

# Predictive power of dependence measures for quitting smoking. Findings from the 2016-2018 ITC Four Country Smoking and Vaping Surveys.

Le Grande, M., Borland, R., Bickel, W.K., Heckman, B.W., Yong, H.H., Cummings, K.M., Shang, C., O'Connor, R.J., McNeill, A.

## Abstract

**Objective:** To test whether urges to smoke and perceived addiction to smoking, have independent predictive value for quit attempts and short-term quit success over and above the Heaviness of Smoking Index (HSI).

**Methods:** Data were from the International Tobacco Control Four Country Smoking and Vaping Wave 1 (2016) and Wave 2 (2018) surveys. 3661 daily smokers (daily vapers excluded) provided data in both waves. A series of multivariable logistic regression models assessed the association of each dependence measure on odds of making a quit attempt and  $\geq 1$  month smoking abstinence.

**Results:** Of the 3661 participants, 1594 (43.5%) reported a quit attempt. Of those who reported a quit attempt, 546 (34.9%) reported short-term quit success. Fully adjusted models showed that making quit attempts was associated with lower HSI [adjusted odds ratio (aOR) = 0.81, 95% confidence interval (CI) = 0.73-0.90,  $P < 0.001$ ], stronger urges to smoke (aOR = 1.08, 95% CI = 1.04-1.20,  $P = 0.002$ ), and higher perceived addiction to smoking (aOR = 0.52, 95% CI 0.32-0.84,  $P = 0.008$ ). Lower HSI (aOR = 0.57, 95% CI = 0.40–0.87,  $P < 0.001$ ) weaker urges to smoke (aOR = 0.85, 95% CI = 0.76–0.95,  $P = 0.006$ ), and lower perceived addiction to smoking (aOR = 0.55, 95% CI = 0.32-0.91,  $P = 0.021$ ) were associated with greater odds of short-term quit success. In both cases overall  $R^2$  was around 0.5.

**Conclusions:** The two additional dependence measures were complementary to HSI adding explanatory power to smoking cessation models, but variance explained remains small.

**Implications:** Strength of urges to smoke and perceived addiction to smoking may significantly improve prediction of cessation attempts and short-term quit success over and above routinely assessed demographic variables and the HSI. Stratification of analyses by age group is recommended since the relationship between dependence measures and outcomes differ significantly for younger (age 18-39) compared to older (age over 40) participants. Even with the addition of these extra measures of dependence, the overall variance explained in predicting smoking cessation outcomes remains very low. These measures can only be thought of as assessing some aspects of dependence. Current understanding of the factors that ultimately determine quit success remains limited.

## Recommended Citation

Le Grande, M., Borland, R., Bickel, W.K., Heckman, B.W., Yong, H.H., Cummings, K.M., Shang, C., O'Connor, R.J., McNeill, A. (2020). Predictive power of dependence measures for quitting smoking. Findings from the 2016-2018 ITC Four Country Smoking and Vaping Surveys. *Nicotine and Tobacco Research*, [Published online, doi:<https://doi.org/10.1093/ntr/ntaa108>].

**Link:** <https://academic.oup.com/ntr/article-abstract/doi/10.1093/ntr/ntaa108/5859127>