

Nutrition Society Congress 2024, 2–5 July 2024

Comparison of dietary intake and physical activity in children and adolescents with or without non-alcoholic fatty liver disease

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Non-alcoholic fatty liver disease (NAFLD) affects 5.5–10% of children worldwide, while in individuals with obesity, it increases to almost 34%^{1,2}. Long-term dietary habits, leisure-time physical activity and sedentary activities have been proposed as modifiable risk factors for developing NAFLD in children/adolescents^{3,4}, however, data to date remain limited. The aim of this study was to investigate differences in dietary intake and physical activity between children/adolescents with overweight/obesity and NAFLD and children/adolescents with overweight/obesity without the disease.

A total of 106 children/adolescents with overweight/obesity, aged 12.5 ± 1.8 years, were included in the study, of whom 48 were diagnosed with NAFLD and 58 belonged to the control group. Participants in the two groups were matched for age, gender, body mass index, and Tanner stage. The diagnosis of NAFLD was based on elevated alanine aminotransferase (ALT) and/or abdominal ultrasound, followed by exclusion of other causes of secondary liver fat accumulation⁵.

Additionally, the dietary intake of the participants was assessed by four 24-hour recall method and analyzed for energy, macronutrients, and micronutrients using the Nutritionist Pro software program. The adherence to the Mediterranean Diet (MD) was assessed using the KIDMED index⁶. Physical activity was assessed using a questionnaire validated in the Greek population, the Self-Administered Physical Activity Checklist⁷. Each participant completed the above questionnaire 4 times together with the 24-hour recalls.

No significant differences in the energy intake and the intake of macro-/micro-nutrients were observed between children/adolescents with NAFLD and the control group (all $p > 0.05$). Regarding adherence to MD, there was no significant difference between children/adolescents with NAFLD and children/adolescents without NAFLD, with only 5% of the total sample demonstrating a high level of adherence to MD (score >8). Children/adolescents with NAFLD spent fewer minutes per day on physical activity compared with children/adolescents without NAFLD [49 (29, 70) min/day versus 67 (44, 95) min/day, $p = 0.006$]. In addition, children/adolescents with NAFLD spent more hours per day playing computer/video games compared with the control group [2.7 (1.4, 5.2) hours/day versus 1.9 (0.7, 3.3) hours/day, $p = 0.035$].

In conclusion, no differences in dietary intake in terms of energy, macro- and micro- nutrients intake were recorded between overweight/obese children/adolescents with and without NAFLD. Participation in physical activities was significantly lower, and time spent in sedentary activities was higher, in children/adolescents with NAFLD compared with their counterparts without NAFLD.

References

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