

Smoke-Free Over 50: An Aging Challenge

By Jeffrey Smith



Better communication about the relative risk of different nicotine products, easier-to-use noncombustible products, and age-specific educational campaigns must be combined to make noncombustible alternatives more appealing and to help free older smokers from cycles of dependence and relapse.

Introduction

Nicotine dependence and withdrawal symptoms represent a formidable barrier to smoking cessation, particularly for adults over age 50—a group characterized by decades-long tobacco use and entrenched habits.¹ Although smoking rates among this cohort have declined over the past 25 years, they have lagged behind the declines seen in younger cohorts. Beyond physical addiction, issues like psychological reliance, health comorbidities, social triggers, and age-related challenges associated with reduced-risk alternatives further reinforce smoking among this population and add to the challenge.²

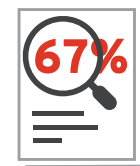
Despite the difficulties that those over age 50 face, current research on this population is sparse.³ This paper uses the extant data to explore the difficulties that smokers over age 50 face and highlights the interplay of physiological, psychological, and environmental factors that underscore the need for tailored interventions for those in this age group, and to address this pressing public health burden.

Nicotine Dependence and Withdrawal Symptoms

Research from the National Survey on Drug Use and Health (based on data from 2006 to 2019) indicates that 74.6 percent of U.S. smokers over age 50 smoke daily, reflecting moderate-to-high dependence on the Fagerström Test for Nicotine Dependence (FTND), with scores often ranging from 4 to 10.⁴ This long-term dependence complicates cessation for those over age 50, as prolonged smoking strengthens the addictive grip of nicotine over time.⁵

Withdrawal symptoms can also hinder quitting efforts in this age group. A longitudinal study found that 67 percent of smokers over age 50 reported withdrawal symptoms during attempts to quit, with 50 percent identifying cravings as the most severe.⁶ Additionally, a U.S. cohort study showed that 87 percent of adult smokers, including those over age 50, experienced withdrawal within one week of abstinence, with two-thirds reporting persistent cravings.⁷ Higher FTND scores (above 6) correlated with a 40 percent lower quit-success rate compared to scores below 4, emphasizing withdrawal's role as a barrier.⁸

Smoking rates among those over age 50 have declined over the past 25 years, though more slowly than in younger groups. In 1998, the National Health Interview Survey reported a smoking prevalence of 21.6 percent among adults aged 45 to 64 and 10.8 percent among



A longitudinal study found that 67 percent of smokers over age 50 reported withdrawal symptoms during attempts to quit, with 50 percent identifying cravings as the most severe.

those 65 and older.⁹ By 2022, smoking prevalence had dropped to 15.6 percent (ages 40 to 64) and 9.4 percent (65+), reflecting average annual percentage changes of -1.5 and -0.2, respectively.¹⁰ This contrasts with sharper declines in younger adults—for instance, ages 18 to 24 saw a -4.5 percent average annual shift—suggesting that older smokers may be less responsive to cessation campaigns.¹¹ From 1998 to 2022, the proportion of heavy smokers over age 50—defined as those who smoke more than 24 cigarettes daily—fell from 25 percent to 8 percent, yet 34 percent still smoked 15 to 24 cigarettes daily, indicating persistent dependence.¹²

The scope of the issue is evident in cessation outcomes: Only 6 percent of smokers over age 50 successfully quit each year, compared to higher quit rates in younger cohorts.¹³ Those with psychiatric comorbidities, which affect an estimated 28 percent of this group, consume 40 to 50 percent of U.S. cigarettes and report anxiety-related withdrawal in 60 percent of quit attempts, reducing success by 25 percent.¹⁴ While nicotine replacement therapies (NRTs) raise quit rates from 6 percent to 12 to 18 percent in the general population, efficacy diminishes in highly dependent older smokers without behavioral support.¹⁵ These trends underscore a critical need for tailored interventions for those older than age 50, as slower declines and severe withdrawal symptoms continue to fuel high smoking rates in this population.

Health Complications and Medication Interactions

Smoking-related health complications significantly hinder cessation efforts among adults over age 50, which is a population already disproportionately affected by chronic conditions, in part because of decades of tobacco use.¹⁶ Research shows that 70 percent of smokers over age 50 have at least one smoking-attributable condition, such as chronic obstructive pulmonary disease (COPD), cardiovascular disease (CVD), or cancer, compared to 40 percent of younger smokers.¹⁷ These comorbidities intensify nicotine dependence and withdrawal severity, reducing quit success. For instance, a study of patients with COPD (mean age 62) found that 68 percent exhibited high nicotine dependence, with only 5 percent achieving sustained abstinence each year, compared to 10 percent in smokers without COPD.¹⁸ The physical toll of these conditions (e.g., shortness of breath in COPD or fatigue in CVD) exacerbates withdrawal symptoms like irritability and anxiety, reported by 75 percent of older smokers during quit attempts.¹⁹

NRT, a cornerstone of cessation interventions, faces unique challenges in this group. Although NRT doubles quit rates in the general population (from 6 percent to 12 to 18 percent), its efficacy drops in older smokers with health complications.²⁰ For example, only 8 percent of smokers over age 50 with CVD sustained abstinence with NRT at six months versus 15 percent of healthier peers.²¹ This abstinence issue is partly due to side effects like elevated blood pressure, reported in 20 percent of users with heart disease. COPD patients also struggle disproportionately, with 60 percent resuming smoking within three months due to inadequate relief from cravings, which NRT often fails to fully address in high-dependence cases.²² The use of other medications, which is the case for 65 percent of smokers over age 50, further complicates NRT use, as drug interactions (e.g., with beta-blockers) can reduce tolerability.²³

One effective cessation aid and antidepressant, bupropion, illustrates the additional hurdles that smokers over age 50 face. Although the drug can increase quit rates by 50 to 100 percent in healthier smokers, its effectiveness wanes in older adults with comorbidities.²⁴ While no recent studies have taken up this issue, in a 2014 trial of smokers over age 50 with depression, only 12 percent achieved abstinence at one year with bupropion, compared to 20 percent of those without psychiatric conditions.²⁵ This was attributed to intensified withdrawal symptoms, side effects like insomnia, and seizure risks.²⁶

Psychological Dependence and Stress

Psychological dependence on smoking plays a pivotal role in perpetuating cigarette use among older adults. With time and continued use, smoking can become a long-standing coping mechanism for stressors such as chronic illness, anxiety, and depression, deepening



Research shows that 70 percent of smokers over age 50 have at least one smoking-attributable condition, such as chronic obstructive pulmonary disease, cardiovascular disease, or cancer, compared to 40 percent of younger smokers. These comorbidities intensify nicotine dependence and withdrawal severity, reducing quit success.

such behaviors' psychological grip. A study of older smokers (mean age 58) found that 55 percent identified smoking as their primary stress-relieving strategy, with 62 percent reporting increased cigarette use during stressful periods.²⁷ This reliance is rooted in nicotine's mood-regulating effects, with research showing that 70 percent of smokers over age 50 with high psychological dependence experienced elevated anxiety and irritability within 24 hours of abstinence, compared to 45 percent of less-dependent peers.²⁸

Stress creates a feedback loop that undermines quitting by exacerbating psychological dependence on smoking. Among smokers over age 50, 48 percent reported chronic stress from health or financial concerns, and those with higher stress levels smoked an average of 18 cigarettes daily versus 12 for low-stress counterparts.²⁹ Moreover, a 2014 longitudinal study revealed that 75 percent of older smokers with psychiatric comorbidities cited stress relief as a barrier to cessation, with only 7 percent achieving abstinence at one year, compared to 14 percent of smokers without such conditions.³⁰ Withdrawal amplifies this challenge; a 2009 study found that 60 percent of older smokers reported stress-related symptoms (e.g., tension, restlessness) during quit attempts, driving relapse rates to 85 percent within three months.³¹ More research is needed to determine if these statistics remain accurate, but without such research, little can be done to help older smokers.

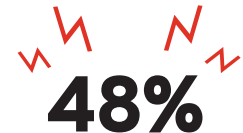
The impact of these factors on cessation is profound, as psychological dependence often outweighs physical nicotine dependence. In one study, researchers found that older smokers with high psychological dependence were 50 percent less likely to sustain abstinence than those with lower scores, even with medication-assisted therapy.³² Behavioral interventions targeting stress management have shown promise but are underutilized. A randomized trial found that cognitive-behavioral therapy (CBT) to help manage stress increased quit rates from 6 percent to 15 percent in smokers over age 50, but only 20 percent of cessation programs for this age group incorporate such strategies.³³ Although NRT alone doubles quit rates in the general population, it fails to address psychological triggers, which can be common in older patients; in fact, 65 percent of older smokers relapse due to stress within six months despite NRT use.³⁴

Critically, the tobacco-control narrative often overlooks psychological dependence, focusing on physical addiction. Yet for smokers over age 50, the emotional reliance on smoking perpetuates a cycle of dependence and relapse, which necessitates integrated cessation approaches.

Reduced Motivation and Self-Efficacy

Many older adults struggle to find the motivation to quit because of fatalistic beliefs—such as the idea that decades of smoking have caused irreversible damage—and low self-efficacy, which is a lack of confidence in their ability to quit. These types of barriers are especially pronounced in those over age 50 given their long smoking histories and higher rates of smoking-related health issues. One study of smokers aged 50 to 75 found that 58 percent believed that quitting would not reverse damage like lung or heart disease, correlating with a 40 percent lower likelihood of quit attempts compared to those optimistic about cessation benefits.³⁵ Health realities validate this fatalism: 70 percent of smokers over age 50 have at least one smoking-related condition, fueling perceptions that quitting is futile.³⁶ Additionally, analyzing data from the Health and Retirement Study (HRS) of adults aged 51 to 61 who were followed from 1992 to 1998 found that although serious health events (e.g., heart attacks, cancer) tripled cessation rates, many older smokers who did not suffer a serious health event kept smoking, suggesting that—without a disruptive health event—fatalistic attitudes deterred proactive quitting.³⁷ More research is needed to determine how these statistics translate in the current landscape.

Low self-efficacy further erodes motivation. Research has shown that 62 percent of smokers over age 50 rated their self-efficacy as low, compared to only 38 percent of those under 40.³⁸ Past failure also plays a role: 55 percent had three or more unsuccessful attempts, and each attempt reduced their confidence by 35 percent.³⁹ Older smokers who reduced the



48%

Among smokers over age 50, 48 percent reported chronic stress from health or financial concerns, and those with higher stress levels smoked an average of 18 cigarettes daily versus 12 for low-stress counterparts.

quantity they smoked (e.g., > 50 percent reduction) were nearly three times more likely to quit, suggesting that small successes can boost self-efficacy. Yet only 29 percent of smokers from the HRS reduced consumption significantly, and among those who did not reduce their consumption, cessation rates remained low (6 percent), reflecting limited confidence in quitting without prior progress.

Together, these factors stifle cessation efforts. Smokers over age 50 with both fatalistic beliefs and low self-efficacy were 47 percent less likely to attempt quitting and typically smoked 20 cigarettes daily versus 14 for motivated peers.⁴⁰ Among patients with COPD, (mean age 62), 65 percent felt that “the damage is done,” with self-efficacy dropping 25 percent post-diagnosis and relapse rates reaching 80 percent within three months.⁴¹ Importantly, interventions like counseling have been shown to increase quit attempts by 30 percent, and CBT with pharmacotherapy has been shown to boost self-efficacy by 20 percent and increase quit rates to 15 percent overall.⁴² Unfortunately, only 25 percent of those hoping to quit have access to such support.⁴³ These findings suggest that reduction strategies could help build confidence, but current interventions often underestimate the psychological hurdles that older smokers face. Thus, working to tailor approaches toward reshaping beliefs and boosting confidence in this population could have far-reaching, positive impacts.

Social and Environmental Triggers

Older adults who smoke have unique social and environmental triggers that intensify cravings, complicating efforts to quit. A small qualitative study of e-cigarette users revealed that 55 percent of older smokers preferred NRT products that mimicked the hand-to-mouth action and smoke exhalation of cigarettes, which oral products lacked, leading to a 50 percent lower adoption rate for pouches (8 percent versus 16 percent for e-cigarettes).⁴⁴ Moreover, neuroimaging data from 1994 shows that ritual cues (e.g., lighting a cigarette) trigger a 25 percent greater dopamine release in smokers over age 50 than they do in younger adults, which reinforces the older generation’s resistance to change.⁴⁵ Among those with entrenched smoking habits, 70 percent relapsed within three months of trying alternatives, citing ritual disruption as the primary reason.⁴⁶

Many adults over age 50 live in environments where smoking is normalized or socially reinforced, making it more difficult to abstain. Research shows that 60 percent of smokers over age 50 report daily exposure to smoking cues, such as seeing others smoke or frequenting smoking-permissive environments, compared to 45 percent of those under 40.⁴⁷ These triggers intensify cravings, with one study finding that older smokers rated cravings as 30 percent higher (on a 0 to 100 scale) when exposed to social cues like friends smoking, which was correlated with a 50 percent higher relapse rate within one month.⁴⁸

In a comprehensive study done in 1994, a randomized trial of 1,447 smokers aged 50 to 74 from the American Cancer Society’s Smoking Cessation Program highlighted the significance of social context.⁴⁹ The study reported that 68 percent of participants lived with another smoker, finding that this group was 40 percent less likely to quit at 12 months (10 percent success rate) compared to those in nonsmoking households (17 percent success rate).⁵⁰ Social support deficits compounded the issue: Only 35 percent of participants reported being encouraged to quit by peers, and those lacking support faced a 25 percent lower cessation rate.⁵¹ Environmental triggers, such as proximity to tobacco outlets (noted by 52 percent of participants), further fueled cravings, with daily exposure linked to a 33 percent increase in smoking frequency.⁵²

The potency of these triggers is tied to long-term conditioning. A neuroimaging study revealed that smokers over age 50 showed 20 percent greater activation in reward-related brain regions when exposed to smoking cues versus neutral stimuli, compared to a 12 percent increase in younger smokers, reflecting stronger cue-reactivity with longer-term use.⁵³ This heightened response drives relapse. In fact, 70 percent of older smokers cited environmental triggers (e.g., frequenting coffee shops and bars where patrons smoke) as the primary reason for resuming smoking within three months of a quit attempt, versus 55 percent of younger



Research shows that 60 percent of smokers over age 50 report daily exposure to smoking cues, such as seeing others smoke or frequenting smoking-permissive environments, compared to 45 percent of those under 40. These triggers intensify cravings.

adults. Dependence amplifies this response, with 74 percent of daily smokers over age 50 reporting cravings triggered by social settings.⁵⁴

Interventions often fall short of mitigating these effects. Although behavioral counseling has been shown to reduce trigger-induced cravings by 15 percent in older smokers, quit rates remained low (8 percent at six months) without environmental restructuring.⁵⁵ Other research has found that self-help materials doubled quit attempts (from 15 percent to 30 percent), but sustained abstinence lagged (12 percent) because of persistent social triggers.⁵⁶ These findings underscore the need for strategies like peer support and cue-avoidance training to address the unique social and environmental burdens faced by older smokers.

Misperceptions of Risk

Older smokers are less likely to adopt reduced-risk nicotine products than younger smokers, despite evidence that these products pose fewer health risks than combustible cigarettes.⁵⁷ A primary reason for this is misperceptions about their relative risk.⁵⁸ For example, research from the Population Assessment of Tobacco and Health study found that 63 percent of smokers over age 50 believed that e-cigarettes were as harmful as or more harmful than combustible cigarettes, compared to 54 percent of younger smokers; this reduced older individuals' likelihood of switching by 35 percent.⁵⁹ Similarly, for those over age 50, 58 percent overestimated the risks of nicotine pouches and e-cigarettes, and 45 percent cited media reports of vaping-related lung injuries (e.g., e-cigarette or vaping use-associated lung injury, or EVALI) as justification for their estimate, despite cases of EVALI being linked to illicit THC products, not nicotine vaping.⁶⁰ These misperceptions are problematic, as 70 percent of deaths from smoking-related diseases in this age group are attributed to combustible cigarettes, and e-cigarettes deliver nicotine with 95 percent fewer harmful toxicants.⁶¹

These misperceptions also translate into low switching rates. In the study noted above, those over age 50 with risk misperceptions were 50 percent less likely to consider switching from combustible cigarettes than those with accurate risk perceptions.⁶² The older smokers also expressed skepticism about long-term safety data, with 67 percent believing that noncombustible products carried unknown risks equivalent to combustible products—a view reinforced by unclear public health messaging.⁶³ Additionally, a longitudinal study found that only 12 percent of smokers over age 50 transitioned exclusively to e-cigarettes over two years, compared to 20 percent of those under age 40, with 40 percent of non-switchers citing risk beliefs as a deterrent.⁶⁴ A 2004 study found that misperceptions are similarly prevalent among oral tobacco users: 55 percent of older smokers viewed smokeless tobacco as equally carcinogenic as cigarettes, despite evidence that such products have an 80 to 90 percent lower risk of oral cancer.⁶⁵ Nicotine dependence compounds misperception issues, with 74 percent of daily smokers over age 50 (with FTND scores ≥ 6) preferring familiar cigarettes over unfamiliar alternatives.⁶⁶

Efforts to correct misperceptions show promise but face challenges. One study reported that educational interventions increased accurate risk perceptions by 25 percent in older smokers, yet only 15 percent switched to e-cigarettes within six months, largely because of entrenched habits or distrust in harm reduction.⁶⁷ Other researchers found that tailored messaging emphasizing relative risk (e.g., “e-cigarettes are less harmful than smoking”) boosted interest in reduced-risk products by 30 percent, but uptake lagged without peer endorsement.⁶⁸ These findings challenge the narrative that older smokers reject alternatives solely from habit, highlighting how risk misperceptions—driven by misinformation and poor communication—limit harm reduction potential.

Physical and Cognitive Challenges with Switching to Noncombustibles

Some smokers experience new physical and cognitive demands when switching to noncombustible nicotine products. Physical challenges common in the aging population, such as reduced dexterity and heightened sensory issues—like increased throat or eye



Misperceptions of risk are problematic, as 70 percent of deaths from smoking-related diseases in this age group are attributed to combustible cigarettes, and e-cigarettes deliver nicotine with 95 percent fewer harmful toxicants.

irritation—can complicate a switch to lower-risk e-cigarettes.⁶⁹ Fifty percent of those over age 65 experience arthritis or tremors, which make device maintenance on e-cigarettes (e.g., refilling or battery changes) difficult.⁷⁰ Additionally, a study of smokers over age 50 found that 35 percent reported the handling of e-cigarettes as “too fiddly,” which reduced their willingness to switch by 30 percent compared to those without motor difficulties.⁷¹

Oral tobacco and nicotine pouches pose fewer mechanical demands but introduce other issues. For instance, 25 percent of older users reported discomfort from prolonged gum placement, and 15 percent struggled with swallowing, which is a common difficulty in 20 percent of individuals in this age group.⁷²

Cognitive challenges further impede the adoption of these newer products. A study analyzing 1,416 Australian smokers (30 percent of whom were over age 50) from the International Tobacco Control Four Country Survey found that older participants rated e-cigarettes as more difficult to understand, 45 percent of whom were unsure how to use them effectively, citing issues with puffing technique and dosage.⁷³ This group was also 25 percent less likely to try e-cigarettes than younger peers, citing cognitive overload as a barrier, particularly among those with mild cognitive impairment (which is present in 16 percent of smokers over age 50).⁷⁴ Similarly, 30 percent of older smokers found nicotine pouch instructions confusing, which reduced uptake of that product to 8 percent versus 15 percent among younger adults.⁷⁵

As with misperceptions, these physical and cognitive barriers also translate into lower switching success. Among smokers over age 50 with high nicotine dependence, only 10 percent sustained noncombustible use at six months, with 50 percent reverting to combustible cigarettes because of usability issues.⁷⁶ Interventions show potential: Simplified devices were shown to increase e-cigarette adoption by 20 percent in older smokers, and education raised pouch use by 15 percent, yet overall switching remained low (12 percent) without ongoing support.⁷⁷ This suggests that familiarity with cigarettes outweighs novel products’ benefits and underscores the need for both age-specific designs and age-specific training to help older users overcome physical and cognitive hurdles.

Conclusion

Older smokers face persistent challenges when attempting to overcome nicotine dependence and withdrawal symptoms. Their struggles underscore the critical public health challenge of persistent combustible cigarette use among this group—a problem that is exacerbated by decades-long smoking behaviors, chronic health conditions, and deeply ingrained psychological and social habits. This paper identifies a need to invest resources in novel approaches to address the prevalence of smoking in older individuals, specifically. The clear dearth of modern research on this population similarly identifies the vital need for public health resources to support research.⁷⁸

Despite a gradual decline in smoking prevalence among all populations of smokers, older adults remain less responsive to cessation efforts than younger cohorts, with only 6 percent quitting annually and many relapsing because of intense cravings, stress responses, and environmental cues.⁷⁹ Pharmacological aids like NRT and bupropion are options worth considering, but have shown only limited success in older populations.⁸⁰ Moreover, without addressing underlying psychological dependence, low self-efficacy, and physical and cognitive challenges, any attempt to assist older smokers in their journey away from combustible cigarettes will often fall short of long term success. Better communication about the relative risk of different nicotine products, easier-to-use noncombustible products, and age-specific educational campaigns must be combined to make noncombustible alternatives more appealing and to help free older smokers from cycles of dependence and relapse.



Physical and cognitive barriers also translate into lower switching success. Among smokers over age 50 with high nicotine dependence, only 10 percent sustained noncombustible use at six months, with 50 percent reverting to combustible cigarettes because of usability issues.

About the Author

Jeffrey Smith is a behavioral neuroscientist and resident senior fellow in the R Street Institute’s integrated harm reduction program.

Endnotes

1. "Smoking Cessation: A Report of the Surgeon General," U.S. Department of Health and Human Services, 2020. <https://www.hhs.gov/sites/default/files/2020-cessation-sgr-full-report.pdf>.
2. Mohammad Reza Masjedi et al., "Determinants of smoking cessation in elderly people: A review," *Journal of Health in the Field* 12:1 (2024). <https://journals.sbm.ac.ir/jhf/article/download/44535/33696/231259>.
3. Bethea A. Kleykamp and Jessica A. Kulak, "Cigarette Use Among Older Adults: A Forgotten Population," *American Journal of Public Health* 113:1 (Dec. 14, 2022), pp. 27-29. <https://ajph.aphapublications.org/doi/abs/10.2105/AJPH.2022.307151>.
4. Beth Han et al., "Patterns and Characteristics of Nicotine Dependence Among Adults With Cigarette Use in the US, 2006-2019," *JAMA Network Open* 6:6 (2023). <https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2806505>.
5. Bridget F. Grant et al., "Nicotine Use and DSM-IV Nicotine Dependence in the United States, 2001-2002 and 2012-2013," *American Journal of Psychiatry* 177:11 (Aug. 14, 2020), pp. 1082-1090. <https://psychiatryonline.org/doi/abs/10.1176/appi.ajp.2020.19090900>.
6. Zhao Liu et al., "Prevalence of tobacco dependence and associated factors in China: Findings from nationwide China Health Literacy Survey during 2018-19," *The Lancet Regional Health Western Pacific* 24 (July 2022). [https://www.thelancet.com/journals/lanwpc/article/PIIS2666-6065\(22\)00079-7/fulltext?uuiid=uid%3A23c4e91c-57f0-40f3-86b5-001224894585](https://www.thelancet.com/journals/lanwpc/article/PIIS2666-6065(22)00079-7/fulltext?uuiid=uid%3A23c4e91c-57f0-40f3-86b5-001224894585).
7. Judith J. Prochaska and Neal L. Benowitz, "Current advances in research in treatment and recovery: Nicotine addiction," *Science Advances* 5:10 (Oct. 16, 2019). <https://www.science.org/doi/full/10.1126/sciadv.aay9763>.
8. Alexei V. Prokhorov et al., "Nicotine dependence, withdrawal symptoms, and adolescents' readiness to quit smoking," *Nicotine & Tobacco Research* 3:2 (May 2001), pp. 151-155. <https://academic.oup.com/ntr/article-abstract/3/2/151/1121177>.
9. Centers for Disease Control and Prevention, "Cigarette Smoking Among Adults—United States, 1998," *Morbidity and Mortality Weekly Report* 49:39 (October 2000), pp. 881-884. <https://www.cdc.gov/mmwr/preview/mmwrhtml/mm4939a1.htm>.
10. Rafael Meza et al., "Trends in US Adult Smoking Prevalence, 2011 to 2022," *JAMA Health Forum* 4:12 (2023). <https://jamanetwork.com/journals/jama-health-forum/fullarticle/2812427>.
11. Ibid.
12. "Tobacco Trends Brief," American Lung Association, last accessed April 11, 2025. <https://www.lung.org/research/trends-in-lung-disease/tobacco-trends-brief>.
13. "Tobacco," World Health Organization, July 31, 2023. <https://www.who.int/news-room/fact-sheets/detail/tobacco>.
14. Philip H. Smith et al., "Cigarette Smoking and Mental Illness: A Study of Nicotine Withdrawal," *American Journal of Public Health* 104:2 (February 2014), pp. e127-e133. <https://ajph.aphapublications.org/doi/abs/10.2105/AJPH.2013.301502>.
15. "Nicotine Dependence (Tobacco Use Disorder)," Cleveland Clinic, last accessed April 11, 2025. <https://my.clevelandclinic.org/health/diseases/24482-nicotine-dependence>.
16. Daniel M. Doolan and Erika Sivarajan Froelicher, "Smoking Cessation Interventions and Older Adults," *Progress in Cardiovascular Nursing* 23:3 (2008), pp. 119-127. <https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1751-7117.2008.00001.x>.
17. Brian D. Carter et al., "Smoking and Mortality—Beyond Established Causes," *The New England Journal of Medicine* 372:7 (Feb. 12, 2015), pp. 631-640. <https://www.nejm.org/doi/abs/10.1056/NEJMsa1407211>.
18. Donald P. Tashkin, "Smoking Cessation in Chronic Obstructive Pulmonary Disease," *Respiratory and Critical Care Medicine* 36:04 (2015) pp. 491-507. <https://www.thieme-connect.com/products/ejournals/html/10.1055/s-0035-1555610>.
19. Sharon M. Hall et al., "Extended treatment of older cigarette smokers," *Addiction* 104:6 (June 2009), pp. 1043-1052. <https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1360-0443.2009.02548.x>.
20. Lindsay F. Stead et al., "Nicotine replacement therapy for smoking cessation," *Cochrane Database of Systematic Reviews* (Nov. 14, 2012). <https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD000146.pub4/abstract>.
21. Ibid.
22. Donald P. Tashkin et al., "Effects of Varenicline on Smoking Cessation in Patients With Mild to Moderate COPD: A Randomized Controlled Trial," *Chest* 139:3 (March 2011), pp. 591-599. <https://www.sciencedirect.com/science/article/pii/S001236921160127X>.
23. Carter et al. <https://www.nejm.org/doi/abs/10.1056/NEJMsa1407211>.
24. John R. Hughes et al., "Anxiolytics for smoking cessation," *Cochrane Database of Systematic Reviews* 4 (Oct. 23, 2000). <https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD002849/abstract>.
25. Smith et al. <https://ajph.aphapublications.org/doi/abs/10.2105/AJPH.2013.301502>.
26. Ibid.
27. Hall et al. <https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1360-0443.2009.02548.x>.
28. Karl Fagerström, "Determinants of Tobacco Use and Renaming the FTND to the Fagerström Test for Cigarette Dependence," *Nicotine & Tobacco Research* 14:1 (2011), pp. 75-78. <https://academic.oup.com/ntr/article-abstract/14/1/75/1047894>.
29. Jean-François Etter and John A. Stapleton, "Nicotine replacement therapy for long-term smoking cessation: a meta-analysis," *Tobacco Control* 15:4 (2006), pp. 280-285. <https://tobaccocontrol.bmj.com/content/15/4/280.short>.
30. Smith et al. <https://ajph.aphapublications.org/doi/abs/10.2105/AJPH.2013.301502>.
31. Hall et al. <https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1360-0443.2009.02548.x>.
32. Robert J. Wellman et al., "A comparison of the Hooked on Nicotine Checklist and the Fagerström Test for Nicotine Dependence in Adult Smokers," *Nicotine & Tobacco Research* 8:4 (August 2006), pp. 575-580. <https://academic.oup.com/ntr/article-abstract/8/4/575/1072297>.
33. Hall et al. <https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1360-0443.2009.02548.x>.
34. Etter and Stapleton. <https://tobaccocontrol.bmj.com/content/15/4/280.short>.
35. Hua-Hie Yong et al., "Do predictors of smoking relapse change as a function of duration of abstinence? Findings from the United States, Canada, United Kingdom and Australia," *Addiction* 113:7 (July 2018), pp. 1295-1304. <https://onlinelibrary.wiley.com/doi/abs/10.1111/add.14182>.
36. Carter et al. <https://www.nejm.org/doi/abs/10.1056/NEJMsa1407211>.
37. Tracy Falba et al., "Reduction of quantity smoked predicts future cessation among older smokers," *Addiction* 99:1 (January 2004), pp. 93-102. <https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1360-0443.2004.00574.x>.
38. Michael Chaiton et al., "Estimating the number of quit attempts it takes to quit smoking successfully in a longitudinal cohort of smokers," *BMJ Open* 6:6 (June 9, 2016). <https://bmjopen.bmj.com/content/6/6/e011045>.
39. Ibid.
40. Yong et al. <https://onlinelibrary.wiley.com/doi/abs/10.1111/add.14182>.
41. Carlos A. Jiménez-Ruiz et al., "Statement on smoking cessation in COPD and other pulmonary diseases and in smokers with comorbidities who find it difficult to quit," *European Respiratory Journal* 46:1 (2015), pp. 61-79. <https://publications.ersnet.org/content/erj/46/1/61.abstract>.
42. Hall et al. <https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1360-0443.2009.02548.x>.

43. Ibid.
44. Vani Nath Simmons et al., "E-cigarette use in adults: a qualitative study of users' perceptions and future use intentions," *Addiction Research Theory* 24:4 (Feb. 23, 2016), pp. 313-321. <https://pmc.ncbi.nlm.nih.gov/articles/PMC5055066>.
45. Arthur L. Brody et al., "Cigarette Smoking Saturates Brain α 4 β 2 Nicotinic Acetylcholine Receptors," *Archives of General Psychiatry* 63:8 (2006), pp. 907-914. <https://jamanetwork.com/journals/jamapsychiatry/article-abstract/668192>.
46. Cynthia A. Conklin et al., "Examining the relationship between cue-induced craving and actual smoking," *Experimental and Clinical Psychopharmacology* 23:2 (April 2015), pp. 90-96. <https://psycnet.apa.org/fulltext/2015-08349-001.html>.
47. Saul Shiffman et al., "Smoking Patterns and Stimulus Control in Intermittent and Daily Smokers," *PLoS ONE* 9:3 (March 5, 2014). <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0089911>.
48. Conklin et al. <https://psycnet.apa.org/fulltext/2015-08349-001.html>.
49. C. Tracy Orleans et al., "Quitting motives and barriers among older smokers. The 1986 adult use of tobacco survey revisited," *Cancer* 74:S7 (Oct. 1, 1994), pp. 2055-2061. [https://acsjournals.onlinelibrary.wiley.com/doi/abs/10.1002/1097-0142\(19941001\)74:7+%3C2055::AID-CNCR2820741712%3E3.0.CO;2-Q](https://acsjournals.onlinelibrary.wiley.com/doi/abs/10.1002/1097-0142(19941001)74:7+%3C2055::AID-CNCR2820741712%3E3.0.CO;2-Q).
50. Ibid.
51. Ibid.
52. Ibid.
53. Amy C. Janes et al., "Brain Reactivity to Smoking Cues Prior to Smoking Cessation Predicts Ability to Maintain Tobacco Abstinence," *Biological Psychiatry* 67:8 (April 15, 2010), pp. 722-729. https://www.sciencedirect.com/science/article/pii/S0006322310000107?casa_token=ADlpeXLLW0AAAAA:3fU9gY9U7iGysM1xkRTfkQMeC5tPztHkLeNCzae3cOEgmkwMJw1HxXzkKmjx7l2JQQ9dYNmDM.
54. Han et al. <https://jamanetwork.com/journals/jamanetworkopen/article-abstract/2806505>.
55. Hall et al. <https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1360-0443.2009.02548.x>.
56. Orleans et al. [https://acsjournals.onlinelibrary.wiley.com/doi/abs/10.1002/1097-0142\(19941001\)74:7+%3C2055::AID-CNCR2820741712%3E3.0.CO;2-Q](https://acsjournals.onlinelibrary.wiley.com/doi/abs/10.1002/1097-0142(19941001)74:7+%3C2055::AID-CNCR2820741712%3E3.0.CO;2-Q).
57. Dana Rubenstein et al., "Older age is associated with greater misperception of the relative health risk of e-cigarettes and cigarettes among US adults who smoke," *Tobacco Control* 33:2 (2024), pp. 266-269. <https://tobaccocontrol.bmj.com/content/33/e2/e266.abstract>.
58. Ibid.
59. Tara Elton-Marshall et al., "Adult perceptions of the relative harm of tobacco products and subsequent tobacco product use: Longitudinal findings from waves 1 and 2 of the population assessment of tobacco and health (PATH) study," *Addictive Behaviors* 106 (July 2020). https://www.sciencedirect.com/science/article/pii/S0306460319305507?casa_token=8DS7uPYjO6QAAAAA:h6vRkvi2jDO0KRiEDymBrgQvP9o4uc_egYEHb_05UlcWhi736NRzQkozntvvnFa4MZqTldNq_-c.
60. Ann McNeill et al., "Evidence review of e-cigarettes and heated tobacco products 2018: A report commissioned by Public Health England," Public Health England, February 2018. https://assets.publishing.service.gov.uk/media/5a981c6740f0b67aa27253cc/Evidence_review_of_e-cigarettes_and_heated_tobacco_products_2018.pdf.
61. Ibid.
62. Olivia A. Wackowski et al., "Smokers' perceptions of risks and harm from snus relative to cigarettes: A latent profile analysis study," *Addictive Behaviors* 91 (April 2019), pp. 171-174. https://www.sciencedirect.com/science/article/pii/S0306460318313091?casa_token=g5lReF9GtpUAAAAA:UWgvVBFXX7xu6rzMAYhpXxb2ZiQa1KWM-VaMLQgw1ehOh9QR2GelXesZaMQC1YSWkER-imnGAuY.
63. Ibid.
64. Karin A. Kasza et al., "Correlates of Transitions in Tobacco Product Use by U.S. Adult Tobacco Users between 2013–2014 and 2014–2015: Findings from the PATH Study Wave 1 and Wave 2," *Environmental Research and Public Health* 15:11 (Nov. 14, 2018). <https://www.mdpi.com/1660-4601/15/11/2556>.
65. David T. Levy et al., "The Relative Risks of a Low-Nitrosamine Smokeless Tobacco Product Compared with Smoking Cigarettes: Estimates of a Panel of Experts," *Cancer Epidemiology, Biomarkers & Prevention* 13:12 (2004), pp. 2035-2042. <https://aacrjournals.org/cebpa/article-abstract/13/12/2035/256250>.
66. Han et al. <https://jamanetwork.com/journals/jamanetworkopen/article-abstract/2806505>.
67. Elton-Marshall et al. https://www.sciencedirect.com/science/article/pii/S0306460319305507?casa_token=8DS7uPYjO6QAAAAA:h6vRkvi2jDO0KRiEDymBrgQvP9o4uc_egYEHb_05UlcWhi736NRzQkozntvvnFa4MZqTldNq_-c.
68. Wackowski et al. https://www.sciencedirect.com/science/article/pii/S0306460318313091?casa_token=g5lReF9GtpUAAAAA:UWgvVBFXX7xu6rzMAYhpXxb2ZiQa1KWM-VaMLQgw1ehOh9QR2GelXesZaMQC1YSWkER-imnGAuY.
69. Neil McKeganey and Tiffany Dickson, "Why Don't More Smokers Switch to Using E-Cigarettes: The Views of Confirmed Smokers," *International Journal of Environmental Research and Public Health* 14:6 (2017). <https://www.mdpi.com/1660-4601/14/6/647>.
70. Carter et al. <https://www.nejm.org/doi/abs/10.1056/NEJMsa1407211>.
71. Simmons et al. <https://pmc.ncbi.nlm.nih.gov/articles/PMC5055066>.
72. Levy et al. <https://aacrjournals.org/cebpa/article-abstract/13/12/2035/256250>.
73. Laura Twyman et al., "Perceived barriers to smoking cessation in selected vulnerable groups: a systematic review of the qualitative and quantitative literature," *BMJ Open* 4:12 (Dec. 22, 2014). <https://bmjopen.bmj.com/content/4/12/e006414.short>.
74. Ibid.
75. Levy et al. <https://aacrjournals.org/cebpa/article-abstract/13/12/2035/256250>.
76. Han et al. <https://jamanetwork.com/journals/jamanetworkopen/article-abstract/2806505>.
77. Simmons et al. <https://pmc.ncbi.nlm.nih.gov/articles/PMC5055066>.
78. Kleykamp and Kulak. <https://ajph.aphapublications.org/doi/abs/10.2105/AJPH.2022.307151>.
79. Lauren J. Hunt et al., "The Epidemiology of Smoking in Older Adults: A National Cohort Study," *Journal of General Internal Medicine* 38:7 (Dec. 20, 2022), pp. 1697-1704. <https://link.springer.com/article/10.1007/s11606-022-07980-w>.
80. Philip B. Cawkwell et al., "Pharmacological Smoking Cessation Therapies in Older Adults: A Review of the Evidence," *Drugs & Aging* 32 (May 30, 2015), pp. 443-451. <https://link.springer.com/article/10.1007/s40266-015-0274-9>.