

Bupropion Use Reduce Body Mass Index in Adolescents

Bupropion is an antidepressant medication used to treat major depressive disorder and seasonal affective disorder. Bupropion is used to help people stop smoking by reducing cravings and other withdrawal effects. ⁽¹⁾

Over 20% of American adolescents have obesity and are at greater risk of serious health problems that continue into adulthood. Adolescents with overweight and obesity are more likely to smoke. Gaining weight is a barrier of smoking cessation for adolescents, particularly girls so approaches to smoking cessation that reduce weight gain would be the optimal solution. In adults, bupropion has been shown to limit post-cessation weight gain. ⁽²⁾

In a study conducted in 2016 they evaluated the role of Bupropion in weight loss through calculate the reduction of body mass index (BMI). They found that Bupropion significantly decrease (BMI) in overweight and obese patients taking Bupropion for smoking cessation. ⁽²⁾

A prospective, randomized, placebo-controlled, double-blind clinical trial was performed to compare Bupropion with placebo. A total of 296 adolescents between the ages of 14 to 17 years who smoked at least 6 cigarettes a day, exhaled carbon monoxide levels of over 10 ppm, had at least 2 past quit attempts were recruited and randomly assigned to placebo (n = 100), 150 mg/day (n = 101), or 300 mg/day (n = 95) SR bupropion hydrochloride. Participants took bupropion SR (150 mg/day or 300 mg/day) or placebo once a day for the first 3 days then twice a day for the remaining trial period which is six months. Weight and height were measured at baseline, weekly during the 6 weeks of treatment, and at week 26. The primary outcome of this analysis is the change in BMI z-score. Twenty-four percent of the participants at week 6, and 53% of participants at week 26 were lost to follow-up or were missing height and weight measurements. As a Result adolescents in the 300 mg/day group had a significant reduction in BMI z-score 6 weeks after quitting ($\beta = -0.16$, $CI = (-0.29, -0.04)$, $P\text{-value} = 0.01$). This result was not sustained at the 6-month follow-up. While the other two groups had diversity in results. ⁽²⁾

This study demonstrated that BMI increases can potentially be reduced in adolescents after smoking cessation with bupropion SR. These results are particularly relevant for adolescents who have either overweight or obesity, or have reservations about quitting for fear of gaining weight or BMI. ⁽²⁾

Mechanism of action of Bupropion is a relatively weak inhibitor of the neuronal uptake of norepinephrine and dopamine. The exact neurochemical effects of bupropion leading to weight loss are not fully understood. Effects may result from action on areas of the brain involved in the regulation of food intake: the hypothalamus (appetite regulatory center) and the mesolimbic dopamine circuit (reward system). ⁽³⁾

In a conclusion, the significant reduction in BMI *z*-score during smoking cessation with bupropion has important implications for the future of obesity.

References:

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