

## A meta-analysis of the efficacy of smokeless tobacco for smoking cessation

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**Introduction and Aims:** Despite rigorous tobacco control strategies implemented globally, smoking remains prevalent. Swedish snus, a type of low-nitrosamine smokeless tobacco, could reduce tobacco-related harms. Scientific evaluations of the efficacy of smokeless tobacco appear conflicted. The present study aimed to systematically review the findings of studies assessing the efficacy of these products in smoking cessation.

**Method / Approach:** Randomised controlled trials (RCTs), longitudinal and cross-sectional studies that evaluated the effectiveness of Swedish snus and other low-nitrosamine smokeless tobacco products were identified using PubMed, Web of Science and PsycINFO. Random effect meta-analytic models were used to test the effect of smokeless tobacco for smoking cessation in RCTs, longitudinal, and cross-sectional studies.

**Results:** Use of smokeless tobacco products such as Swedish snus was associated with increased abstinence in longitudinal (RR = 1.38, 95% CI [1.05, 1.82],  $p = .022$ ) and cross-sectional (OR = 1.87, 95% CI [1.29, 2.72],  $p = .001$ ) studies. Leave-one-out analysis determined that the significant association in longitudinal studies was mainly driven by one finding, the removal of which yielded statistically non-significant results. Lastly, participants in RCTs that were randomised to receive smokeless tobacco did not have higher rates of abstinence when contrasted against those receiving nicotine replacement therapy or a nicotine-free control.

**Discussions and Conclusions:** There is weak evidence for the efficacy of smokeless tobacco in smoking cessation. Most of the evidence for support of smokeless tobacco was from cross-sectional studies conducted in Scandinavian countries.

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