

Epidemiology

Reasons to quit and barriers to quitting smoking in US young adults

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Abstract

Background. Young adulthood provides an enormous opportunity to alter trajectories of smoking behaviour for a large public health impact.

Objective. The purpose of this study was to examine correlates of perceived barriers to quitting smoking and reasons to quit in a sample of young adult current and former smokers.

Methods. This study used data from the 2011 National Young Adult Health Survey, a random-digit-dial cellphone survey. Participants were US young adult current smokers aged 18–34 ($n = 699$) and young adults who were either current smokers who had made a quit attempt in the past-year ($n = 402$) or former smokers ($n = 289$). Correlates of barriers to quitting smoking and reasons for quitting smoking were assessed using bivariate and multivariable analyses.

Results. More than half of current smokers identified ‘loss of a way to handle stress’ (59%) and ‘cravings or withdrawal’ (52%) as barriers to quitting. Female gender, daily smoking and intention to quit remained significantly associated with endorsing ‘loss of a way to handle stress’ as a barrier to quitting in multivariable analyses. The two most popular reasons for quitting smoking were physical fitness (64%) and the cost of tobacco (64%).

Conclusion. These findings highlight barriers to cessation and the reasons that young smokers give for quitting. This information may be helpful to physicians as they counsel their young adult patients to quit smoking.

Key words. Cross-sectional studies, preventive medicine, smoking, smoking cessation, tobacco use, young adult.

Introduction

Young adulthood is a critical developmental transition (1) and provides an enormous opportunity to alter trajectories of smoking behaviour for a large public health impact (2). However, the recent decades have seen increases in the rate of smoking initiation and

rate of transition to regular smoking in young adults (3–5). Young adult smokers are a unique group in that they have eluded youth prevention efforts and largely, are not the target of adult cessation intervention efforts. The phase of identity formation, characteristic of adolescence (6), is also a key driver of smoking in young adults. A 2015 meta-ethnography of 17 qualitative studies on smoking

identity in young adults showed that smoker identities took time to develop, were subject to change and were context dependent (7). Of particular note in this age group, a number of studies demonstrate that young adults deny being 'smokers', despite reporting smoking behaviour (8–12). As a result of the conflict between their smoking behaviour and identities, young adult smokers may experience little pressure from others and feel ambivalent about changing their smoking behaviour (11,12). Identity has also been shown to play a role in cessation, as it relates to a sense of addiction (7,13). Self-identified young adult 'social smokers' report lower cessation intentions and cessation attempts compared to established smokers (14) and non-daily college smokers perceive themselves as being able to quit 'when they want to' (13). There are also important functional roles of smoking in enhancing social power (7) and coping with stress (7,13) that have been called out as perceived barriers to quitting among young adults (15,16) and documented as negative predictors of cessation in this age group (17). These barriers to quitting are tempered by potential motivators to quit smoking among young adults, identified by Berg *et al.* (16) as the desire to save money, health reasons, social factors, the bad smell or taste of cigarettes, stigma associated with smoking and wanting to prevent nicotine addiction.

Unfortunately, indicators of tobacco dependence are present even after low levels of exposure in young smokers (18). Early emergence of these signal risk for subsequent chronic smoking (19) and nicotine dependence is negatively associated with cessation in young adults (17). Nicotine dependence provides a critical link between the functional value of smoking, beliefs about quitting associated with a fluid smoking identity and cessation in this age group. Young adults who begin smoking infrequently in social contexts may progress rapidly, and unintentionally, to become nicotine-dependent smokers and thus, have increased difficulty quitting despite their reasons or motivation to quit.

While there have been few effective smoking cessation interventions targeted to young adult smokers (20), evidence suggests that evidence-based cessation treatments (21) and some high-intensive interventions implemented in a primary care setting (22) can impact cessation among young smokers. An additional barrier here is the uptake of these types of treatments among young adults. Young adulthood coincides with the typical transition from paediatric to adult care, which has been associated with poor clinical outcomes, increased costs and low patient and family satisfaction (23). In the USA, family physicians, just under 70% of whom see paediatric patients (24,25), are in a unique position to maintain continuity of care during the transition from adolescence and into young adulthood, an important period of experimentation with tobacco and other substances (26). Since 70% of young adults report seeing a physician in the last year (27), family physicians are likely to encounter patients during a period of experimenting and transitioning to chronic smoking, and with their lifespan focus may have a unique perspective and opportunity to support them in cessation during this period. As an example, in the USA, following the 2009 passage of the Health Information Technology Economic and Clinical Health (HITECH) Act (28) and incentives to adopt electronic health records (29), there has been a significant push by Medicaid and Medicare to record the smoking status for patients 13 years and older. Nondisclosure of smoking status has been shown to be higher in young adults aged 18–34, compared to older adults (30), so there is potential for family physicians to facilitate improved delivery of evidence-based treatments to young adults who may not otherwise report their tobacco use or follow-up with cessation services in another setting.

The purpose of this article is to examine correlates of perceived barriers to quitting smoking and reasons to quit in a sample of

young adult current and former smokers. The overall goal is to identify subgroups of young adults who may be targets for future cessation treatment, intervention or communication efforts that may better resonate with young adult smokers.

Methods

Study sample

This study uses cross-sectional data from the 2011 National Young Adult Health Survey (NYAHS). Details about the survey's sampling methodology and benchmarks are reported elsewhere (31). Briefly, the NYAHS is a random-digit-dial cell phone survey stratified by census region, which collected data from 2871 young adults aged 18–34 years about tobacco use, attitudes, susceptibility and behaviours, as well as obesity and physical activity, Internet and social media use, and demographic characteristics. The American Association of Public Opinion Research's (AAPOR) response rate 4 and cooperation rate 4 was 24% and 64.2%, respectively. Response rate 4 is an estimate of the proportion of eligible respondents who provided data for the study and is calculated as the number of completed and partially completed interviews divided by the total number of eligible respondents. The denominator includes an estimate of the number of eligible respondents among those whom eligibility could not be determined. The cooperation rate 4 represents the proportion that provided data among eligible respondents with whom contact was made. It is calculated as the number of completed and partially completed interviews divided by the total number of interviews in which contact was made with an eligible respondent, excluding those not able to take part in an interview due to physical and mental inability, language problems or other communication problems and other reasons. A full explanation of the calculations is available in the AAPOR standard definitions handbook (32). However, as noted by the AAPOR Cell Phone Task Force, cell phone response rates are less reliable due to the very large number of calls where eligibility cannot be determined (33). Thus, it is advantageous to consider alternative ways to judge the sample quality such as comparing the sample to external benchmarks. For the NYAHS, a comparison of our sample demographic profile to the Census profile of the young adult population showed a very close match, which suggest good sample and data quality (27). Data presented here are from two subsets of the cohort: (i) 699 young adult current smokers aged 18–34 years who identified barriers to quitting smoking and (ii) 691 young adults who were either current smokers who had made a quit attempt in the past-year ($n = 402$) or former smokers ($n = 289$) who reported reasons for quitting smoking. This study was approved by the Institutional Review Board at Rutgers Biomedical and Health Sciences.

Measures

Standard demographic data were collected in this survey, including age, gender, race/ethnicity and education. Current cigarette smoking was defined as smoking every day or some days. Former smokers were defined as having smoked 100 cigarettes over their lifetime but did not smoke at the time of the survey. Current smokers were asked to report time to first cigarette after waking dichotomized as within the first hour after waking or >1 hour after waking; quit attempt in the past year (yes/no); intention to quit smoking (within 30 days, within 6 months, no intention to quit) and perceived likelihood of successful quitting (four-point Likert scale from 'very likely' to 'very unlikely'). Perceived barriers to quitting smoking, assessed of all current smokers, were composed of six items with binary responses

(yes/no): (i) cost of quit-smoking medications/products; (ii) cost of classes or programs; (iii) risk of gaining weight; (iv) loss of a way to handle stress; (v) interfere with relationships and (vi) cravings or withdrawal. Seven reasons for quitting smoking with binary responses (yes/no) were reported by current smokers with a past-year quit attempt and former smokers: (i) information about health hazards; (ii) cost of tobacco; (iii) illness of a friend or relative; (iv) physical fitness; (v) encouragement from a friend or relative; (vi) restrictions at workplace or school and (vii) restrictions in the home. Participants could endorse multiple barriers to quitting or reasons for quitting.

Data analysis

Sample weights were applied to adjust for non-response and the varying probabilities of selection. SUDAAN statistical software, which corrects for the complex sample design, was used to generate 95% confidence intervals (CIs) for prevalence estimates and the logistic regression. Bivariate analyses were conducted to identify correlates of barriers to quitting smoking and reasons for quit smoking, accounting for multiple comparisons using the Benjamini and Hochberg method (34) and a 20% false discovery rate. Multivariable logistic regression was used to assess the independent

Table 1. Correlates of barriers to quitting among US young adult current smokers aged 18–34 ($n = 699$) in 2011, %^a

	Cost of quit-smoking medications/products	Cost of classes or programs	Risk of gaining weight	Loss of a way to handle stress	Interfere with relationship	Cravings or withdrawal	Full sample
Overall	23.5	15.8	23.0	59.1	16.4	52.2	100.0
Age							
18–24	17.8	12.2	22.2	61.4	13.8	45.9	39.2
25–34	27.2	18.2	23.5	57.6	18.1	56.3	60.8
Gender			**	*			
Male	19.6	15.1	13.9	51.9	17.2	48.2	55.8
Female	28.4	16.8	34.3	68.3	15.5	57.4	44.2
Race/ethnicity							
White, non-Hispanic	24.4	17.1	21.7	57.0	16.9	56.1	54.1
Black, non-Hispanic	26.4	15.1	35.2	66.7	13.5	39.5	11.3
Hispanic	24.5	14.0	21.3	49.2	13.4	57.3	20.8
Other, non-Hispanic	15.8	14.8	20.7	72.3	20.7	39.6	13.3
Education							
Less than high school	26.7	17.3	23.5	61.7	12.2	61.1	22.9
High school graduation	23.9	17.0	27.1	57.1	14.4	49.2	30.3
Some college/tech	24.7	15.9	22.6	64.9	16.6	51.7	35.5
College graduation or more	11.7	8.1	11.1	39.7	28.4	45.4	11.3
Current cigarette use				*	**	**	
Everyday	26.8	18.3	25.2	65.2	11.0	61.8	63.9
Some days	17.5	11.6	19.0	48.5	26.1	35.5	36.1
Time to first cigarette						**	
Within first hour after waking	29.7	19.7	27.2	63.8	12.5	65.5	47.2
More than 1 hour after waking	18.9	13.0	20.1	54.9	20.5	42.6	52.8
Quit attempt in past year				*			
Yes	27.6	16.1	23.8	65.2	16.9	55.9	60.6
No	17.2	15.0	21.8	50.1	15.8	46.9	39.4
Intention to quit	*			**			
Within 30 days	26.5	16.1	24.5	59.3	20.5	49.1	34.2
Within 6 months	32.6	18.9	25.9	73.4	14.0	58.1	30.2
No intention to quit	13.8	13.7	17.1	47.2	15.8	53.4	35.6
Likelihood of successful quitting			**	**		**	
Very likely	15.8	9.2	12.3	46.1	18.0	31.5	38.3
Somewhat likely	25.8	20.1	26.5	70.0	12.8	60.6	35.7
Somewhat unlikely	30.6	23.2	36.4	63.5	20.3	65.6	12.6
Very unlikely	32.1	15.6	31.1	63.7	17.6	76.4	13.5

FDR, false discovery rate.

^aMissing observations: responses of 'Don't Know' and 'Refused' were excluded tablewise for each comparison.

*FDR-adjusted $P < 0.05$, **FDR-adjusted $P < 0.01$.

Table 2. Adjusted odds of citing loss of a way to handle stress or cost of cessation products as barrier to quitting among US current young adult smokers, 2011

	Loss of way to handle stress (N = 625) ^a			Craving or withdrawal (N = 628) ^a		
	AOR	95% CI	P-value ^b	AOR	95% CI	P-value ^b
Age						
18–24	1.13	0.70, 1.82	0.61	0.80	0.49, 1.30	0.36
25–34	1.00	1.00, 1.00	–	1.00	1.00, 1.00	–
Gender						
Male	0.54	0.33, 0.86	0.01**	0.73	0.45, 1.19	0.21
Female	1.00	1.00, 1.00	–	1.00	1.00, 1.00	–
Race/ethnicity			0.48			0.05*
White, non-Hispanic	1.00	1.00, 1.00	–	1.00	1.00, 1.00	–
Black, non-Hispanic	1.19	0.58, 2.42	0.63	0.52	0.22, 1.19	0.12
Hispanic	1.76	0.86, 3.60	0.12	1.58	0.80, 3.12	0.19
Other, non-Hispanic	1.04	0.53, 2.05	0.91	0.53	0.25, 1.15	0.11
Education			0.66			0.14
Less than high school	1.25	0.56, 2.83	0.59	0.86	0.37, 1.99	0.72
High school graduation	1.16	0.58, 2.33	0.68	0.47	0.22, 0.98	0.04*
Some college/tech	1.54	0.75, 3.18	0.24	0.69	0.34, 1.41	0.31
College graduation or more	1.00	1.00, 1.00	–	1.00	1.00, 1.00	–
Current cigarette use						
Everyday	1.82	1.00, 3.31	0.05*	1.73	0.92, 3.26	0.09
Some days	1.00	1.00, 1.00	–	1.00	1.00, 1.00	–
Time to first cigarette						
Within first hour after waking	1.01	0.55, 1.83	0.99	2.01	1.11, 3.64	0.02*
More than 1 hour after waking	1.00	1.00, 1.00	–	1.00	1.00, 1.00	–
Quit attempt in past year						
Yes	1.36	0.78, 2.37	0.29	1.36	0.80, 2.33	0.26
No	1.00	1.00, 1.00	–	1.00	1.00, 1.00	–
Intention to quit			<0.001**			0.31
Within 30 days	2.09	1.07, 4.06	0.03*	1.54	0.77, 3.08	0.22
Within 6 months	3.39	1.86, 6.18	<0.001**	1.57	0.84, 2.94	0.16
No intention to quit	1.00	1.00, 1.00	–	1.00	1.00, 1.00	–
Likelihood of successful quitting			0.01**			<0.001**
Very likely	0.44	0.20, 0.97	0.04*	0.20	0.08, 0.49	<0.001**
Somewhat likely	1.09	0.50, 2.36	0.84	0.54	0.22, 1.31	0.17
Somewhat unlikely	0.99	0.37, 2.68	0.99	0.64	0.22, 1.87	0.41
Very unlikely	1.00	1.00, 1.00	–	1.00	1.00, 1.00	–

AOR, adjusted odds ratio.

^aExcludes current smokers with invalid responses for a covariate.

^bWald F.

* $P < 0.05$, ** $P < 0.01$.

association of factors correlated with the top two barriers to quitting smoking among young adults. Adjusted odds ratios and their 95% CIs are presented.

Results

Barriers to quitting among current young adult smokers

Among current smokers, 39% were 18–24 years old and 56% were male (Table 1). The majority of the young adult smokers were White non-Hispanic (54%), followed by Hispanic (21%), other race non-Hispanic (13%) and Black non-Hispanic (11%). Approximately 53% had completed a high school education or less. Sixty-four percent were everyday smokers and 36% were some day smokers. Almost half (47%) smoked a first cigarette within 1 hour of waking and 64% reported intending to quit in the next 6 months or less. The majority believed that they would be somewhat (36%) or very likely (38%) to quit smoking successfully.

More than half of current smokers identified ‘loss of a way to handle stress’ (59%) and ‘cravings or withdrawal’ (52%) as barriers to quitting, with smaller proportions endorsing the other barriers (Table 1). In bivariate analyses, females (versus males), daily smokers (versus some days), those who had made a quit attempt in the past year and those intending to quit within 6 months reported ‘loss of a way to handle stress’ as a barrier to quitting at significantly higher rates. Prevalence of reporting this barrier to quitting was significantly lower among smokers who believed that they were ‘very likely’ to quit successfully. In multivariable analyses, gender, daily smoking and intention to quit remained significantly associated with endorsing ‘loss of a way to handle stress’ as a barrier to quitting, controlling for all other variables in the model (Table 2). Smokers who believed that they were ‘very likely’ to quit smoking successfully had significantly lower odds of endorsing this item.

In bivariate analyses, daily smokers (versus some days) and those who smoked a cigarette within 1 hour of waking (versus >1 hour) reported ‘cravings or withdrawal’ as a barrier to quitting at

Table 3. Correlates of reasons to quit among US young adult current smokers aged 18–34 with a past-year quit attempt ($n = 402$) and former smokers ($n = 289$) in 2011, %^a

	Info about health hazards	Cost of tobacco	Illness of a friend or relative	Physical fitness	Encouragement from friend or relative	Restrictions at workplace or school	Restrictions at home	Full sample
Overall	59.7	63.6	39.0	64.3	55.2	15.7	18.7	100.0
Age								
18–24	58.6	62.0	39.6	63.4	56.3	16.1	17.3	31.5
25–34	60.3	64.4	38.8	64.7	54.7	15.5	19.3	68.5
Gender								
Male	58.7	63.9	35.6	65.9	54.5	16.8	16.1	53.9
Female	61.0	63.3	43.0	62.3	56.1	14.3	21.7	46.1
Race/ethnicity								
White, non-Hispanic	58.6	67.1	39.1	65.0	57.3	15.1	16.7	61.1
Black, non-Hispanic	64.1	53.4	36.4	58.3	37.5	15.7	21.7	9.2
Hispanic	56.1	53.8	37.4	64.5	63.8	19.2	27.4	18.6
Other, non-Hispanic	68.6	69.7	45.0	65.6	44.0	13.5	13.6	11.1
Education								
Less than high school	53.2	67.3	45.1	60.6	50.4	24.2	19.8	18.3
High school graduation	58.1	66.8	37.3	57.7	57.0	12.9	19.6	26.9
Some college/tech	60.1	64.0	39.7	69.8	59.0	15.8	20.0	38.3
College graduation or more	68.9	54.5	34.2	66.8	49.8	11.1	13.6	16.5
Cigarette use		*	**				**	
Everyday	59.7	72.2	52.9	65.8	57.2	17.0	25.1	35.6
Some days	70.0	69.5	41.4	68.9	62.7	24.8	26.9	23.7
Not at all (former smoker)	53.7	52.7	25.5	60.2	49.1	9.2	8.3	40.7

FDR, false discovery rate.

^aMissing observations: responses of 'Don't Know' and 'Refused' were excluded tablewise for each comparison.*FDR-adjusted $P < 0.05$, **FDR-adjusted $P < 0.01$.

significantly higher rates. Significantly lower prevalence of reporting this barrier to quitting was observed for smokers who believed that they were 'very likely' to quit successfully. In multivariable analyses, smoking a cigarette within the first hour of waking was positively associated with citing 'cravings or withdrawal' as a barrier to quitting, and having a high perceived likelihood of successful quitting was negatively associated with endorsement of this barrier, controlling for all other variables in the model (Table 2).

Reasons for quitting among current and former young adult smokers

Among those who reported reasons for quitting smoking items, 41% were former smokers and 59% were current smokers with a past-year quit attempt (Table 3). Thirty-one percent were 18–24 years old and 54% were male. The majority of this subsample was White non-Hispanic (61%), followed by Hispanic (19%), other race non-Hispanic (11%), and Black non-Hispanic (9%). Approximately 18% had not completed a high school education. The two most popular reasons endorsed for quitting smoking were physical fitness (64%) and the cost of tobacco (64%), followed by information about health hazards (60%), encouragement from a friend or relative (55%), illness of a friend or relative (39%), restrictions in the home (19%) and last, restrictions at workplace or school (16%). Current cigarette use was the only significant correlate of a reason to quit in bivariate analyses, with daily and someday smokers endorsing the cost of tobacco and illness of a friend or relative, and restrictions at home at higher rates than former smokers.

Conclusion

Findings from this study highlight indicators of psychological and physiological dependence that serve as barriers to smoking cessation in young adults. Young adult current smokers have been shown to report greater levels of perceived stress than never smokers (35). In line with a robust literature on the utility of smoking to regulate mood in adolescents and young adults (36–38), more than half of current young adult smokers endorsed 'loss of a way to handle stress' as a barrier to quitting. In our study, females, daily smokers and those who intended to quit within 6 months were more likely to cite stress management as a barrier to cessation. These results align with a systematic review that reported stress management as a common perceived barrier to quitting across a number of vulnerable population subgroups (39). In order to reduce this leading perceived barrier, stress management techniques and skills training could be incorporated into an intervention based in a family practice setting. The scope of the data in the current study limits statistical generalizability to US young adults. However, understanding barriers and reasons for quitting are also highly relevant in practice outside the USA, for example, the 'Relevance' and 'Road-block' stages of the European Smoking Cessation Guidelines' 5Rs strategy are focused on understanding 'why is smoking cessation important for you in a personal plan' and identifying barriers for successful quit attempts, respectively (40).

Consistent with studies on nicotine dependence as a positive predictor of smoking escalation (18,19) and a negative predictor of cessation in young adults (17), craving and withdrawal symptoms were the second most highly cited barrier to quitting and nearly two-thirds (64%) intended to quit within the next 6 months. Such factors have specific treatment implications for these young adult smokers. A key component to a comprehensive tobacco treatment plan and one of the primary treatment modalities directed at reducing cravings and withdrawal symptoms are the evidence-based tobacco treatment

medications. Data regarding the effectiveness of these medications in adult smokers are well established (41). However, data regarding efficacy of treatment medications in adolescents (i.e. under age 18) are less robust (42). Clinically, adult smokers who show signs of dependence and withdrawal and who are interested in quitting, such as those described in this study, should routinely be offered cessation medications unless contraindicated (41). This is also consistent with a meta-analysis showing that evidence-based cessation treatments were as effective in young adults as in the general adult population (21). Therefore, the young adults in this study would likely benefit from the use of available pharmacotherapies and these should be offered to young adult patients seen in the family practice setting.

This study uses a US national sample of young adults that closely matches the US Census distributions on key demographic variables and is benchmarked to the Behavior Risk Factor Surveillance Survey (BRFSS) (31). It contributes to a growing evidence base on young adult cessation, which has long been an understudied aspect of tobacco research, and identifies key drivers of smoking maintenance and potential levers for future intervention. This study does not, however, quantify the ability of these 'reasons' and 'barriers' items to predict smoking cessation behaviour, which may be possible in future longitudinal studies in young adults and other vulnerable populations.

There are few existing behavioural smoking cessation interventions for young adults that have demonstrated efficacy (20). Multicomponent interventions delivered in primary care settings improve cessation outcomes. However, future studies will be needed to determine which components are most impactful at achieving these effects (43). Physician advice, especially as delivered in primary care, continues to be shown to impact abstinence rates (44). Primary care providers are motivated to assist young adult smokers to quit for obvious reasons, including the health benefits for their patients. Additionally, other incentives have been explored in primary care. The use of blended payment schemes in primary care, including financial incentives to directly reward 'performance' and 'quality', is increasing in a number of countries. An example of a major system intervention includes the Quality and Outcomes Framework for GPs in the UK (45). Novel work is underway to provide interventions covering a broader range of health behaviours and providing counselling, support and life skills to young adults (46). This type of approach, in concert with evidence-based tobacco treatment (41), may offer young adults the coping and stress management skills to navigate the many transitions occurring in this population (1) and facilitate successful tobacco cessation. Findings from this study highlight barriers to cessation and the reasons that young smokers give for quitting. This information may be helpful to physicians as they counsel their young adult patients to quit smoking.

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Declaration

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