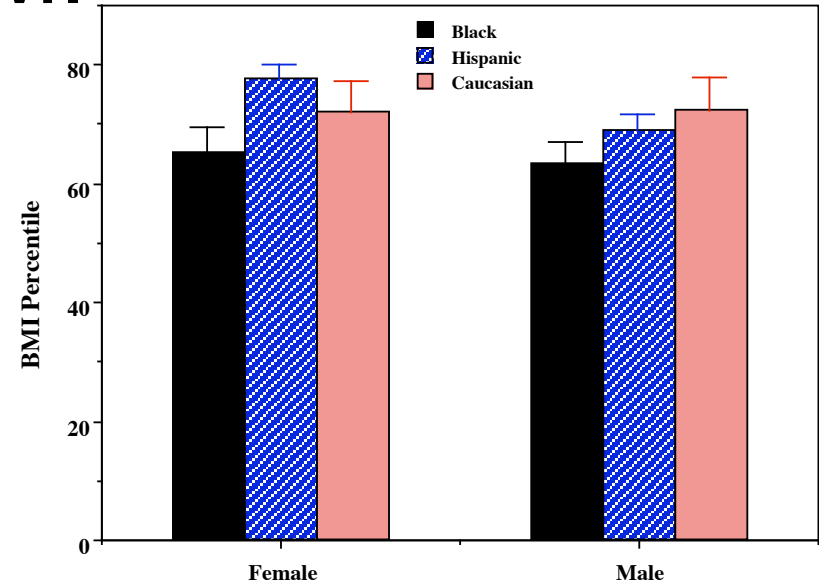
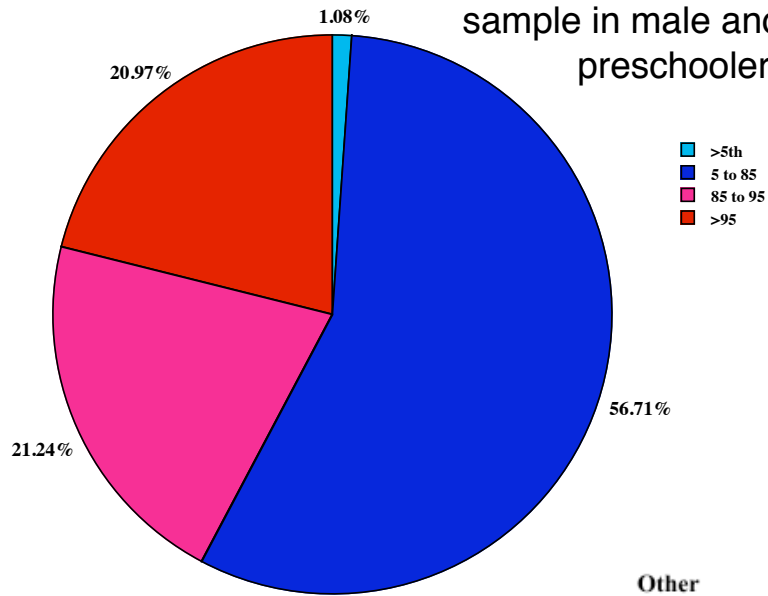
- Preschoolers aged 3 to 5 enrolled in Waterbury and Meriden HS/SR programs

Data collection:

- Interviews with parents included socio-demographic information, SNAP (Supplemental Nutrition Assistance Program) participation, child's food preference and aversion, and OM history questions
- Dietitians recorded standardized height/weight measurements using empirical sex- and age-specific norms, "at risk for overweight" is defined as >85th percentile and "overweight" is defined as >95th percentile BMI
- The study was conducted in accordance with the University of Connecticut Institutional Review Board (Humans Subject Number H03-240; American Diabetes Association Foundation funded)

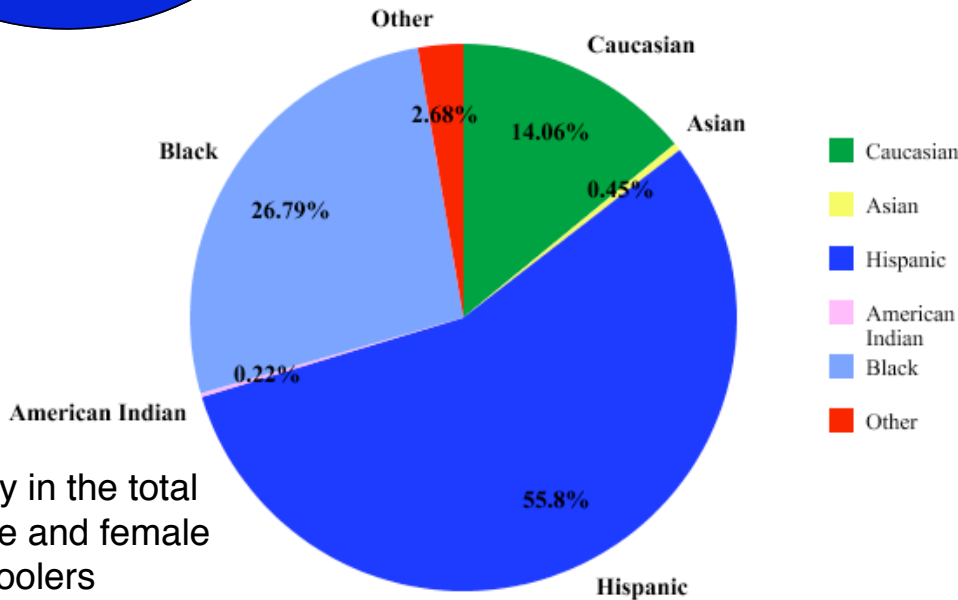
Results-Ethnicity and BMI

BMI Percentile in the total sample in male and female preschoolers

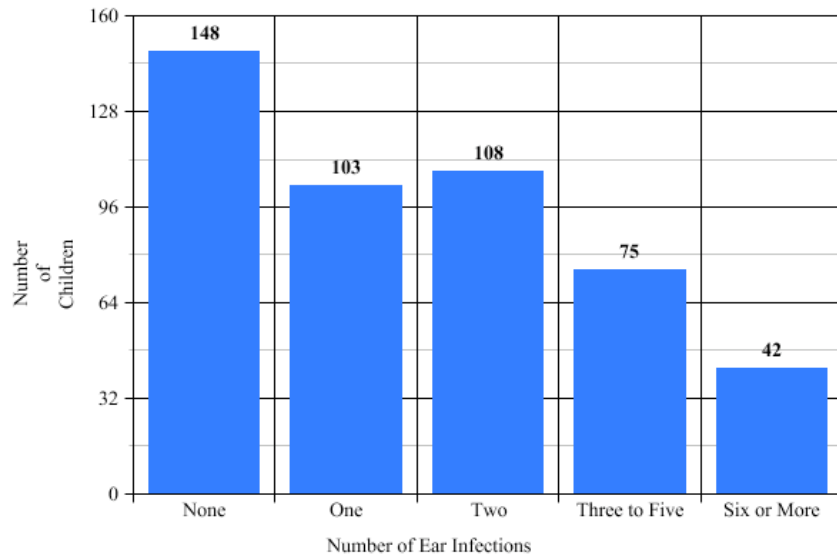


Hispanic children tended to have a higher BMI% than Black children ($p < 0.01$). The only sex difference is among the Hispanic children in the sample. Hispanic females have the highest BMI percentile.

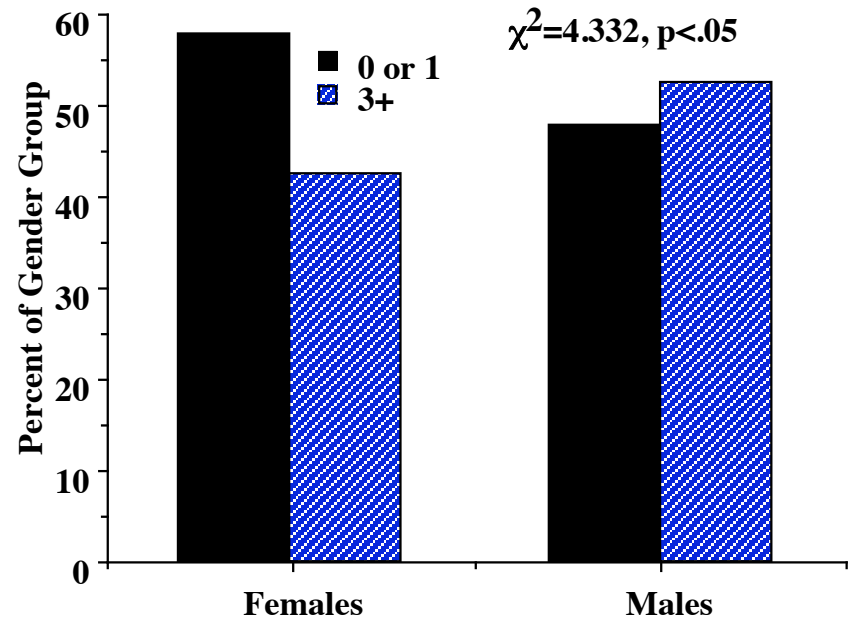
Race/Ethnicity in the total sample in male and female preschoolers



Results-Otitis Media



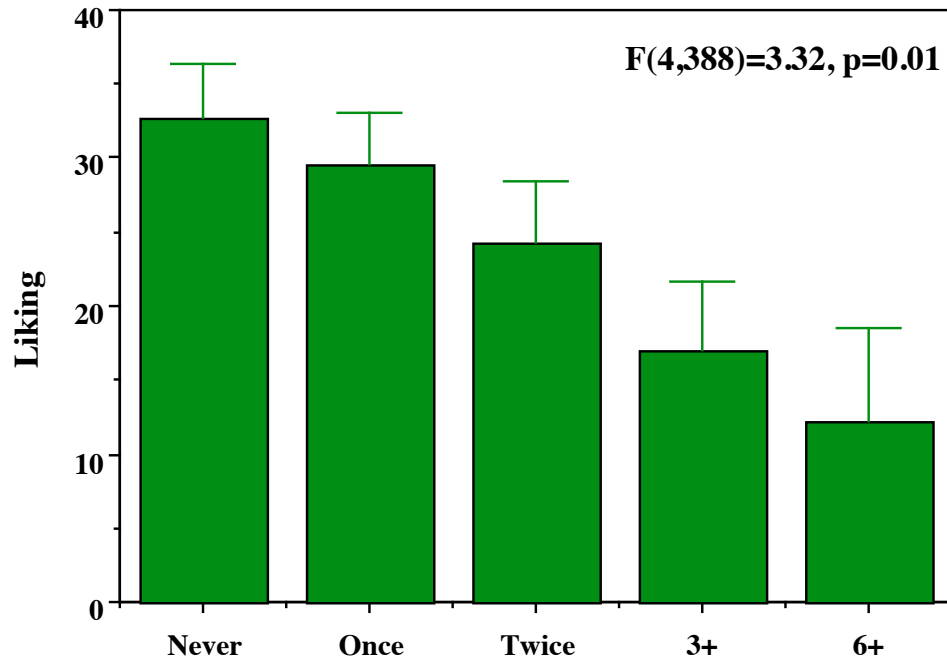
Number of ear infections in the total sample in male and female preschoolers



Males were more likely to have more frequent ear infections, an effect independent of age.

Results-Otitis Media

Vegetables/Fruits

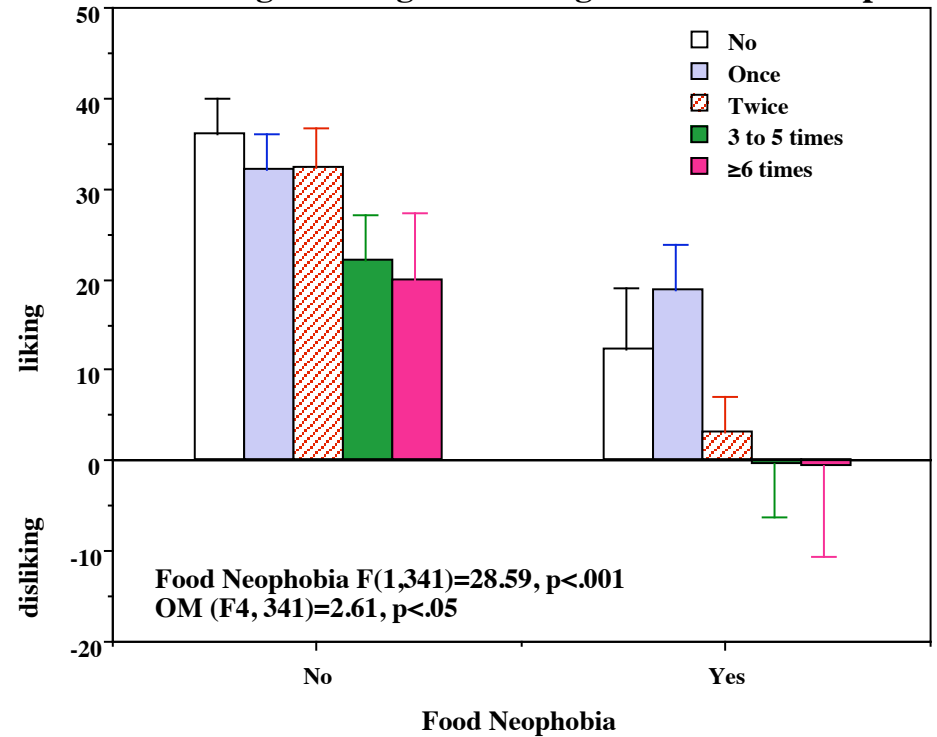


Ear Infections

Children with greater reported exposure to otitis media had lower liking for vegetables and fruits.

Preschoolers with OM exposure and neophobia had lowest vegetable and fruit liking

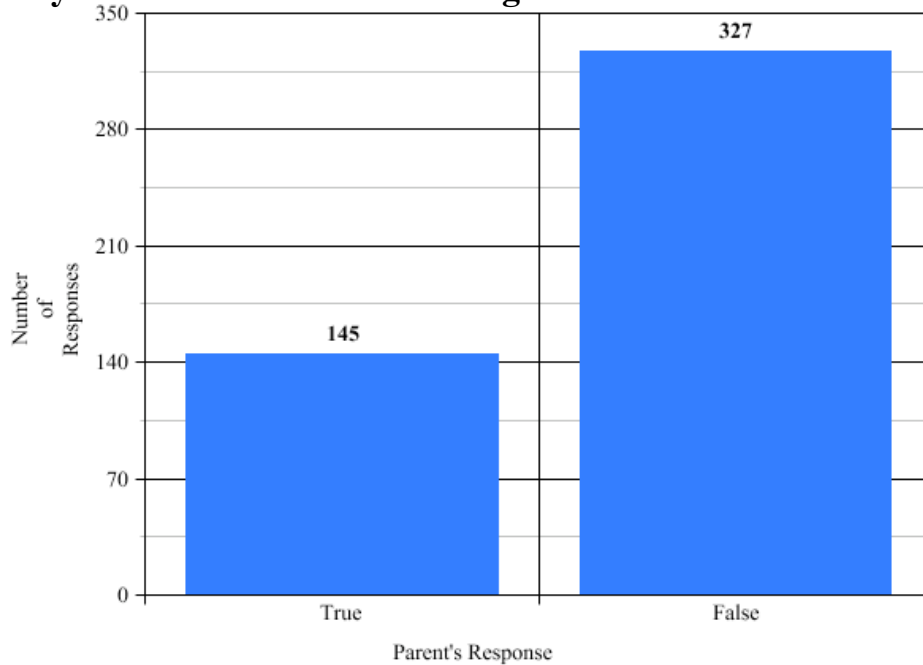
Liking/disliking for the Vegetable/Fruit Group



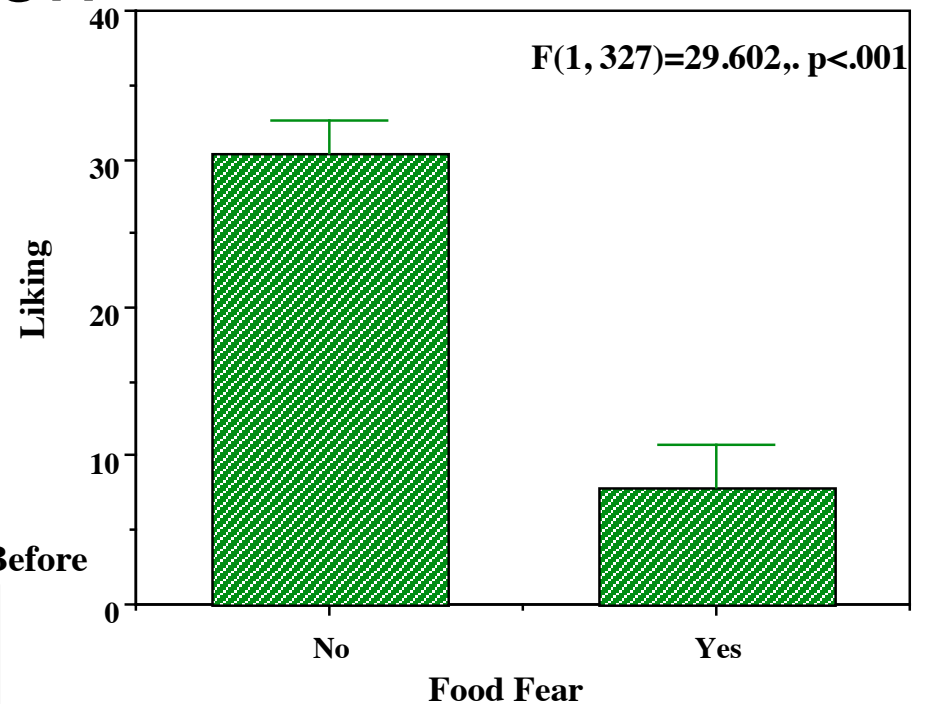
Results-Food Aversion

30.72 % of parents indicated that their child was afraid to eat new foods.

My Child is Afraid to Eat Things He/She Has Never Had Before

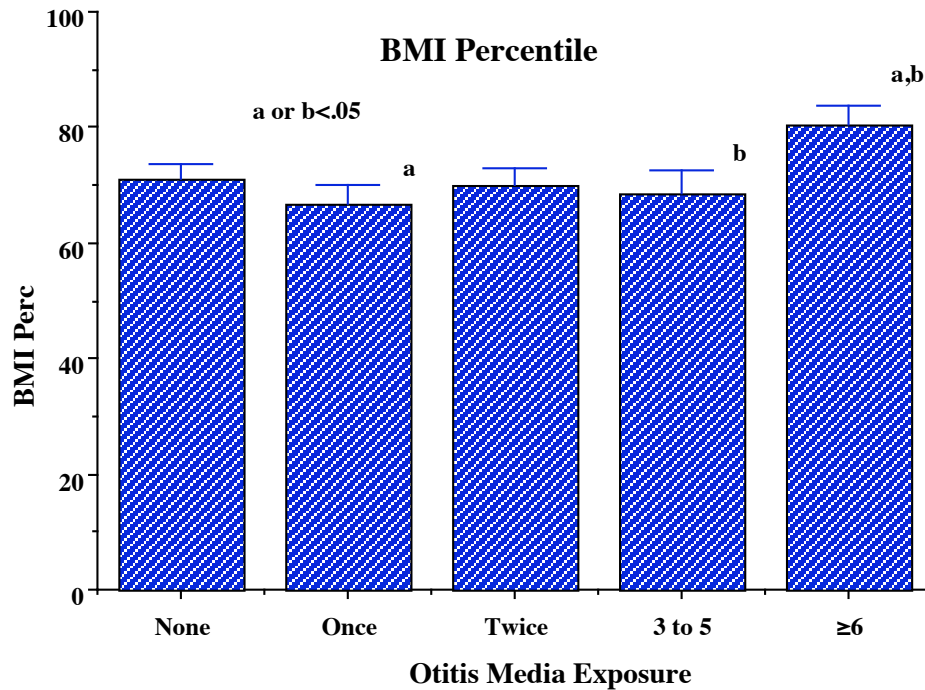


Liking for Fruits and Vegetables



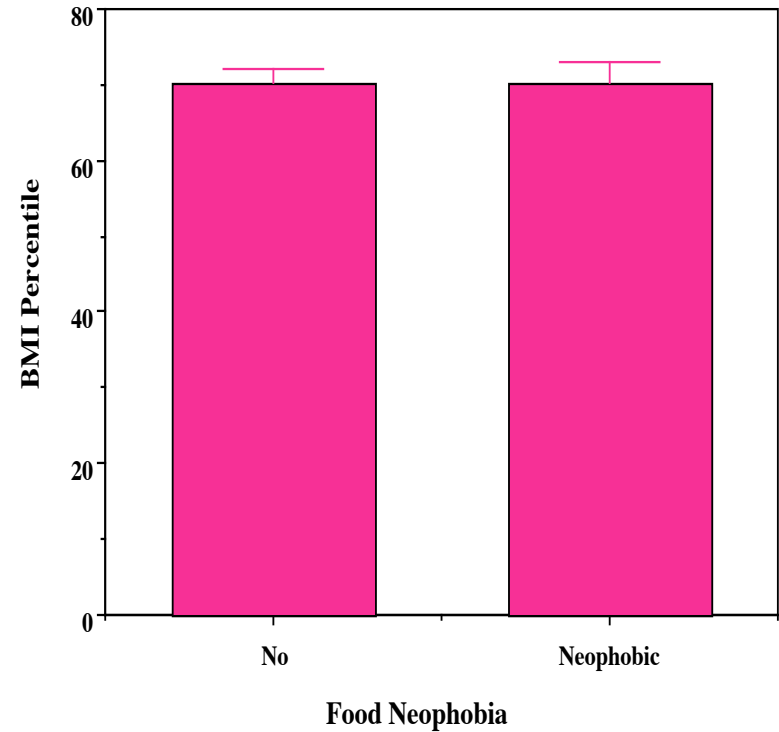
Independent of sex, age, SNAP participation, ethnicity and rating of liking for non-food items, children who were afraid to eat new things had a significantly lower liking for fruit and vegetables. ($p<0.001$).

BMI Percentile



The preschoolers with greatest OM exposure averaged the highest BMI percentile, separate from age and sex effects.

Food neophobia did not explain difference in BMI percentile.



Conclusion

- Data obtained via annual nutrition assessments and preference questionnaires in HS/SR programs can be beneficial for evaluating nutritional risk among preschoolers.
- Preschoolers preferred high fat, sweet and salty foods and least like vegetables. Future programs aimed to increase the health status of preschoolers should consider ways to increase children's preference towards vegetables.
- Research shows that OM exposure may cause damage to the taste nerves of the anterior tongue. Our results suggest OM exposure plays a significant role in fruit and vegetable preference in young children.
- OM and neophobia may limit preschooler's vegetable and fruit liking, which increases current or future risk of being overweight.
- Further research on effects of OM exposure on obesity risk in preschoolers is necessary to determine a cause and effect relationship and possible means of limiting overweight risk related to OM exposure.

Acknowledgments

- The authors wish to thank HS/SR program sites involved and the American Diabetes Association Foundation, Healthy Food Choices Research Award for making this study possible
- The authors wish to especially thank the UCONN dietetic interns who assisted with the collection, preparation and entry of the data.