

MDPI

Abstract

## Socioeconomic Inequalities in Food Habits among Children Living in North Macedonia <sup>†</sup>

Aleksandra Stamenova 1,\* , Katerina Mihajlova 10, Lorraine S. Wallace 2 and Igor Spiroski 2,3

- Faculty of Medicine, School of Doctoral Studies in Public Health, Ss. Cyril and Methodius University in Skopje, 1000 Skopje, North Macedonia; kkovachovska@gmail.com
- <sup>2</sup> Faculty of Medicine, Ss. Cyril and Methodius University in Skopje, 1000 Skopje, North Macedonia; lorraine.wallace@osumc.edu (L.S.W.); igor.spiroski@medf.ukim.edu.mk (I.S.)
- <sup>3</sup> Institute of Public Health of the Republic of North Macedonia, 1000 Skopje, North Macedonia
- \* Correspondence: aleksandra.stamenova@medf.ukim.edu.mk
- † Presented at the 14th European Nutrition Conference FENS 2023, Belgrade, Serbia, 14–17 November 2023.

Abstract: Nutritional factors are major drivers of childhood obesity and increased risk of noncommunicable diseases in adulthood. Therefore, understanding family food habit patterns and differences are important for public health policy planning. Drawing from a nationally representative sample of children in North Macedonia (MKD), the aim of our study was to explore the association between children's food-related behaviours and family socioeconomic status (SES). As part of the fifth round of the World Health Organization (WHO) European Childhood Obesity Surveillance Initiative (COSI), a cross-sectional study was conducted with MKD children and their parents/caregivers. Each child's daily food habits (daily consumption of fresh fruits and vegetables, soft drinks, and breakfast) were assessed and categorised as either healthy or less healthy. Family SES was ascertained by a self-reported level of parental education attainment (low, medium, and high) and family-perceived wealth (low, medium, and high), following the methodology employed in previous WHO COSI studies. A multivariate multilevel logistic regression analysis was employed to estimate the odds ratios (ORs) of having a healthy food habit as a function of family SES while controlling for sex and place of residence. Results: The sample was composed of 3221 7-year-old children (boys = 1590 and girls = 1631), with the majority living in urban areas (75.2%). Healthy food habits were as follows: eating breakfast every day (75.4%), eating fresh fruit every day (40.5%), eating fresh vegetables every day (36.2%), and consuming sugar-containing soft drinks <3 days per week (59.2%). Higher familyperceived wealth was predictive of a greater likelihood of eating breakfast (OR = 1.18; 95% confidence interval [CI] = 1.03-1.34) and fresh fruits (OR = 1.19; 95%CI = 1.07-1.34) every day. Higher parental education was predictive of a greater likelihood of eating breakfast (OR = 1.46; 95%CI = 1.29-1.66) and vegetables (OR = 1.12; 95%CI = 1.01–1.24) every day and consuming sugar-containing soft drinks <3 days per week (OR = 1.21; 95%CI = 1.09–1.35). Our findings show that while most MKD children practice at least one healthy food habit, there are evident dietary disparities among children related to family SES. These SES patterns are valuable information for public health policymakers to consider as they work to reduce health inequalities with targeted public health and economic actions.

Keywords: food habits; socioeconomic status (SES)



updates

Citation: Stamenova, A.; Mihajlova, K.; Wallace, L.S.; Spiroski, I.
Socioeconomic Inequalities in Food
Habits among Children Living in
North Macedonia. *Proceedings* **2023**, *91*, 241. https://doi.org/10.3390/
proceedings2023091241

Academic Editors: Sladjana Sobajic and Philip Calder

Published: 4 February 2024



Copyright: © 2024 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (https://creativecommons.org/licenses/by/4.0/).

**Author Contributions:** Conceptualization, A.S., L.S.W., K.M. and I.S.; methodology, I.S.; validation, A.S., I.S. and L.S.W.; formal analysis, L.S.W.; investigation, I.S., L.S.W. and A.S.; resources, I.S. and L.S.W.; data curation, A.S. and L.S.W.; writing—original draft preparation, A.S. and L.S.W.; writing—review and editing, A.S., L.S.W., I.S. and K.M.; supervision, I.S.; project administration, I.S.; funding acquisition, I.S. All authors have read and agreed to the published version of the manuscript.

**Funding:** This research was funded through the National annual programme for public health in North Macedonia.

Proceedings **2023**, 91, 241

**Institutional Review Board Statement:** The study was conducted in accordance with the Declaration of Helsinki, and approved by the Ethics Committee of Ss. Cyril and Methodius University- Faculty of Medicine in Skopje, 1000 Skopje, North Macedonia (protocol code 03-242/10 from 24 January 2019).

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

**Data Availability Statement:** The datasets presented in this article are not readily available. Reasonable requests to access the datasets should be directed to the Principal Investigator igor.spiroski@medf.ukim.edu.mk.

**Conflicts of Interest:** The authors declare no conflict of interest.

**Disclaimer/Publisher's Note:** The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.