



Tobacco cessation pharmacotherapy use among racial/ethnic minorities in the United States: Considerations for primary care

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Abstract

Pharmacotherapies for tobacco cessation are efficacious and recommended during quit attempts. Racial/ethnic minorities in the United States are less likely to use medication-based aids for tobacco cessation, despite greater difficulty achieving long-term abstinence. The reasons for this include, among others, provider- and patient-level considerations. Primary care clinicians play an important role in encouraging racial/ethnic minority tobacco users to use cessation pharmacotherapy. To better understand pharmacotherapy use, we conducted a narrative review of patient-level factors that may determine uptake and adherence. This review indicates that social and cultural factors impact pharmacotherapy use, including health care experiences, beliefs, perceptions, and norms. The proportion of individuals using pharmacotherapy during quit attempts and adhering to the full course of treatment may be enhanced with greater attention to the ethnocultural concerns of these groups. Culturally appropriate assessment and brief advice delivered by primary care providers could yield significant benefits in population health. Recommendations for treating racial/ethnic tobacco users with pharmacotherapy for cessation are offered.

Keywords: Tobacco cessation; pharmacotherapy; racial/ethnic minorities; primary care; physician advice; nicotine replacement therapy; varenicline; bupropion

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Introduction

Racial/ethnic minorities in the United States are at heightened risk of tobacco-related morbidity and death [1–4]. These populations are also less likely to quit smoking successfully [5–13]. Smoking cessation pharmacotherapy combined with behavioral intervention is the recommended standard of care [14, 15], and both are critical components of any quit attempt [16]. However, racial/ethnic minorities are less likely to use Food and Drug Administration (FDA)-approved cessation aids [17, 18], and have been underrepresented in pharmacotherapy clinical trials. Primary care providers

play a key role in primary and secondary prevention of disease, and are on the front line of tobacco education and treatment. There has been minimal progress in addressing tobacco-related disparities; thus developing methods to encourage provider-patient communication and increase both access and use of treatments is important. Improving our understanding of patient-level concerns regarding pharmacotherapy for tobacco cessation has the potential to enhance provider responsiveness and outcomes. The purpose of this article is to summarize factors associated with tobacco cessation pharmacotherapy use



among US racial/ethnic minority populations and to recommend strategies for increasing the uptake of evidence-based treatment.

Provider advice to quit and racial/ethnic minorities

More than 70% of tobacco users visit a primary care provider annually [19], and many of these patients desire to quit. However, fewer than 10% are successful in a given year [20]. This represents a captive group with significant interest in cessation and who may be influenced by clinician advice [21]. Provider-delivered tobacco cessation advice is an evidence-based intervention [14, 22] that is positively associated with quit attempts [23]. Despite improvement in the delivery of tobacco cessation messages by providers [24], the rates of advice, assistance, and follow-up remain less than 60% [20, 25]. The reasons include time constraints, other medical priorities, and insufficient training on cessation methods. Moreover, evidence indicates limited provider compliance in recommending and prescribing pharmacotherapy [26].

Compared with white smokers, racial/ethnic minority smokers are historically less likely to receive provider advice to quit [27–29], even after socioeconomic status and health care access have been controlled for [30]. Tobacco use assessment and advice to quit appears to be particularly low among African Americans [31] and Hispanics [32]. However, some research has found no racial/ethnic differences in the receipt of provider advice [12]. Another concern is that providers may misperceive the subset of patients with low health literacy, those with limited English language fluency, or those who do not understand self-care instructions (e.g., how and when to take medication) as nonadherent [33, 34]. Overall, there is a need to increase the delivery and effectiveness of provider assistance to racial/ethnic minority tobacco users interested in quitting.

Efficacy of pharmacologic tobacco cessation treatment among racial/ethnic minorities

Each of the FDA-approved pharmacologic cessation aids (nicotine patches, gum, lozenge, inhaler and nasal spray, bupropion, and varenicline) have demonstrated efficacy in multiple randomized clinical trials [35, 36]. Indeed, more than 150 therapeutic trials have tested the efficacy of nicotine replacement

therapies (NRTs), and their use increases the likelihood of cessation by 50%–70% compared with control conditions [35]. Systematic reviews have recommended pharmacotherapy for tobacco cessation among US racial/ethnic minority populations [37, 38]. However, the small number of studies examining pharmacotherapy effects in these populations may preclude firm conclusions. For instance, the Robles et al. [37] review included only one trial among Hispanics, one among Native Americans, and none among Asian Americans. When examined closely, the findings from the extant randomized clinical trials testing the efficacy of pharmacotherapies among racial/ethnic minority groups are equivocal. Some studies suggest that treatment with nicotine gum is no better than use of placebo [39], and that bupropion has a short-term impact on cessation among treatment-seeking African American smokers [40]. Initial evidence suggests that both NRT and varenicline may be less effective in lower socioeconomic status predominantly racial/ethnic minority primary care patients [41]. Other research, however, found no differences in NRT effectiveness by race/ethnicity [42]. Thus more research evaluating the effectiveness of pharmacotherapy among racial/ethnic minority tobacco users is warranted.

Perceptions of pharmacotherapy among racial/ethnic minorities

Consumer beliefs and risk perceptions are significant patient-level variables that contribute to the underuse of tobacco cessation pharmacotherapy. Across racial/ethnic groups, evidence-based cessation aids are underused, and tobacco users report limited NRT knowledge [43, 44], which can result in erroneous beliefs regarding the effectiveness and perceived side effects, and can lead to safety concerns [45]. Tobacco smokers, in general, have also reported concerns about NRT addiction potential and possible interactions with other medications [43]. While there may be widespread concern and misperceptions regarding pharmacotherapy, white non-Hispanics remain more likely to have greater access to tobacco pharmacotherapies and thus use them more frequently and consistently. From the perspective of addressing tobacco cessation disparities, it is critical that we take a closer look at possible reasons for underuse among racial/ethnic minorities.

Relatively few studies have focused on perceptions of FDA-approved cessation aids in racial/ethnic minority populations.



However, because of the lower propensity of use compared with that in whites [12, 17, 28, 30, 38, 46–49], this warrants attention. Here, we summarize research examining attitudes and beliefs around pharmacologic tobacco cessation aids among African Americans, Hispanics, American Indians/Native Alaskans, and Asian Americans/Pacific Islanders. As can be seen in Table 1, most of the extant literature includes qualitative research. Qualitative studies allow the patients' voices to be heard in rich, nuanced, and contextualized ways, thus facilitating theory development and hypothesis generation. Finally, it is important to note the inherent within-group heterogeneity of groups categorized by race/ethnicity. Ethnocultural groups share some common beliefs, traditions, and experiences, yet there are individual differences that must be considered to prevent stereotyping and overgeneralizing.

African Americans

Compared with white smokers, African American smokers are less likely to use pharmacologic aids during cessation attempts [12, 17, 30, 49]. Moreover, pharmacotherapy adherence among treatment-seeking African Americans is approximately 50% [57], and thus has significant room for improvement. Outcome expectancies are an important contributor to behavior and decision-making, and African Americans appear to have less confidence in the effectiveness of tobacco interventions relative to white smokers [50], which may, in part, provide a patient-level explanation. A cross-sectional survey of current smokers found that compared with whites, African Americans reported concern about pharmacotherapy addiction potential and were less likely to endorse the need for tobacco cessation treatment, which were predictive of pharmacotherapy uptake [49]. These findings are consistent with those of qualitative studies. For instance, a qualitative study, including a racially/ethnically diverse sample, found that compared with white and Hispanic smokers, African American smokers expressed suspicion of the pharmaceutical industry and government, and concerns regarding the “unknowns” about NRT [43]. Similar beliefs and concerns were described in a seminal qualitative study of African American smokers, which found that participants viewed NRT as unfamiliar and concerning, and reported concerns about NRT dosing, and the inability to control nicotine absorption into the body [51]. The hesitation to

use pharmacotherapy may stem, in part, from negative experiences within the health care system and medical mistrust [52], which is rooted in a long history of mistreatment and denial of health care.

Hispanics/Latinos

Hispanic smokers are significantly less likely than white smokers to have used pharmacotherapy during quit attempts [17, 18, 46]. A few studies have attempted to unpack this consistent finding. A seminal qualitative study among Hispanic smokers who reported at least one previous-year quit attempt identified themes including the general avoidance of medication, tobacco cessation misconceptions, distrust, and rejection of pharmacotherapy [53]. Participants also conceptualized the act of smoking as a weakness, rather than an illness to be medicated. These findings may reflect an incongruence between pharmacotherapy use and cultural values, such as hard work and determination [27]. Hispanic smokers report confidence that NRT has the potential to reduce cravings, yet may have negative perceptions [53], and disbelieve that these products contain nicotine [43]. Relative to other racial/ethnic groups, Hispanic smokers may also believe that the use of NRT represents a personal vulnerability. That is, tobacco cessation can be accomplished by relying on willpower and self-determination [43]. The belief that willpower alone is sufficient to quit smoking among Hispanics is consistent with population-level quantitative findings [44]. Thus, seeking professional help or pharmacotherapy use may represent an individual weakness or a departure from this belief [27].

American Indians/Native Alaskans

A minority of American Indian or Native Alaskan tobacco smokers report using pharmacotherapy for cessation [29, 55, 58]. Indeed, this group has the lowest pharmacotherapy use rates of all racial/ethnic categories in the United States [48]. A quantitative survey conducted among self-identified American Indians found low pharmacotherapy awareness among current smokers, particularly the nicotine lozenge, varenicline, and bupropion [54]. Few studies have examined perceptions regarding cessation pharmacotherapies in this population, yet the extant data suggest that cultural factors may offer some insight. A qualitative study among current and former smokers

Tobacco cessation pharmacotherapy considerations



Table 1. Summary of research examining attitudes and beliefs around pharmacologic tobacco cessation aids among African Americans, Hispanics, American Indians/Native Alaskans, and Asian Americans/Pacific Islanders

Racial/ethnic group	Authors and year	Study design	Pharmacotherapy perceptions: Unique themes by race/ethnicity
African Americans	Hendricks et al. [50] (2014)	Quantitative	Low confidence in tobacco intervention effectiveness
	Ryan et al. [49] (2011)	Quantitative	Negative attitudes toward treatment for smoking cessation overall Negative attitudes toward pharmacotherapy Disbelief regarding efficacy Concern about addiction potential Concern about safety/harm
	Carpenter et al. [43] (2011)	Qualitative	Concerns expressed regarding mechanisms by which NRT works Too many unknowns about NRT Concerns and apprehensions raised regarding addictive potential and possible interactions with other medications Suspicious raised regarding pharmaceutical industry and government oversight
	Yerger et al. [51] (2008)	Qualitative	NRT viewed as unfamiliar NRT viewed as worrisome Concerned about dosing, lack of control of amount entering the body Concerned about addiction to NRT Concerned that NRT effectiveness expectations are too high
	Fu et al. [52] (2007)	Qualitative	Barriers to treatment include mistrust of providers Lack of general knowledge of the benefits of treatment Negative attitudes towards treatment Skeptical of pharmacotherapy effectiveness
	Hispanics	Carpenter et al. [43] (2011)	Qualitative
Carter-Pokras et al. [27] (2011)		Qualitative	NRT use conflicts with cultural values regarding hard work and self-determination Seeking professional help or pharmacotherapy represents weakness
Levinson et al. [53] (2006)		Qualitative	General avoidance of pharmaceuticals Tobacco use viewed as a weakness versus an illness Question whether NRT contains nicotine May have negative perceptions of NRT use, such as one is trading addictions, or it is ineffective
American Indians/ Native Alaskans	Cook-Shimanek et al. [44] (2013)	Quantitative	Belief that willpower alone is sufficient to quit smoking
	Daley et al. [54] (2011)	Quantitative	Low awareness of nicotine lozenge, varenicline, and bupropion among current smokers



Table 1 (continued)

Racial/ethnic group	Authors and year	Study design	Pharmacotherapy perceptions: Unique themes by race/ethnicity
	Burgess et al. [29] (2007)	Qualitative	General concern about medications Lack of NRT knowledge Concern about side effects Skeptical about pharmacotherapy effectiveness
	Fu et al. [52] (2007)	Qualitative	Hesitant to use pharmacotherapy, rooted in negative health care experiences
	Choi et al. [55] (2006)	Qualitative	Pharmacotherapy may seem inaccessible and expensive Preference for combination counseling and pharmacotherapy versus pharmacotherapy alone
Asians/Pacific Islanders	Lee et al. [56] (2011)	Qualitative	Preference for NRT, oral medications versus behavioral counseling Would accept tobacco cessation advice from health care provider

NRT, Nicotine replacement therapy.

found that while participants expressed a desire to quit, most did not use pharmacotherapy (or counseling) during quit attempts [29]. Important themes emerged, including overall concern about conventional medication, coupled with apprehension about pharmacotherapy side effects and effectiveness [29]. Participants also expressed distrust related to racism. These findings were consistent with those of another qualitative investigation including American Indians, specifically, reservations regarding pharmacotherapy being rooted in a history of negative experiences with the health care system [52], lack of awareness, and limited knowledge about these products [29]. Finally, Choi et al. [55] found that accessibility and cost may also present major barriers to use among American Indian adult smokers.

Asian Americans and Pacific Islanders

Asian Americans and Pacific Islanders are less likely to use tobacco cessation pharmacotherapy compared with whites [12], although this difference may be nonsignificant after adjustment for covariates [47]. The underuse of cessation aids among Asian Americans may be related to low rates of provider advice to quit [59]. There is a paucity of research examining perceptions of pharmacotherapy among Asian

Americans or Pacific Islanders. Qualitative research among Vietnamese and Hmong smokers found that while medical providers were viewed positively, they were not perceived as resources for tobacco cessation [52]. The Vietnamese participants, in particular, discussed the cultural values of mental control and self-determination as important for quitting. We also found one focus group study of Asian or Pacific Islander adult smokers who lived with a hospitalized child [56]. The findings suggested that NRT and oral medications were preferred over behavioral counseling. In addition, smokers with high readiness to quit expressed a desire for clinician advice. Additional research seeking to understand pharmacotherapy use barriers among Asian Americans is needed.

Discussion and recommendations

Tobacco cessation disparities may be attributed to multiple variables, including health care system factors and individual factors – such as access to and use of evidence-based pharmacotherapies [60]. Provider advice to quit in the primary care setting may be more effective for population health than policy changes (e.g., increasing taxes and smoking bans) [22]. There is a tremendous opportunity for primary care providers to take a more active role in meeting the unique needs of racial/ethnic



minority smokers. Recognizing racial/ethnic cultural factors and perspectives about pharmacotherapy is necessary for the development of successful strategies to improve both uptake and adherence. On the basis of the studies summarized above, we offer the following recommendations (Table 2).

Recommendation 1: Develop a working knowledge of possible pharmacotherapy barriers among racial/ethnic minorities

Patient-level barriers appear to be based in historical, current, and cultural factors that influence interest and uptake of these treatments. Across groups, lack of knowledge was consistently reported, and represents a barrier to the accessibility and use of these products. Health care providers have the opportunity to introduce pharmacotherapy options to tobacco users. In doing so, they also have the opportunity to address barriers

and to dispel myths regarding use. Another trans-group similarity was the notion of medical distrust. Racial/ethnic minority experiences within the health care system and/or concern about the intentions of pharmaceutical companies may lead to reservations about medications for tobacco cessation. Overcoming these long-standing barriers will require health care professionals to employ more empathetic responses and expressions of concern for patients' well-being.

There were also notable distinctions in pharmacotherapy perceptions across racial/ethnic minority groups. The current research suggested that skepticism about pharmacotherapy effectiveness was among the foremost concerns of African American smokers, followed by becoming addicted to NRT. In contrast, Hispanics were distinguished by a cultural conflict between the need for a cessation aid and personal weakness. American Indians/Native Alaskans seemed most concerned

Table 2. Tobacco cessation pharmacotherapy among US racial/ethnic minorities: Provider recommendations

1. Develop a working knowledge of possible pharmacotherapy barriers among racial/ethnic minorities:
 - a. Barriers appear to be based in historical, current, and cultural factors
 - b. Trans-group barriers may include lack of awareness and knowledge, biomedical distrust, and negative health care experiences
 - c. Consider individual differences
2. Assess beliefs and expectations related to taking pharmacotherapy for tobacco cessation:
 - a. Enhance the standard assessment with one or two questions to assess possible barriers
 - b. Encourage communication by use of normalizing language
 - c. Use the assessment as an opportunity for a teachable moment (see recommendation 3)
3. Deliver culturally appropriate advice to racial/ethnic minority tobacco users:
 - a. Use lay explanations to educate patients regarding pharmacotherapy, including options, efficacy, benefits and risks
 - b. Commit to the process of cultural humility
 - c. Ensure that messages are culturally and individually appropriate
 - d. Empathize with common reservations regarding medication, and specifically, pharmacotherapy for tobacco cessation
 - e. Address misconceptions, such as trading addictions, and use of cessation aids representing personal weakness
4. Engage patients in shared decision-making:
 - a. Focus on patient-centered and value-based care
 - b. Information exchange, discussion of cessation treatment options and preferences, and joint decision-making
 - c. Seek patient buy-in, involving other important stakeholders (e.g., family)
5. Assist patients by making a treatment recommendation that includes pharmacotherapy:
 - a. Offer a prescription
 - b. Use the teach-back method to ensure patient understanding of proper use
 - c. Refer uninsured/underinsured patients to a range of no-cost, evidence-based intervention options, including state tobacco quitlines, local group programs, and <https://smokefree.gov>



about taking medications in general, and expressed a desire for behavioral support. Finally, the one study conducted in a sample of Asians/Pacific Islanders suggested that this population may be open to pharmacotherapy, particularly when prescribed by a health care professional. Additional research in each of these populations is needed to enhance our understanding of social and cognitive factors that serve as barriers to cessation treatment.

Knowledge of factors that may influence the care of racial/ethnic minority tobacco smokers is important for the delivery of culturally appropriate communication and for satisfactory clinical encounters [61]. However, racial/ethnic group cultural beliefs and practices are not monolithic; there is significant within-group heterogeneity (i.e., individual differences) that must be considered. Understanding the interrelatedness of race, ethnicity, socioeconomic status, cultural context, and geography will offer valuable insights to clinicians. Efforts to learn more about these variables represent an approach to addressing health care inequities.

Recommendation 2: Assess beliefs and expectations related to use of pharmacotherapy for tobacco cessation

In addition to the standard assessment and documentation of tobacco use [14], providers treating racial/ethnic minority tobacco smokers are encouraged to assess patients' treatment preferences and barriers to uptake and adherence. Previous research among African American light smokers found inadequate treatment adherence to bupropion therapy in a sample of treatment-seekers [62]. The use of pharmacotherapy for tobacco cessation may be incongruent with the cultural orientation (i.e., norms, beliefs, and practices) of patients. For example, a 50-year-old Hispanic male and current smoker who presents in a primary care clinic may believe that smoking is a just bad habit and a sign of vulnerability. He may also be generally avoidant of medication. A brief assessment of beliefs regarding NRT as a cessation aid would allow a "teachable moment"; that is, an opportunity for patient education regarding the neurobiology of nicotine dependence and the benefits of NRT for withdrawal management after cessation. Assessment items might include: "What would you think about using the nicotine patch or gum to help you quit smoking?" or "What would you expect from a medication to help

you quit?" Normalizing language designed to elicit barriers can also be used, including "Some people have concerns (or worries) about using NRT or a pill to help them quit smoking. What are your thoughts?" Such questions can enhance the standard assessment and inform providers about whether the issues identified in this review (and others) are relevant for the individual patient.

Recommendation 3: Deliver culturally appropriate advice to racial/ethnic minority tobacco users

Patient education about the many health risks of persistent smoking is important for primary and secondary prevention as well as for reducing tobacco-related disparities. When racial/ethnic minority patients are being treated, information about pharmacologic aids is needed regarding efficacy and safety, and also development and regulation. Health care professionals have a particularly important role in promoting wider use of evidence-based cessation strategies [43]. Indeed, there are positive associations between quality provider-patient communication and medication adherence and treatment satisfaction [63].

There is long-standing evidence that compared with whites, racial/ethnic minorities perceive health care system-wide biases, including provider bias [64]. Compared with whites, racial/ethnic minority patients may experience lower self-efficacy for medical decision-making and lower quality of care [65]. Many racial/ethnic minority smokers who desire to quit would be open to pharmacotherapy use, if it is accessible and discussed by providers [29, 46, 66]. Provider communication should be based directly on the enhanced assessment of tobacco use, and tailored to patients' unique barriers and concerns. Concerns regarding proper dosing [12, 37, 51], NRT addiction [53], and side effects [29] should be discussed proactively with patients. In doing so, providers should normalize and validate concerns (e.g., suspicion of the pharmaceutical industry), but need not identify potential barriers as being common among racial/ethnic minorities. Language such as the following should be used: "It is common to have concerns about the motives of drug companies. Fortunately, varenicline has been tested in many studies outside of the pharmaceutical industry and has helped more patients quit compared with a placebo (or a pill without medication)."

**Recommendation 4: Engage patients in shared decision-making**

Established models of provider-patient communication, such as the shared decision-making model [67], emphasize patient-centered care and value-based care. Evidence suggests that unmet provider communication needs may be magnified among racial/ethnic minority patients [68]. In the current context, providers would facilitate an information exchange, followed by a discussion of cessation treatment options and preferences, and a joint decision. Indeed, shared decision-making is positively associated with treatment adherence and timely care [69]. A systematic review found that the shared decision-making process for racial/ethnic minorities should be extended beyond patients and providers to include other important stakeholders, such as family members [68].

Recommendation 5: Assist patients by making a treatment recommendation that includes pharmacotherapy

Increasing access to tobacco cessation treatment is important for reducing tobacco-related disparities. Patients with health insurance are more likely to receive provider advice to quit [59], an association that may contribute to health care inequities. Providers should be aware of publicly available, evidence-based, tobacco cessation options that are available at no cost. These resources include state tobacco quitlines, group cessation programs in the community or hospitals, mobile applications, and text messaging programs. Many state quitlines and hospital-based programs also offer NRT.

Conclusion

In conclusion, racial/ethnic minorities suffer disproportionately from tobacco use, and access to cessation aids is sorely needed. At both the health system level and the provider level, equity in treatment access, education, and advice to quit is needed to increase use. There are modifiable patient-level reasons for under-use that we need to better understand and address. Providers are encouraged to embrace multiculturalism through the process of cultural humility. In the care of patients from diverse backgrounds, cultural humility is a multifaceted learning process of openness, self-awareness, and self-critique, which can result in mutual empowerment, partnerships, and optimal clinical care [70]. In primary care settings, providing culturally appropriate

advice and making a pharmacotherapy recommendation are vital. When pharmacotherapy is prescribed as an adjunct to behavioral counseling, uptake among racial/ethnic minorities can be high. With greater attention to the ethnocultural concerns of these groups, providers can encourage pharmacotherapy use and adherence, and play an integral role in reducing and eliminating racial/ethnic tobacco-related disparities.

Conflict of interest

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