

The Impact of Covid-19 on Obesity and Ultra-processed Food Intake in Adolescents and Young Adults: Interim Analysis from the PIE Study

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Introduction: A 10% increase in the diet's proportion of ultra-processed foods is associated with a higher risk of abdominal obesity (OR 1.07, 95% CI 1.01 to 1.13) as well as visceral obesity (OR 1.07, 95% CI 1.02 to 1.13) (Neri, 2022). Given that ultra-processed food intake now comprises 67% of the adolescent diet (Wang, 2021), there is growing interest in the impact of COVID-19 on obesity and ultra-processed food intake in adolescents and young adults.

Methods: This paper presents an interim analysis of the Processed Intake Evaluation (PIE) study enrolling 1800 participants, aged 13-19 years, in the US. The interim data is presented for the first 452 participants in the PIE study. For these participants, we calculated a composite PIE score (Processed Intake Evaluation) score, a scale of 0-100) averaged for consumption of different ultra-processed foods (1) before COVID-19 prior to 2020 (2) during COVID-19 restrictions 2020-2021 (3) after easing of COVID-19 restrictions in 2022.

Results: The participants' mean age was 16.6 ± 1.1 years, with 53% females. The processed food intake (PIE score) decreased from 56.2 (before COVID-19) to 52.6 (during COVID-19 restrictions) to 48.1 (now with COVID-19 restrictions eased). The respective decrease was 57.9 to 55.5 to 49.1 in male participants and 54.1 to 50.6 to 47.4 in female participants. Next, the study analyzed a panel of 23 behavioral nutritional factors and identified that less processed food stocked at home and fewer opportunities to eat processed food with peers had the highest association with this decrease during COVID-19. Next, we analyzed participants in high/low-risk groups based on obesity and diabetes in the participant or family. The high-risk group showed a muted decrease in ultra-processed food consumption from 57.7 (prior COVID) to 53.3 (COVID restrictions) to 53.0 (now). In contrast, the low-risk group showed a higher sustained decrease from 55.9 to 52.5 to 47.1. The differential decrease between the two groups was significant (-4.7 vs. -8.8 for the high/low-risk group, $p < 0.01$).

Conclusion: This study suggests that the ultra-processed food consumption in adolescents has decreased markedly during COVID-19. Further, the decrease has been sustainable and continued its downward trend even after easing pandemic restrictions. This downward trend related to COVID-19 will be confirmed in the final analysis of 1800 patients, however, this early data provides an encouraging signal that expanded research into COVID-19 impact on reduction in ultra-processed foods consumption and obesity may be warranted, and presents a window of opportunity to strengthen further nutritional and behavioral interventions targeted at adolescents and young adults for reducing obesity-related risk factors.

Presentation Type: e-Poster on demand

Location: Digital Poster Pods, ENDOExpo