

Is Switching Between Freebase and Nicotine Salt Liquid Associated with ENDS Use Dependence?

Qinghua Nian

Background

There are two formulations of nicotine in electronic nicotine delivery systems (ENDS): nicotine salt or freebase. Nicotine salt is increasingly used in the market and enhances the appeal and sensory experience of using high nicotine ENDS. Little is known about changes between nicotine formulation and whether maintenance or change is associated with ENDS dependence.

Methods

- From Dec. 2020 to Sep. 2022 (VAPER waves 2-4), 456 U.S. adults (21+) using ENDS frequently (5+ days/week) self-reported and uploaded photos of their most-used ENDS liquids via an online survey
- Nicotine formulation from coded photo data were used if available; if not, self-reported data were used
- The switching status of nicotine formulation was classified as: (1) using nicotine salt in three waves, (2) using freebase in three waves, (3) changing from freebase to salt (freebase-freebase-salt; freebase-salt-salt), (4) changing from salt to freebase (salt-salt-freebase; salt-freebase-freebase), and (5) changing back and forth (salt-freebase-salt; freebase-salt-freebase)
- ENDS dependence in wave 4 was measured in by a four-item E-cigarette Dependence Scale (EDS: range 0-4, 4 being most dependent)
- Data were analyzed using ANCOVA

U.S. adults who frequently use ENDS
and **consistently use nicotine salt liquids**
are more likely to have a
higher ENDS dependence than those
consistently using freebase liquids.



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Use Research (VAPER) Study

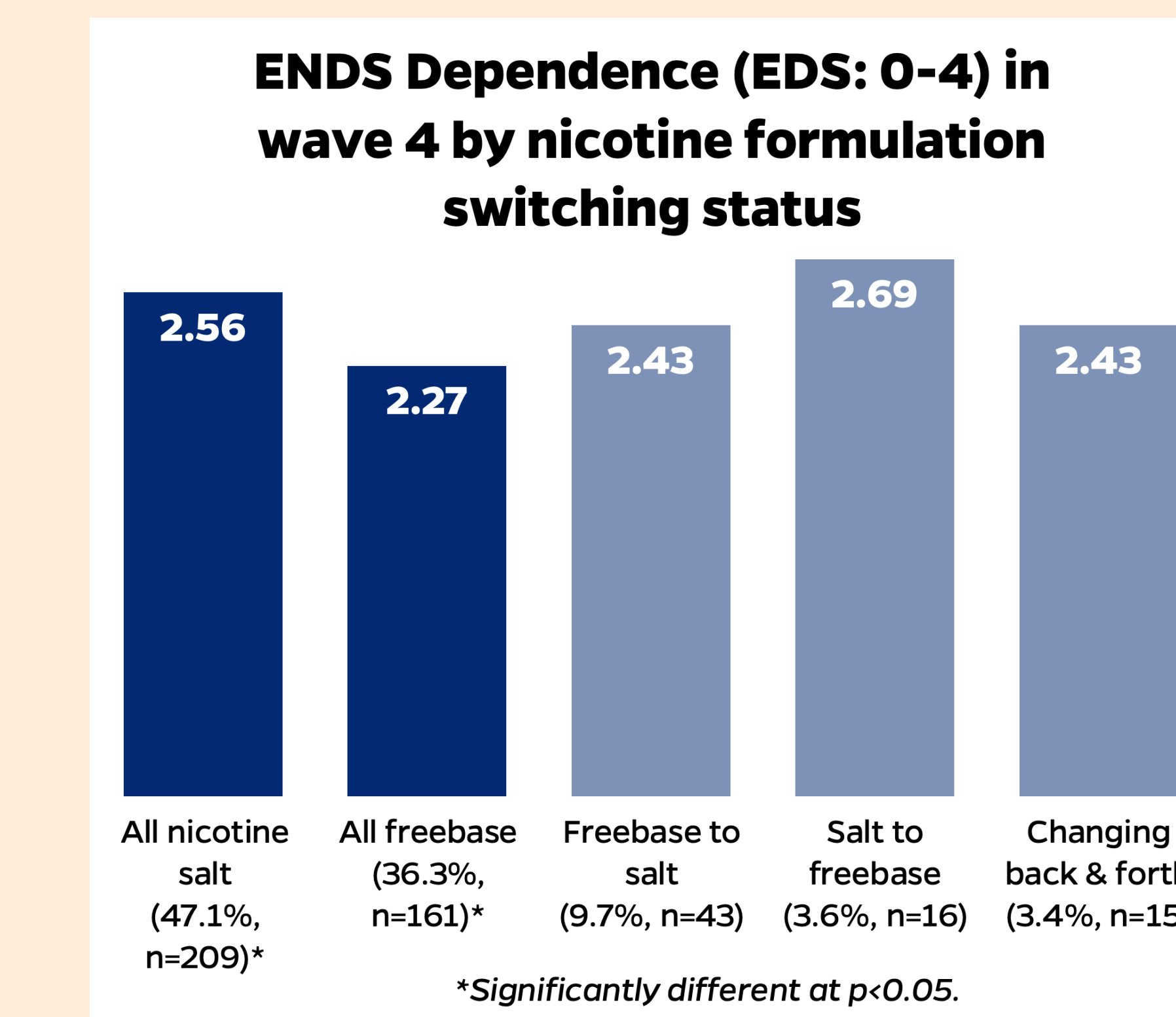
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Results

- Most adults (83.3%) frequently using ENDS did not change the nicotine formulation of their most-used liquid in all three waves



- After controlling for smoking status, participants using nicotine salt in three waves reported significantly higher ENDS dependence than those using freebase in three waves ($p < 0.01$)

Conclusions

- Over a 21-month period, participants consistently using nicotine salt liquids were more likely to have a higher ENDS dependence than those consistently using freebase liquids
- Understanding how switching between and maintaining use of freebase and nicotine salt liquid relates to ENDS dependence can inform nicotine formulation regulations that may impact addiction

Authors

Qinghua Nian, Jeffrey J. Hardesty, Joanna Cohen, Elizabeth Crespi, Joshua Sinamo, Ryan David Kennedy, Kevin Welding