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Changes in psychological outcomes and sleep quality following energy restriction with and without almonds

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Associations between obesity and mental illness have been identified, but they are complex and bidirectional[1]. Weight loss interventions have been proposed as a potential strategy to improve mental health in individuals with overweight or obesity, but the evidence remains inconclusive[2]. Additionally, the role of specific foods in a weight loss diet and mental health outcomes is not well understood[3]. This study aimed to explore the association between weight loss (with and without almonds) and self-administered psychological and sleep assessments, including the Profile of Mood States (POMS), the Perceived Stress Scale (PSS), the Zung Self-Rating Depression Scale (ZSDS), and the Pittsburgh Sleep Quality Index (PSQI). Participants (n = 140, 47.5 ± 10.8 years) with overweight or obesity (BMI: 30.7 ± 2.3 kg/m^2) were randomised to an energy-controlled almond-enriched diet (AED) or nut-free diet (NFD). Psychological and sleep assessments were conducted at baseline, after 3 months of weight loss, and after 6 months of weight maintenance. Data were analysed using mixed-effects models and linear regression. For POMS, total mood disturbance score (TMDS) (60.2%, p = 0.01), fatigue-inertia (21.2%, p = 0.003), and vigor-activity (19.9%, p<0.001) improved over time (with no different between groups), with improvements associated with the magnitude of weight loss (TMDS: β = 0.059, p = 0.02; fatigue-inertia: β = 0.268, p = 0.016; vigor-activity: β=-0.194, p = 0.048). No significant changes were observed in tension-anxiety, depression-dejection, anger-hostility, or confusion-bewilderment. A significant group x time interaction (p = 0.048) was found for the PSS, which increased in the NFD group (10.1%) and decreased in the AED (1%) during the weight maintenance phase. No significant changes were observed for the ZSDS. The PSQI demonstrated significant improvement in both groups over time for sleep quality (11.3%, p<0.001), sleep latency (24.3%, p<0.001), sleep disturbance (39.2%, p = 0.04), and daytime dysfunction (290.4%, p<0.001), but not for sleep duration or habitual sleep efficiency. Summed scores, generating the global sleep score (GSS), demonstrated an overall significant improvement in both groups over time (33.5%, p<0.001), and these improvements were associated with weight loss (GSS: β = 0.863, p<0.001). The findings emphasise the importance of evaluating mental health outcomes in weight loss interventions and highlight the potential influence of weight management on mood and sleep quality. Further research is warranted to explore the impact of diet composition on perceived stress and other mental health outcomes.

Keywords: obesity; weight loss; sleep; mental health

Ethics Declaration

Yes

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