

Research Article

Perception and Use of Smoking Cessation Methods Stratified by Patient Characteristics: A Pilot Study

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Abstract

An anonymous survey was administered to a convenience sample to investigate attitudes surrounding tobacco cigarette smoking cessation methods in relation to characteristic information, elucidate which patient populations may be more likely to favor unassisted or assisted cessation, and identify areas where further patient education may be necessary.

Of 131 participants surveyed, 6% were current smokers, 24% former smokers, and 65% never smoked. On average, participants could recall two evidence-based cessation methods. Unassisted cessation (45.8%) and nicotine replacement therapy (NRT) (43.51%) ranked highest in familiarity. Unassisted (32.82%), counseling (29.77%), and NRT (23.66%) ranked most effective. Participants were more likely to view physicians as cessation resources compared to pharmacists ($p=0.015$). Age and education affected whether participants indicated physicians ($p=0.003$, $p<0.001$, respectively) or pharmacists ($p=0.018$, $p=0.003$, respectively) were cessation resources. Participants over age 60 ($p<0.001$), without a high school diploma ($p=0.004$), or current smokers ($p=0.053$) were more likely to agree that unassisted quitting signified greater commitment. Participants over 60 were less positive about the usefulness of NRT compared to participants ages 18-24 ($p=0.009$) and 25-30 ($p=0.046$).

Participants indicated that unassisted smoking cessation was the most well-known and effective method. Awareness of cessation methods and their proper utilization was poor across all characteristic subsets. Age and education influenced attitudes toward available cessation resources. Despite pharmacists being easily accessible, these results indicate that more education is needed for pharmacists to be more widely regarded as resources for cessation. Providers need to be mindful of these factors when discussing options for tobacco cigarette smoking cessation.

ABBREVIATIONS

NRT: Nicotine Replacement Therapy; RX: Prescription; E-cigs: Electronic Cigarettes

INTRODUCTION

Unassisted tobacco cigarette smoking cessation, executed by limiting tobacco consumption abruptly or gradually, or by replacing tobacco cigarettes with electronic cigarettes, is the most popular option for smoking cessation [1]. The preference for unassisted smoking cessation persists despite evidence indicating improved results from the combination of behavioral counseling with the use of nicotine replacement therapy (NRT) or other pharmacological aids [1,2]. Current tobacco dependence treatment guidelines recommend a combination of both pharmacological and non-pharmacological cessation aids [2].

Smokers' attitudes may play a role in the choice of unassisted

smoking cessation. For example, willpower and the desire and commitment to quit are considered prerequisites for a successful quit attempt [3-7]. Additionally, smokers have expressed the belief that quitting smoking was their personal responsibility and that unassisted cessation was the right way to do so [7]. Quitting unassisted exemplifies the values of self-reliance, independence, autonomy, and strength, and allows smokers to feel as though they have achieved something by quitting without aids [4,7]. For some smokers, smoking is not viewed as an illness, and thus seeking treatment from a medical professional seems unnecessary [3,7]. For others, the decision against cessation aids may be due to a lack of awareness of the options available for smoking cessation treatment [8].

The resistance to using pharmacological aids may be attributed to misconceptions surrounding the safety and role of these pharmacological aids in smoking cessation treatment

[3,4,6-9]. Smokers feel that cessation aids will not be effective unless the requisite willpower and desire to quit are present, demonstrating a lack of understanding of the role of cessation aids in helping smokers increase their readiness to quit [6]. A common concern regarding cessation aids stems from the disconnect between understanding the physical dependence on nicotine and the psychological habit of smoking; thus, patients may question the efficacy of cessation aids, as they do not feel the treatment is helping to break the habit of smoking, only addressing the nicotine dependence [4,9]. NRT was most often endorsed by smokers as a method that would be efficacious for those whose nicotine dependence was only physical, without a psychological component [4]. Patients often incorrectly use cessation aids, particularly NRT, both by using NRT for shorter durations and at lower doses than indicated [4,6]. Additionally, the belief that one is transferring the addiction from cigarettes to NRT has contributed to the concern that using NRT is only delaying the quitting process [6].

Smokers have shown a preference for lay knowledge about smoking cessation, acquired through either their own experiences or the experiences of family and friends, over information presented to them by a medical professional [7]. Previous studies indicated in general, recollections of acquaintances' use of cessation aids was negative, focusing on side effects that had been experienced; recollections of acquaintances' experiences quitting unassisted tended to be more positive, focusing on the support provided by family and friends.⁷The negative side effects of cessation aids about which patients expressed the most concern were irritability, taste (NRT), and mental health effects (bupropion, varenicline) [4].

There are also misconceptions about non-pharmacological smoking cessation tools. In a comparative study, smokers perception of quit lines were generally negative, including beliefs that those resources only served to scold or shame smokers, and that the advice given was impersonal and scripted [4]. Further, with regard to counseling, smokers endorsed the belief that less intensive counseling is required for smoking cessation than for alcohol use disorders or opioid use disorders [3].

While several studies have been conducted to assess attitudes of smokers toward various tobacco cessation methods, little research has been conducted to determine factors that may influence which method an individual is more likely to try and which patient populations would benefit from further education. This pilot study was conducted in Southern New Hampshire to: 1) investigate attitudes surrounding tobacco cigarette smoking cessation methods in relation to patient characteristics; 2) elucidate which patient populations may be more likely to favor unassisted or assisted cessation; and 3) provide guidance for healthcare providers to direct patient education efforts.

METHODS

An anonymous, 30-question survey ([Supplementary data: Appendix A](#)) was developed to assess participant characteristics, including smoking status and prior experiences with cigarette smoking (section 1); knowledge of, and opinions on, smoking cessation methods (section 2); prior experience with smoking cessation (section 3); and opinions on smoking cessation methods

and resources (section 4). For the purposes of this study, former smokers were defined by an abstinence period of at least three months as the likelihood of maintained abstinence increases greatly once the three-month mark has been reached [10]. This was done to better capture those respondents who were beyond the early abstinence period, and in turn at increased risk of relapse, in order to add validity to any analyses comparing survey responses using smoking status as a variable. The study received exempt status from the University's Institutional Review Board.

Participants were recruited as a convenience sample in Southern and Central New Hampshire. Data collection took place from August 10, 2017 to September 8, 2017. Sites for data collection included: community pharmacies, senior centers, and a health professions university. In order to reduce potential bias in the university setting, only newly matriculated students were eligible to complete the survey. An educational poster regarding the health effects of cigarette smoking and the benefits of quitting was used to attract participants.

Study data was analyzed using a combination of descriptive and inferential statistics. A value of $\alpha=0.05$ was used as the threshold for significance. ANOVA with post-hoc Tukey test was used to examine the effect of characteristic differences on responses to Likert scale questions. Paired t-test was used to examine differences in perception of pharmacists and physicians as cessation resources. All data analysis was conducted using Statistical Package for the Social Sciences (SPSS).

RESULTS

Of the survey participants ($n=131$), the majority identified as female, and the age range with the greatest percentage of participants was 18-24 years old (Table 1). Survey results indicate that 24.43% of participants identified as former smokers, 6.87% identified as current smokers, 65.65% indicated that they had never smoked, and 3.82% of participants indicated they used an alternative form of tobacco or electronic cigarettes.

The majority of those identifying as ex-smokers smoked for 5-10 years (25%) or 10+ years (37.5%) (Table 2). Of the ex-smokers, 56.25% quit over 10 years ago. Most ex-smokers either quit on their first try (34.38%) or tried to quit 5 or more times before succeeding (34.38%). Of the current smokers surveyed, 77.78% had been smoking for over 10 years. Approximately 33% of the current smokers had tried to quit more than 5 times, and 11% had never tried to quit. Almost one-third of former and current smokers surveyed smoked 11-20 cigarettes/day.

On average, participants could recall 2 out of 5 evidence-based cessation methods. Additional non-evidence-based methods listed by participants included taking up a new hobby, vaping or using electronic cigarettes, and hypnosis (Figure 1a). There were no statistically significant relationships between age, education, or smoking status and method recall. Of survey participants, 13.74% agreed, 68.7% disagreed, and 12.98% were unsure if electronic cigarettes were a safe alternative to smoking. Age, education, and smoking status were not associated with participants' belief that electronic cigarettes were safe.

When asked specifically about cessation methods, NRT (43.51%) and unassisted cessation (45.8%) ranked highest in

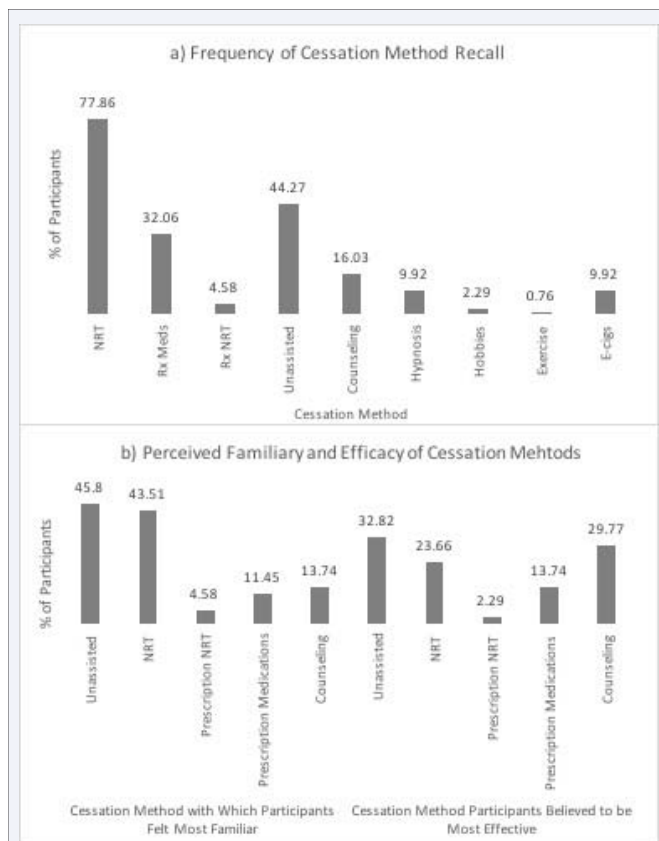


Figure 1 a) Methods listed and frequency of each response when asked to recall cessation methods b) Methods chosen when asked to indicate most familiar and most effective cessation methods.

familiarity among participants. Unassisted cessation (32.82%), NRT (23.66%), and counseling (29.77%) were ranked most effective (Figure 1b). When asked about pharmacologic cessation methods, 45.8% of participants agreed or strongly agreed with the statement that these agents cause unpleasant side effects (Table 3). In regards to soliciting more information about smoking cessation tools, participants were more likely to agree with the statement that physicians (83.2%) are smoking cessation resources than the statement that pharmacists are smoking cessation resources (75.57%; $p=0.015$; Table 3).

Among former/current smokers, 80.49% tried unassisted quitting during their first quit attempt. Unassisted cessation (85.37%) and NRT (34.15%) were the most common methods utilized for all quit attempts; 75% of ex-smokers surveyed reported successfully quitting unassisted. Participants reported that of their friends and family who quit, the most common methods utilized were unassisted cessation (53.44%) and NRT (48.85%); 45.8% of participants reported that family and friends successfully quit unassisted. The majority of participants strongly agreed (70.99%) or agreed (18.32%) that discipline and willpower are necessary for a successful quit attempt (Table 3). Additionally, smokers were more likely than ex-smokers to agree that unassisted quitting signifies greater commitment to quitting ($p=0.043$; Table 4).

Both age and education affected participants' perceptions on smoking cessation methods (Table 4). Respondents greater

than 60 years old were more in agreement with the statement "not using pharmacologic agents signifies greater commitment to quitting," than all other age groups ($p<0.001$). A significant effect of age was also observed on the perception that NRT or other medication can be useful cessation tools ($p=0.017$); Participants who were 18-24 years old and 25-30 years old were more in agreement with the statement than those participants greater than 60 years old ($p=0.009$ and $p=0.046$, respectively). There was also a significant effect of age on agreement that pharmacists can be cessation resources ($p=0.018$); participants aged 18-24 were more in agreement with this statement than those over 60 years old ($p=0.025$). A similar effect was observed with regard to physicians as cessation resources ($p=0.003$); participants aged 18-24 and those aged 25-30 were more in agreement compared to those over 60 years old ($p=0.004$ and $p=0.028$, respectively).

Participants with less education were more in agreement that not using medication or NRT signifies greater commitment to quitting ($p=0.004$); specifically, participants who did not finish high school were more in agreement with that statement compared to those with bachelor's degrees and advanced degrees ($p=0.002$ and $p=0.011$, respectively). Education level was also observed to have an effect on participants' agreement that pharmacists can be cessation resources ($p=0.003$); more participants with an associate's degree or bachelor's degree were in agreement than those who did not finish high school (Table 4). Education level also affected participants' perceptions about physicians as cessation resources ($p<0.001$). A greater proportion of participants with a high-school-level education or above were in agreement of the potential utility of physicians' input than those who did not finish high school.

Table 1: Participant characteristic information.

Patient Characteristics		% of Participants
Age (years)	18-24	32.06
	25-30	16.79
	31-40	17.56
	41-50	6.11
	51-60	7.63
	60+	19.85
Education	Some high school	6.11
	High School	22.14
	Associate's degree	11.45
	Bachelor's degree	49.62
	Advanced degree	10.69
Smoking Status	Former	24.43
	Current	6.87
	Never	65.65
	Other (electronic cigarettes or other tobacco)	3.82
Gender	Female	67.94
	Male	30.53
Friends and Family Who Smoke	Yes	87.02
	No	11.45
Friends and Family Who Have Tried to Quit	Yes	77.86
	No	18.32
Friends and Family Who Have Successfully Quit	Yes	69.47
	No	23.66

Table 2: Smoking and cessation behavior of current and ex-smokers.

Smoking Demographics		% of Participants
Time Smoking (ex-smokers)	Less than 6 months	12.5
	6-12 months	0
	1-5 years	21.88
	5-10 years	25
	10+ years	37.5
Time Since Quitting (ex-smokers)	Less than 6 months	9.38
	6-12 months	6.25
	1-5 years	12.5
	5-10 years	9.38
	10+ years	56.25
Time Smoking (current smokers)	Less than 6 months	11.11
	6-12 months	0
	1-5 years	0
	5-10 years	11.11
	10+ years	77.78
Number of Quit Attempts (ex-smokers)	1	34.38
	2	15.63
	3	6.25
	4	9.38
	5+	34.38
	Number of Quit Attempts (current smokers)	Never
1		11.11
2		22.22
3		0
4		11.11
5+		33.33
Number of Cigarettes Smoked Per Day (ex and current)	Less than 5	19.51
	10-May	17.07
	20-Nov	31.71
	21-30	17.07
	31-40	4.88
40+	2.44	

Table 3: Participant responses to Likert scale questions represented by frequency.

Statement	% of Participants	
Medications used to quit smoking cause unpleasant side effects	Strongly Agree/Agree	45.8
	Undecided	38.93
	Strongly Disagree/Disagree	2.29
Strong discipline and willpower are necessary for a successful quit attempt	Strongly Agree/Agree	89.31
	Undecided	3.82
	Strongly Disagree/Disagree	3.06
By not using medication or nicotine replacement I am more committed to quitting	Strongly Agree/Agree	24.43
	Undecided	36.64
	Strongly Disagree/Disagree	32.06
Medications and nicotine replacement are useful tools to help me quit	Strongly Agree/Agree	60.3
	Undecided	27.48
	Strongly Disagree/Disagree	6.87

My pharmacist can be a resource to help me quit smoking	Strongly Agree/Agree	75.57
	Undecided	13.74
	Strongly Disagree/Disagree	4.58
My doctor can be a resource to help me quit smoking	Strongly Agree/Agree	83.2*
	Undecided	6.87
	Strongly Disagree/Disagree	3.81

*Greater agreement compared to pharmacist as a cessation resource (p=0.015)

Table 4: Effect of participant characteristic on response to Likert scale questions.

% in category that strongly agree or agree			
Statement	Age (years)	Education	Smoking status
Pharmacologic smoking aids cause unpleasant side effects	18 – 24: 47.6	Some High School: 75	Former: 50
	25 – 30: 54.5	High School: 48.3	Current: 66.7
	31 – 40: 56.5	Associate's Degree: 46.7	Never: 43
	41 – 50: 37.5	Bachelor's Degree: 43.1	Other: 50
	51 – 60: 20	Advanced Degree: 35.7	
	60+: 38.5		
Success requires strong willpower and discipline	18 – 24: 92.8	Some High School: 75	Former: 84.4
	25 – 30: 90.9	High School: 82.7	Current: 77.8
	31 – 40: 86.9	Associate's Degree: 93.3	Never: 93
	41 – 50: 75	Bachelor's Degree: 93.8	Other: 50
	51 – 60: 90	Advanced Degree: 85.7	
	60+: 88.5		
Not using medication or NRT signifies greater commitment to quitting	18 – 24: 14.3*** (vs. 60+)	Some High School: 62.5	Former: 43.8
	25 – 30: 9.1*** (vs. 60+)	High School: 27.6	Current: 33.3
	31 – 40: 21.7*** (vs. 60+)	Associate's Degree: 26.7	Never: 17.4* (vs. current)
	41 – 50: 0*** (vs. 60+)	Bachelor's Degree: 20** (vs. some HS)	Other: 0
	51 – 60: 10*** (vs. 60+)	Advanced Degree: 14.3* (vs. some HS)	
	60+: 69.2		
NRT and medications can be useful tools for cessation	18 – 24: 80.9** (vs. 60+)	Some High School: 50	Former: 43.8
	25 – 30: 72.7* (vs. 60+)	High School: 48.3	Current: 77.8
	31 – 40: 56.5	Associate's Degree: 46.7	Never: 65.1
	41 – 50: 37.5	Bachelor's Degree: 73.8	Other: 0
	51 – 60: 50	Advanced Degree: 42.8	
	60+: 30.8		
Pharmacists as cessation resource	18 – 24: 90.5* (vs. 60+)	Some High School: 50	Former: 65.6
	25 – 30: 86.4	High School: 58.6	Current: 66.7
	31 – 40: 73.9	Associate's Degree: 80* (vs. some HS)	Never: 80.2
	41 – 50: 50	Bachelor's Degree: 90.8** (vs. some HS)	Other: 50
	51 – 60: 70	Advanced Degree: 50	
	60+: 53.8		

Physician as cessation resource	18 – 24: 95.2** (vs. 60+)	Some High School: 37.5	Former: 81.2
	25 – 30: 90.9* (vs. 60+)	High School: 75.9*** (vs. some HS)	Current: 66.7
	31 – 40: 91.3	Associate's Degree: 80*** (vs. some HS)	Never: 86
	41 – 50: 62.5	Bachelor's Degree: 98.5*** (vs. some HS)	Other: 50
	51 – 60: 70	Advanced Degree: 57.1** (vs. some HS)	
	60+: 61.5		
*p<0.05, **p<0.01, ***p<0.001			

DISCUSSION

As seen in previous studies, participants in this study identified unassisted cessation as the most commonly used method [1]. Unassisted cessation was also the method with which participants were most familiar and the method they felt was most effective. Participants also indicated a high level of familiarity and perceived efficacy with NRT; however, among participants surveyed, unassisted quitting was reported as being utilized twice as often as NRT, indicating a disconnection between perceptions of smoking cessation methods and actual utilization of these methods. The overall importance of willpower for a successful attempt was consistent with previous studies, as was concerns about side effects from pharmacological aids [3-9]. However, most participants did not feel that using cessation aids signified less commitment to quitting, indicating that the less frequent utilization of cessation aids may be multifaceted.

When asked to list potential quit tools, common themes for alternative cessation methods emerged, with several participants mentioning hypnosis, use of electronic cigarettes or vapes, and keeping busy or starting a new hobby. These results highlight the lack of understanding of evidence-based practice among participants and emphasizes the preference for information obtained from someone other than a healthcare professional, a result that has been observed previously [7]. Given this paucity of knowledge of evidence-based tools, patients across all characteristic groups would likely benefit from further education on the cessation aids available and their place in therapy. Previous studies have demonstrated that simply being counseled on available cessation aids improved patients' confidence in their ability to quit, their attitudes toward the different cessation methods, and their success in maintaining abstinence from tobacco products, though utilization of cessation aids was unaffected [11].

Additionally, participants did not feel as positively about pharmacists as cessation resources as they did about physicians. While physicians fit the more traditional healthcare provider role, pharmacists are easily and affordably accessible for patients. Further patient education and outreach is needed to increase the perception of pharmacists as resources for patients looking to quit smoking. Age and education level affected patient perceptions of cessation aids and of healthcare providers' roles as resources. Generally, younger and more educated participants viewed cessation aids more favorably and were more likely to view their pharmacist or physician as a resource for cessation.

Moreover, when compared to participants who are older or have less education, younger and more educated participants were less likely to agree that use of pharmacologic agents indicated a lower commitment to quitting. Pharmacists and other healthcare providers must be mindful of these patient characteristics and attitudes when approaching the use of cessation aids with a patient. Furthermore, older patients, and those with a lower level of education would benefit from additional education and awareness regarding the use of cessation aids and their role in treatment.

This study had several limitations, primarily relating to collecting survey responses via convenience sampling. Participants were recruited as a convenience sample throughout Southern New Hampshire; as a result, the participant characteristic distribution does not represent that of the general population. Due to the sites used for data collection, most participants were either younger than age 30 or older than age 60, with little representation from middle-aged adults or teenagers under age 18. The approximately 6% of participants surveyed that were current smokers was well below the national average of approximately 18%. Additionally, there were nearly twice as many female participants as there were male participants, and socioeconomic information was not collected. The results of this pilot study may not be generalizable to the greater population, and further studies are needed to assess the external validity of the data and results obtained from the present research. Because participants were asked to complete the survey both anonymously and voluntarily, it was not possible to assess response rates or control for non response bias. Furthermore, the survey used in the present study has not been validated as an assessment tool.

Future directions for research include an examination of the effect of income on perceptions of smoking cessation methods. As the cost of most cessation aids is greater than the cost of quitting unassisted, income may play in role in which cessation method a patient chooses. Additionally, income as it relates to the cost of healthcare may influence attitudes toward utilizing physicians or pharmacists as a resource throughout the smoking cessation process.

CONCLUSION

Participants indicated that unassisted smoking cessation was the most well-known and effective cessation method, and emphasized commitment and willpower as characteristics needed to quit successfully. Awareness of evidence-based cessation methods and utilization was poor across all characteristic subsets. Age and education influenced attitudes toward available cessation resources, particularly use of pharmacologic agents. Despite pharmacists being the most accessible health care provider in the community, these results indicate that more education is needed surrounding pharmacists as resources for smoking cessation. Providers need to be mindful of these factors when discussing the utilization of healthcare professionals and of pharmacologic aids for smoking cessation with patients.

CONFLICT OF INTEREST

This study was approved by the MCPHS University Institutional Review Board committee.

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