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Short- and long-term efficacy of different weight loss methods in obesity-related asthma: a systematic review and meta-analysis

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Asthma is a chronic inflammatory disease of the lungs, characterised by variable airflow limitation and symptoms including shortness of breath, wheezing, coughing and chest tightness⁽¹⁾. One in 9 Australians has asthma and 42% also have obesity⁽¹⁾. The risk of developing asthma doubles in people who have obesity⁽²⁾. While obesity is associated with increased severity of asthma⁽³⁾, people with obesity have more severe asthma symptoms, poorer lung function, reduced quality of life and an increased risk of an asthma exacerbation⁽³⁾. Response to medication also tends to be impaired, therefore limiting the efficacy of pharmaceutical management⁽⁴⁾. Obesity is associated with increased systemic inflammation and there is some evidence that this inflammation may extend to the airways of adults with asthma; with research suggesting obesity is associated with increased airway inflammation⁽⁵⁾. The impact of weight management on airway and systemic inflammation in asthma is unclear. Weight loss has been shown to improve asthma and, as such, has been recommended in asthma management guidelines⁽¹⁾. However, the ideal approach to sustainable weight loss in people with asthma is unknown. The aim of this systematic review is to determine both the short- and long-term efficacy of different obesity management approaches in adults with obesity and asthma, by systematically reviewing the literature. Medline, Embase, CINAHL, Scopus, Web of Science, Current Contents and Cochrane Central Register of Controlled Trials were searched up to January 2024, for obesity management interventions that assessed changes in clinical asthma outcomes, body composition, inflammation, and/or metabolic parameters. Studies were grouped by intervention type (lifestyle modification, pharmacotherapy, and bariatric surgery) and follow-up duration (< 12 months and ≥ 12 months). Eighteen lifestyle interventions, two pharmacotherapy and 17 surgical studies were included in the systematic review and 15 in the meta-analysis. All (n = 18) lifestyle interventions reported short-term results (< 12 months) and two reported long-term results (≥ 12 months). For surgical interventions, five reported short-term outcomes and 94% (16/17) reported long-term outcomes. 69% (9/13) of the lifestyle interventions observed statistically significant improvement in asthma symptoms in the short-term. Only 2 studies report long-term results (≥ 12 months) with improvements maintained in 50% (1/2) of studies. All surgical interventions (8/8) observed statistically significant long-term (≥ 12 months) improvements in asthma symptoms at twelve months. Research suggests that lifestyle interventions to manage obesity improve asthma symptoms in the short-term; however, the long-term efficacy is less certain due to the small number of studies. Surgical interventions show improved asthma symptoms at 12 months. Additional research is required to better understand the optimal obesity management approach and duration for adults with comorbid obesity and asthma.

References

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