

Associations between ad-supported media & UPF intake among preschool-age children

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Background

Ultra-Processed Foods (UPF)—industrial formulations made from substances derived from foods, with little intact food (1)—account for nearly 63% of calories purchased (2). UPF are often high in added sugar, sodium and fat (3–5), and emerging research demonstrates that overconsumption of UPF is associated with cardiometabolic diseases (6,7), the number one cause of death in the world (8). While diets high in UPF are associated with overweight/obesity among adults (9–18), research among children is limited, especially for unhealthy food advertisement exposure.

Hypotheses:

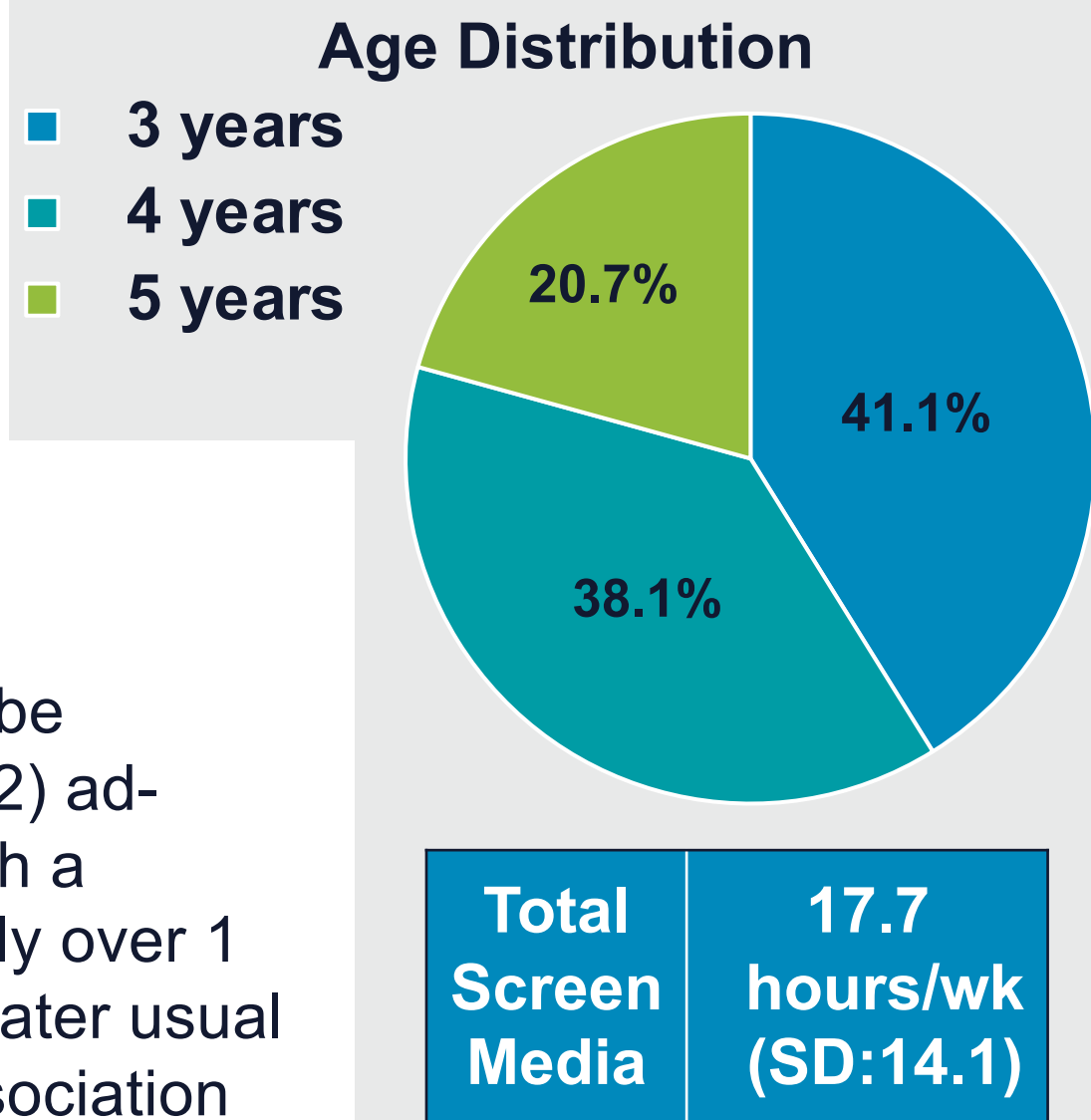
1) A greater usual intake of UPF over 1 year will be positively associated with a greater gain in BMI; 2) ad-supported media will be positively associated with a greater UPF intake cross-sectionally/prospectively over 1 year; and 3) an exploratory hypothesis that a greater usual intake of UPF will partially mediate a positive association between ad-supported media and weight gain over 1 year.

Methods

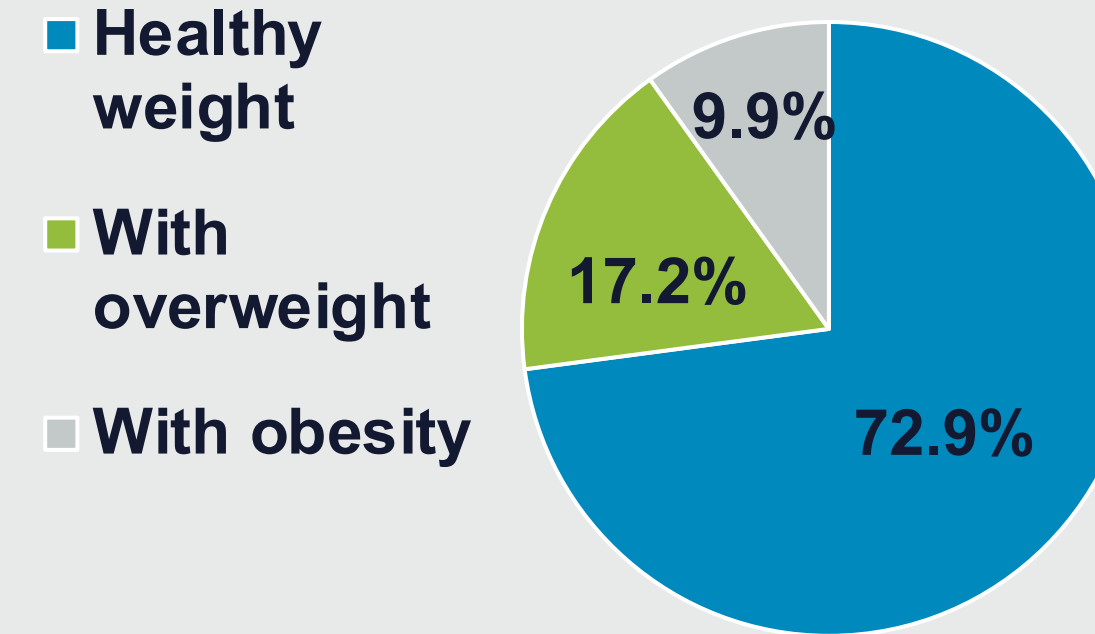
This proposal builds on a rich dataset from the study: Impact of Food Marketing and Cross-Promotions on Preschoolers' Dietary Intake (R01HD071021 PI: Dalton), a prospective, community-based study of 624, 3-5 year old children in NH, followed for 1 year between Mar 2014-Oct 2016. Advertisement-supported, advertisement-free, and mixed-advertisement media use will be proxies for food ad exposure. UPF intake will be measured from two, 3-day food records using the NOVA food classification system. Objectively measured child weight/height will be used to calculate age-and-sex-adjusted BMI. A customized nutrient database includes child-specific packaged foods (e.g., kid's yogurt tubes, squeezable food pouches), accounting for 19% of the final dietary database.

Results

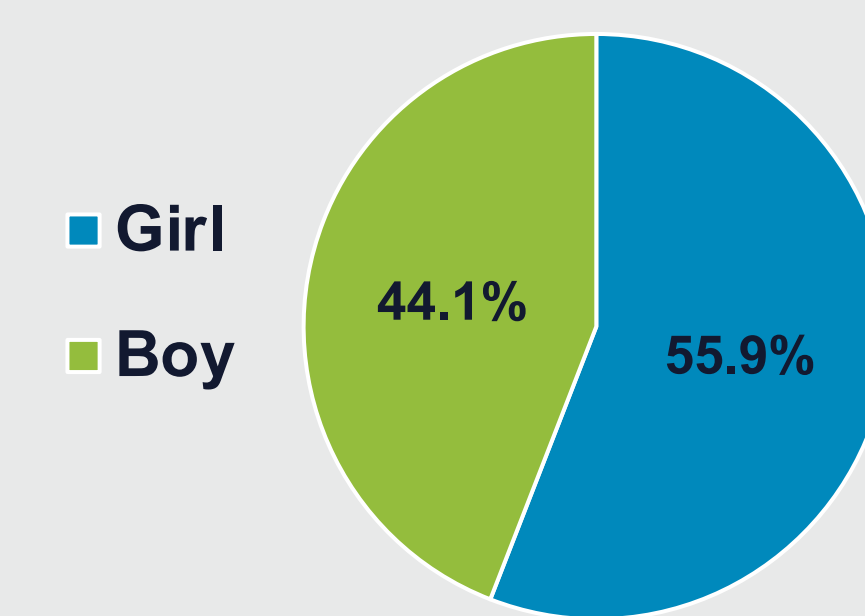
The findings of this proposal are on-going as a chapter in a dissertation. Preliminary analyses (19) from baseline are shown from those with completed food diaries (n=535).



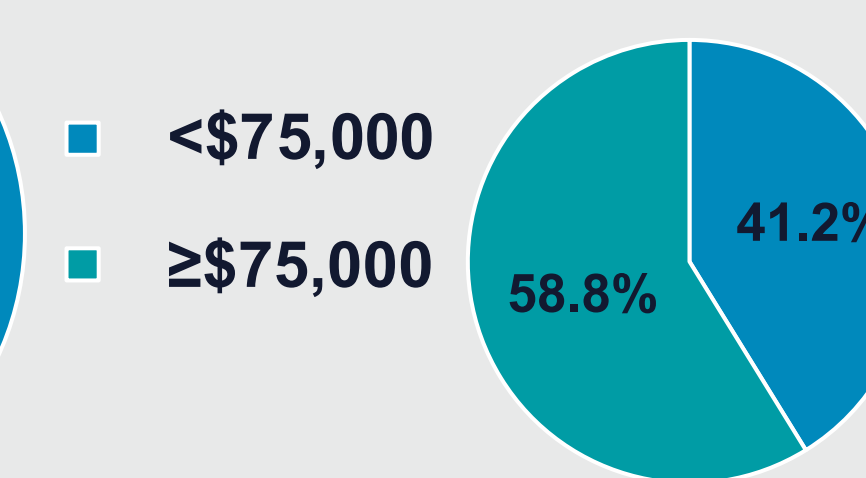
Weight Status at Baseline



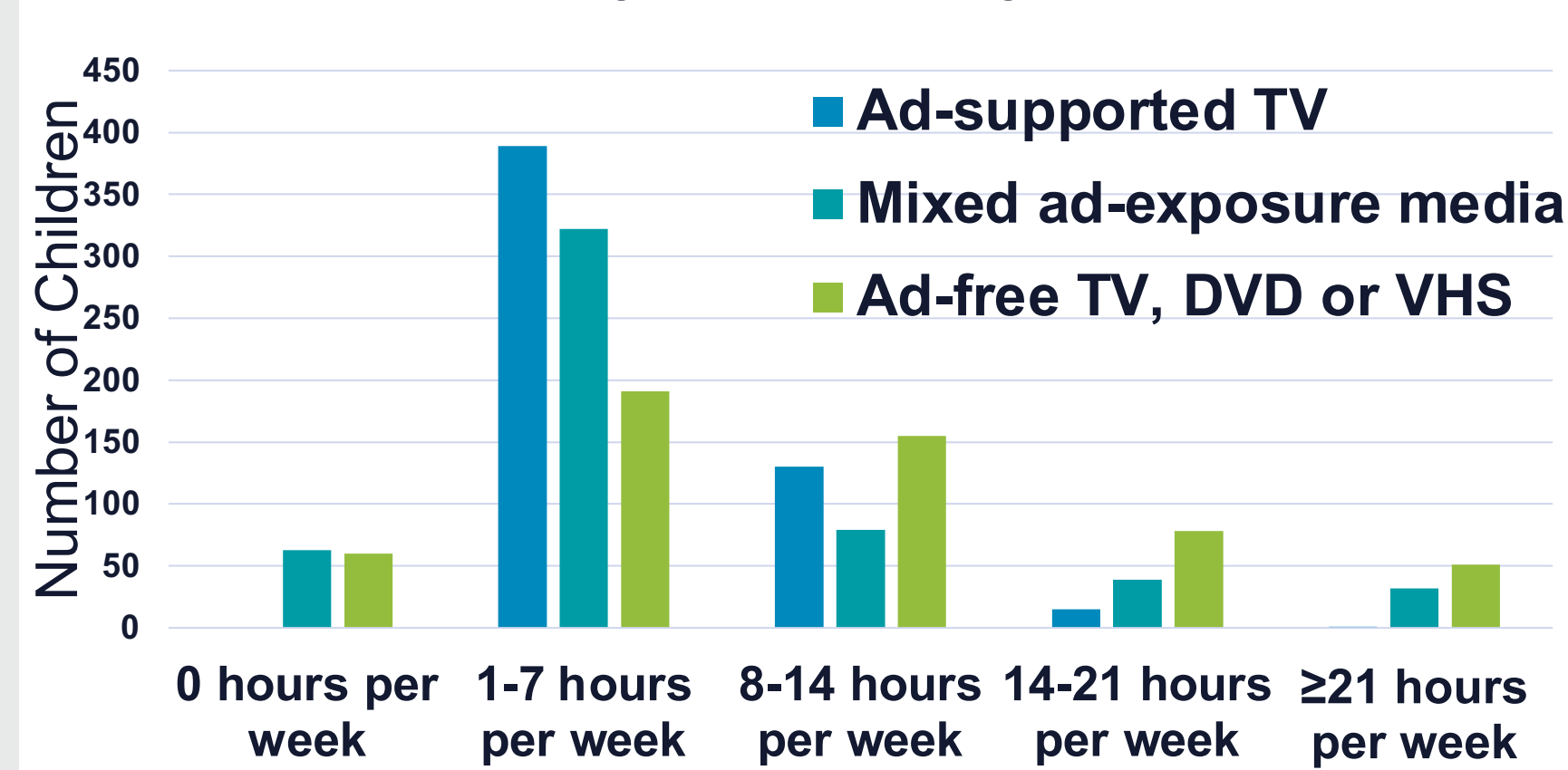
Sex Distribution



Annual Household Income



Hours of Weekly Media Use by Ad Exposure



Implications

This proposed research is significant as these findings may have policy-level implications by demonstrating how child-directed food marketing may adversely affect child health.

Acknowledgements

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References

- Monteiro CA, Cannon G, Levy RB, et al. Ultra-processed foods: what they are and how to identify them. *Public Health Nutr.* 2019;22(5):936–941.
- Poti JM, Mendez MA, Ng SW, et al. Highly Processed and Ready-to-Eat Packaged Food and Beverage Purchases Differ by Race/Ethnicity among US Households. *J. Nutr.* 2016;146(9):1722–1730.
- Rauber F, da Costa Louzada ML, Steele E, et al. Ultra-Processed Food Consumption and Chronic Non-Communicable Diseases-Related Dietary Nutrient Profile in the UK (2008–2014). *Nutrients.* 2018;10(5):587.
- Moubarac J-C, Batal M, Louzada ML, et al. Consumption of ultra-processed foods predicts diet quality in Canada. *Appetite.* 2017;108:512–520.
- Luiten CM, Steenhuis IH, Eyles H, et al. Ultra-processed foods have the worst nutrient profile, yet they are the most available packaged products in a sample of New Zealand supermarkets. *9.*
- Rauber F, Campagnolo PDB, Hoffman DJ, et al. Consumption of ultra-processed food products and its effects on children's lipid profiles: A longitudinal study. *Nutrition, Metabolism and Cardiovascular Diseases.* 2015;25(1):116–122.
- Chen X. Consumption of ultra-processed foods and health outcomes: a systematic review of epidemiological studies. 2020;10.
- Cardiovascular Diseases (CVD's). World Health Organization. 2016;(https://www.who.int/en/news-room/fact-sheets/detail/cardiovascular-diseases-cvds). (Accessed August 8, 2020)
- Hall KD, Ayuketah A, Brychta R, et al. Ultra-Processed Diets Cause Excess Calorie Intake and Weight Gain: An Inpatient Randomized Controlled Trial of Ad Libitum Food Intake. *Cell Metabolism.* 2019;30(1):67–77.e3.
- Canhada SL, Luft VC, Giatti L, et al. Ultra-processed foods, incident overweight and obesity, and longitudinal changes in weight and waist circumference: the Brazilian Longitudinal Study of Adult Health (ELSA-Brasil). *Public Health Nutr.* 2020;23(6):1076–1086.
- Mendonça R de D, Pimenta AM, Gea A, et al. Ultra-processed food consumption and risk of overweight and obesity: the University of Navarra Follow-Up (SUN) cohort study. *The American Journal of Clinical Nutrition.* 2016;104(5):1433–1440.
- Rauber F, Chang K, Vamos EP, et al. Ultra-processed food consumption and risk of obesity: a prospective cohort study of UK Biobank. *Eur J Nutr [electronic article].* 2020;(http://link.springer.com/10.1007/s00394-020-02367-1).
- Beslay M, Srour B, Mègeant C, et al. Ultra-processed food intake in association with BMI change and risk of overweight and obesity: A prospective analysis of the French NutriNet-Santé cohort. *PLoS Med.* 2020;17(8):e1003256.
- Louzada ML da C, Baraldi LG, Steele EM, et al. Consumption of ultra-processed foods and obesity in Brazilian adolescents and adults. *Preventive Medicine.* 2015;81:9–15.
- Juul F, Martínez-Steele E, Parekh N, et al. Ultra-processed food consumption and excess weight among US adults. *Br J Nutr.* 2018;120(1):90–100.
- Silva FM, Giatti L, de Figueiredo RC, et al. Consumption of ultra-processed food and obesity: cross sectional results from the Brazilian Longitudinal Study of Adult Health (ELSA-Brasil) cohort (2008–2010). *Public Health Nutr.* 2018;21(12):2271–2279.
- Rauber F, Steele EM, Louzada ML da C, et al. Ultra-processed food consumption and indicators of obesity in the United Kingdom population (2008–2016). *PLoS ONE.* 2020;15(5):e0232676.
- Nardocci M, Leclerc B-S, Louzada M-L, et al. Consumption of ultra-processed foods and obesity in Canada. *Can J Public Health.* 2019;110(1):4–14.
- Carroll JE, Price G, Longacre MR, et al. Associations between advertisement-supported media exposure and dietary quality among preschool-age children. *Appetite.* 2021;166:105465.

Usual Fast Food Intake

