

## Socio-demographic and environmental factors associated with adolescent overfat and obesity in Ireland – preliminary analysis from the National Teens' Food Survey II

A. Moore Heslin<sup>1</sup>, A. O'Donnell<sup>1</sup>, L. Kehoe<sup>2</sup>, J. Walton<sup>3</sup>, A. Flynn<sup>2</sup>, J. Kearney<sup>4</sup> and BA. McNulty<sup>1</sup>

<sup>1</sup>UCD Institute of Food and Health, UCD School of Agriculture and Food Science, University College Dublin, Dublin, Ireland,

<sup>2</sup>School of Food and Nutritional Sciences, University College Cork, Cork, Ireland,

<sup>3</sup>Department of Biological Sciences, Munster Technological University, Cork, Ireland and

<sup>4</sup>School of Biological & Health Sciences, Technological University Dublin, Dublin, Ireland.

The prevalence of adolescents affected by overweight/obesity in Ireland has increased significantly in recent years, with current data indicating that nearly one in four Irish adolescents are living with overweight/obesity<sup>1</sup>. Obesity is a multifactorial disease strongly influenced by environmental, social, and behavioural factors, with adolescents highlighted as particularly susceptible to the effects of social and environmental determinants of obesity<sup>2</sup>. The aim of this research was to examine associations between various social and environmental factors with risk of excess %body fat amongst adolescents in Ireland. Analyses are based on data collected from the nationally representative National Teens' Food Survey II (2019–2020) ([www.iuna.net](http://www.iuna.net)) (n = 428, 50% female). Percentage body fat (%BF) was measured via bioelectrical impedance using a Tanita BC-420MA body composition analyser, with %BF cut-offs applied to age and gender adjusted %BF z-scores<sup>3</sup>. Parental weight status was determined via application of WHO BMI ranges<sup>5</sup>. Socio-demographic and environmental factors were assessed via self-administered questionnaires, with screen time and energy expenditure (MET minutes/day) assessed using the Youth Physical Activity Questionnaire. Associations between socio-demographic and environmental factors with risk of adolescent overfat/obesity and % BF z-score were assessed via covariate adjusted binary logistic regression, ANCOVA and adjusted multiple linear regression. Overall, 23% of Irish adolescents were identified as having a %BF above the healthy range, with 13% classed as having obesity and 10% as having overfat. Maternal weight status was the strongest predictor of an unhealthy %BF in adolescence, with those who had a mother affected by obesity displaying 6.60-fold higher odds of having overfat/obesity compared to those whose mothers had a BMI within the normal range (95%CI 3.1-13.9,  $p \leq 0.001$ ). A less affluent parental social class also was associated with 3.95-fold higher odds of overfat/obesity in adolescents compared with the most affluent social class (95%CI 1.6-6.0,  $p \leq 0.001$ ). Median screen-time usage was higher amongst adolescents with overfat/obesity at 5.15 hours/day compared to 3.72 hours/day for adolescents classed as having a normal %BF ( $p < 0.001$ ), with 87% of adolescents with overfat/obesity exceeding the recommended screen-time limits of <2 hours/day<sup>5</sup>. Seventy percent of adolescents with overfat/obesity stated they generally obtained below the recommended 8-9 hours' sleep per night<sup>6</sup>, with insufficient sleep displaying a significant association with increased %BF z-score ( $\beta=0.128$ , 95%CI 0.13-0.82,  $p = 0.007$ ). Energy expenditure from physical activity, household location and paternal weight status did not display any overall significant associations with %BF in adolescents. A higher maternal weight status, lower affluence social class, increased screen time and insufficient sleep are associated with an increased risk of an unhealthy %BF in Irish adolescents. Socio-economic status, maternal factors and adolescent lifestyle behaviours exert a strong influence on the risk of an unhealthy body composition in adolescence, highlighting potential target areas for much-needed obesity prevention strategies for adolescents in Ireland.

### Acknowledgments

Many thanks to the participants, families, fieldworkers and staff of NTFSII. This research was funded by the Irish Department of Agriculture, Food and the Marine under the project 'National Teens' Food Consumption Survey II'.

### References

1. Irish Universities Nutrition Alliance (2022) *NTFSII Main Report*
2. Barriuso L, et al. (2015) *BMC Pediatrics*
3. McCarthy HD, et al. (2006) *Int J Obes*
4. Akram DS, et al. (2000) *WHO - Technical Report Series*
5. Marciano L & Camerini AL (2021) *Public Health*
6. Safefood (2022) *Healthy routines start with sleep*