Addictive Behaviors Reports 17 (2023) 100478

Contents lists available at ScienceDirect

Addictive Behaviors Reports

journal homepage: www.elsevier.com/locate/abrep

Hispanic/Latinx individuals' attributions for abstinence and smoking: A content analysis of open-ended responses from a randomized cessation trial

Laura Casas [a], Patricia Medina-Ramirez [a], Vanesa Carreno [b], Patricia Calixte-Civil [c], Ursula Martinez [a,d], Thomas H. Brandon [a,c,d], Vani N. Simmons [a,c,d,*]

[a] Department of Health Outcomes and Behavior, Moffitt Cancer Center, Tampa, FL, USA
[b] St. George's University School of Medicine, West Indies, Grenada
[c] Department of Psychology, University of South Florida, Tampa, FL, USA
[d] Department of Oncologic Sciences, University of South Florida, Tampa, FL, USA

ARTICLE INFO

Keywords:
Hispanic/Latinx
Latino
Smoking cessation
Abstinence
Content analysis

ABSTRACT

Introduction: Little is known about facilitators and barriers to smoking cessation among Hispanics seeking treatment. This secondary analysis examined attributions for abstinence or smoking among participants in a nationwide randomized controlled trial testing a self-help smoking cessation intervention among Spanish-speaking Hispanics in the United States (US).

Methods: At each follow-up assessment (6, 12, 18, and 24 months), participants (N = 1,417) responded to open-ended items regarding reasons for either abstinence or smoking. A content analysis was conducted using NVivo on the responses from 1,035 participants.

Results: Mood Management (e.g., stress and anxiety) was the most frequent reason for smoking across all timepoints. Concern for personal health and wellbeing was the most frequent reason cited for abstinence across all timepoints. Important barriers (e.g., financial stressors, environmental disasters) and facilitators (e.g., family, faith) were also identified. Quantitative subgroup analyses revealed differences in the frequency of abstinence and smoking attributions by sex, marital status, and annual household income.

Conclusion: The identified facilitators and barriers to abstinence support and expand findings from previous studies by using a geographically and ethnically diverse sample of treatment seeking, Spanish-preferring smokers. They also provide specific targets for tailoring cessation and relapse prevention interventions designed to improve cessation outcomes and reduce tobacco-related health disparities among Hispanics in the US.

1. Introduction

Hispanics/Latinxs (hereafter Hispanics) are one of the largest and fastest growing ethnic groups in the US, totaling 18% of the population (Krogstad, 2020). In general, smoking in the US has decreased over the past 50 years. Smoking rates among Hispanics have similarly declined, yet the total number of Hispanic smokers has increased corresponding to the population growth (Cummings & Proctor, 2014). Overall smoking rates remain lower for Hispanics than non-Hispanic Whites (Miller et al., 2018). However, prevalence varies by Hispanic subgroup and gender (Kaplan et al., 2014; Miller et al., 2018). Hispanics are at least as likely to attempt quitting as non-Hispanic Whites but are less likely to be successful at attaining and maintaining abstinence (Alboksmaty et al., 2019; Babb et al., 2020; Levinson et al., 2004; Trinidad et al., 2011).

Spanish-speaking Hispanic smokers face barriers that limit access to the relatively few Spanish language cessation resources available. Hispanics in general are overrepresented in lower socioeconomic groups, with high percentages of low-income and uninsured individuals (Barbeau et al., 2004; Sheffer et al., 2012). Uninsured and insured Hispanic smokers, regardless of their English-speaking ability or language preference, are less likely to receive tobacco screening and physician advice to quit (Babb et al., 2020; Levinson et al., 2004; Lopez-Quintero et al., 2006; Vargas Bustamante et al., 2010). Hispanics in general suffer disproportionate levels of smoking-related morbidity and mortality; 4 of the 5 leading causes of death are smoking related (i.e., cancer, heart disease, stroke, and diabetes) (NCHS, 2019). Furthermore, research

* Corresponding author at: Department of Health Outcomes & Behavior, Moffitt Cancer Center, 12902 Magnolia Drive (MRC – 3 WEST), Tampa, FL 33612.
E-mail address: Vani.Simmons@Moffitt.org (V.N. Simmons).

https://doi.org/10.1016/j.abrep.2022.100478
Received 13 September 2022; Received in revised form 18 November 2022; Accepted 23 December 2022
Available online 24 December 2022

conducted with both English-speaking and Spanish-speaking Hispanics has demonstrated misconceptions about pharmacotherapy [e.g., nicotine replacement therapy (NRT)] and personal beliefs (e.g., smoking is a weakness of character and quitting is a personal responsibility) contribute to the underutilization of treatments (Carpenter et al., 2011; Levinson et al., 2006). As a result, most English and Spanish-speaking Hispanics quit smoking on their own (Kaplan et al., 2014; Levinson et al., 2004; Merzel et al., 2015).

The United States Public Health Service's *Clinical Practice Guidelines for Treating Tobacco Use and Dependence* called for research to identify motivators and determinants of smoking cessation among minorities (2000; 2008). Previous studies exploring this topic among bilingual (English-Spanish) and primarily Spanish-speaking Hispanics identified cessation facilitators mainly related to concerns with personal health and appearance, as well as the cultural value of *familismo* (e.g., setting a good example for children, the pressure or support of family members) (Carter-Pokras et al., 2011; Merzel et al., 2015; Pérez-Stable et al., 1998; Piñeiro et al., 2018; Polednak, 1994; Sias et al., 2008; Simmons et al., 2011). Identified barriers to cessation relate to individual level factors, such as managing negative emotions and engaging in habitual activities (e.g., drinking coffee or alcohol), and interpersonal factors (e.g., social pressure, being around other smokers) (Carter-Pokras et al., 2011; Pérez-Stable et al., 1998; Piñeiro et al., 2018; Sias et al., 2008; Simmons et al., 2011). However, little is known about attributions of abstinence or smoking among Spanish-preferring Hispanic individuals seeking smoking cessation treatment. Moreover, previous studies assessing protective and risk factors among Hispanic smokers have been limited by geographic location and samples of predominately one Hispanic subgroup (e.g., Puerto Ricans in the Northeast, Mexicans in California, Central Americans in Maryland) (Carter-Pokras et al., 2011; Pérez-Stable et al., 1998; Polednak, 1994).

To address the lack of culturally appropriate resources for Hispanics, our team developed a self-help smoking cessation intervention titled *Libre del Cigarrillo por mi familia y por mí: Guía para dejar de fumar (LDC; Free from Cigarettes, for my family and for me: Guide to quitting smoking)*. A randomized controlled trial (RCT) with a diverse sample of Spanish-preferring Hispanic smokers found the *LDC* intervention improved cessation outcomes when compared to usual care (Simmons et al., 2022). The current study examined free-form responses to further understanding of factors perceived to impede or aid cessation. A secondary aim was to examine attributional differences by sociodemographic variables known to impact smoking behavior and cessation outcomes among Hispanic smokers: sex, income, and marital status (Kaplan et al., 2014; Kendzor et al., 2010; Merzel et al., 2015; Ramsey et al., 2019). These analyses could inform tailoring of smoking cessation and relapse-prevention interventions to improve cessation outcomes with the ultimate goal of addressing tobacco-related health disparities affecting Hispanics.

2. Materials and methods

2.1. Participants

Potential participants were 1,417 adult Hispanic smokers living in the US who enrolled in the RCT (approved by Advarra Institutional Review Board). Participants were required to be $\geq$ 18 years of age, have smoked $\geq$ 5 cigarettes/week for $\geq$ 1 year, not currently enrolled in a face-to-face smoking cessation program, and be monolingual Spanish or bilingual Spanish-English speaking with a preference for receiving health materials in Spanish. Participants were recruited throughout the US and Puerto Rico using mass media (e.g., TV ads), social media (i.e., Facebook), and community partnerships (Medina-Ramirez et al., 2020).

2.2. Procedures

RCT participants were randomized to receive either the *LDC* intervention (n = 714) or UC (n = 703). UC consisted of the National Cancer Institute's Spanish-language smoking cessation booklet, *Guia: Viva de forma más saludable para usted y su familia, deje de fumar hoy mismo* (Live Healthier for You and Your Family, Quit Smoking Today). The *LDC* intervention was adapted from a validated English-language intervention, *Forever Free®: Stop Smoking for Good*, using a multi-phase qualitative approach (Piñeiro et al., 2018). *LDC* comprises 11 booklets and 9 pamphlets mailed monthly to participants over 18 months (Medina-Ramírez et al., 2019).

2.3. Measures

Participants were provided the option of completing the assessments online or on paper to accommodate their preferences. At baseline, 58.8% of participants opted for paper and 41.2% for online assessments. Participants were allowed to change their preference for assessment modality throughout the trial. All assessments were completed in Spanish. Sociodemographics and smoking history were collected at baseline. Follow-up assessments at 6-, 12-, 18-, and 24-months post-baseline collected self-reported smoking status; use of other tobacco products, electronic cigarettes, and quit aids; and use and evaluation of the materials. Assessments also included two open-ended items regarding reasons for abstinence or smoking: "If you are currently smoking cigarettes, please tell us why you think you have not stopped smoking" (Si actualmente está fumando cigarrillos, por favor díganos por qué cree que no ha dejado de fumar), and "If you have stopped smoking cigarettes, please tell us what has helped you quit smoking for good" (Si usted ha dejado de fumar cigarrillos, por favor díganos qué le ha ayudado a dejar de fumar para siempre).

2.4. Data preparation and analysis

Analyses for this study included 1,035 participants who answered an open-ended item for at least 1 of the 4 follow-up surveys. Responses from paper surveys were entered verbatim by trained bilingual (Spanish-English) research interns into Excel files and merged with online responses exported from Qualtrics. Data cleaning was conducted by bilingual (Spanish-English) members of the research team (PMR and LC). Data files from each timepoint, separated by smoking status (abstinent or smoking), were subjected to qualitative content analysis using NVivo 12 (QSR International Pty Ltd, 2018). Codebooks were developed using a two-stage deductive and inductive approach (Irwin & Winterton, 2011). A priori themes were determined via review of the literature, then revised through an iterative process starting with the 6-month data files, which were examined and coded jointly by PMR, LC, and VC. Existing codes were modified, and new/emergent ones were identified. Then, an initial comparison was conducted by PMR and LC with 50 responses from each 12-month dataset to identify discrepancies in coding patterns and adjust code definitions (O'Connor & Joffe, 2020). To calculate intercoder reliability, PMR and LC each coded subsamples of 10% of all abstinent and smoking responses. Coding was conducted independently and in duplicate until a high level of agreement was reached (Cohen's Kappa: 88% overall, 89% for abstinent responses, 87% for smoking responses) (O'Connor & Joffe, 2020). Discrepancies were resolved through discussion between PMR and LC, with a third team member (VS) available to resolve disagreements. All remaining responses were then coded independently.

To avoid the overrepresentation of responses from the same individuals driving the findings, our analyses were conducted by timepoint rather than across time. Frequencies were calculated for abstinence and smoking attributions at each assessment timepoint. Data were analyzed using IBM SPSS Statistics (Version 26) (IBM Corp., 2019) predictive analytics software. Chi-square analyses were conducted on the following variables of interest: sex (men vs. women), income (<$10,000 vs. $\geq$ $10,000), and marital status (married or cohabitating vs not married or cohabitating). We used $\alpha = 0.05$ to determine

differences of statistical significance.

3. Results

3.1. Response rates

Characteristics of the 1,035 participants are presented in Table 1. The number of participants who answered at 6-, 12-, 18-, and 24-months was 830 (80%), 761 (74%), 663 (64%), and 697 (67%), respectively. In addition, 214 participants answered the open-ended item once, 165 twice, 217 three times, and 439 four times for a total of 2,951 responses. Of those who responded, the number of participants abstinent/smoking at 6, 12, 18, and 24 months was 152/678, 192/569, 194/469, 229/468 respectively. For those abstinent at 6, 12, 18, and 24 months, the percent of responses with more than one code identified was 51.3, 59.3, 59.3, and 57.2, respectively. For those smoking at 6, 12, 18, and 24 months, the percent of responses with more than one code identified was 88.5, 99.2, 84.5, and 85.9. Among all participants who returned surveys (N = 1,069), 90% provided answers to at least one open-ended question (N = 1,035), with response rates ranging from 85% for participants abstinent at 6 and 18 months to 93% for participants smoking at 12 and 24 months.

3.2. Attributions for abstinence

Fig. 1 shows the frequency of responses cited among abstainers at each assessment. Table 2 presents illustrative quotes. The most frequent reason was *Health and Wellbeing*. These responses presented desires to quit and stay abstinent due to health concerns such as fear of acquiring a smoking-related illness, wanting to prevent health conditions attributed to smoking (e.g., cancer), and wanting to live longer. Comments also reflected noticeably improved physical health since quitting, as well as quitting due to a noticeable decline in health attributed to smoking.

The *LDC Intervention* was the second most-frequent reason at each assessment. Participants in the LDC condition attributed achieving and sustaining abstinence to reading the *LDC* booklets and pamphlets. Participants described the *LDC* intervention as informative, educational, and motivational. Responses emphasized the usefulness of the stories of former smokers depicted in the *LDC* intervention pamphlets. UC participants mentioned the *UC Intervention* far less often.

Family and Friends was another frequent reason, representing concerns for the health and wellbeing of family members and friends. This included familial support for quitting as well as maintaining smoking abstinence. Additionally, feeling pressure to quit from family members and friends was a reason for achieving and maintaining abstinence.

Participants also cited the use of *External Resources* in helping them achieve and maintain abstinence. Responses described resources not provided by the study, primarily the use of quit aids such as NRT and other pharmacotherapies. Additionally, participants attributed their abstinence to maintaining a spiritual or religious practice and relying on faith and God. Several participants also reported using electronic cigarettes and receiving assistance from healthcare providers. Lessons learned from other smokers who successfully quit was cited by a small number of participants.

Table 1
Demographic and smoking variables as reported at baseline.

	Total Sample (n = 1,035)
Demographic Variables	
Age M(SD)	50.3 (11.5)
Women (%)	51.2
Married (%)	44.7
Less than high school education (%)	25.8
Annual household income under $10,000 (%)	39.7
Hispanic Subgroup (%)	
Cuban	23.1
Puerto Rican*	18.3
Mexican	31.1
Central American	5.5
South American	9.3
Dominican	2.5
Other	1.2
More than one subgroup	8.9
Study condition (%)	
LDC	47.8
UC	52.2
Smoking Variables	
Smoking daily in the past month (%)	93.6
Cigarettes per day in the past month, M(SD)	14.6 (8.3)
Fagerström Test for Nicotine Dependence (0–10), M (SD)	4.9 (2.4)
Years as a regular smoker, M(SD)	28.3 (13.0)

M: Mean; SD: Standard Deviation; LDC: Libre del Cigarrillo; UC: Usual Care; * participants of Puerto Rican origin were residing in Puerto Rico or the US.

3.3. Attributions for smoking

Fig. 2 shows the frequency of responses cited among participants who reported reasons for smoking at each timepoint. Table 3 presents illustrative quotes. The most frequent reason for smoking was *Mood management*, which included smoking to cope with negative emotions and moods. Participants frequently attributed their smoking to stress and described smoking as a stress reliever. Participants also reported using smoking to deal with or control mental health issues.

Lack of Self-efficacy was the second most frequent reason for smoking. Participants noted lack of willpower or self-control as reasons for smoking. Participants reported lacking confidence in themselves to quit and not believing they could maintain abstinence once they quit.

Dependence was also a frequent reason for smoking; with smoking described as an addiction or habit often instigated by environmental stimuli or cues such as coffee or alcohol, seeing others smoke, or having cigarettes around. They also mentioned cravings to smoke and enjoying smoking. Participants attributed being addicted to cigarettes to the length of time they have been smoking or having started smoking at a young age. Participants also reported experiencing physical and emotional symptoms of withdrawal, such as headaches, nausea, and anxiety, as preventing them from quitting or staying abstinent.

Lastly, *Personal Problems* was a frequent reason for smoking. Participants attributed smoking to troubles at home or family issues, difficulties at the workplace or employment status concerns. Participants also reported smoking to cope with financial troubles, circumstances out of their control (e.g., hurricanes, the COVID-19 pandemic), as well as problems relating to immigration.

3.4. Subgroup analyses

We compared the frequency of abstinence and smoking attributions across sex, marital status, and annual household income, as these variables were previously associated with cigarette smoking and cessation behaviors among Hispanics (Kaplan et al., 2014; Kendzor et al., 2010; Ramsey et al., 2019). Dichotomizing income at $10,000/year resulted in higher/lower income subgroups that covaried negatively (r = -0.16) with marital status (unmarried/married) and positively (r = 0.14) with sex (men/women). The marital status subgroups negatively covaried with sex (r = -0.16). The themes used as independent variables are described in Tables 2 and 3.

Women more frequently cited *Motivation to Quit* as a reason for abstaining from smoking at month 24, χ^2 (1) = 5.91, p =.015. Among responders who were smoking, women more frequently cited *Mood Management* as a reason for smoking at month 24, χ^2 (1) = 6.80, p =.009, whereas men cited *Social*, χ^2 (1) = 4.76, p =.029, and *Miscellaneous* (see Table 3 for description of theme), χ^2 (1) = 6.29, p =.012, reasons more often, namely at month 18.

Married participants more frequently cited *LDC Intervention* as a

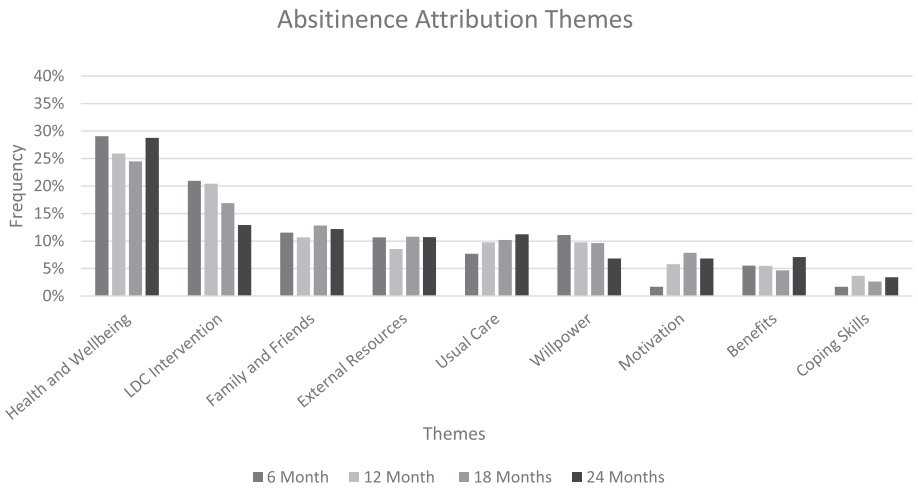

Fig. 1. Frequencies of responses in abstainers at each assessment.

reason for abstinence at month 6, χ^2 (1) = 4.31, p =.038, and month 12, χ^2 (1) = 4.51, p =.034. Married participants also mentioned *Family and Friends* more often at month 6, χ^2 (1) = 4.33, p =.037, and month 12, χ^2 (1) = 6.66, p =.010. When analyzing responses cited by smokers, married participants mentioned *Miscellaneous* reasons more often at month 18, χ^2 (1) = 4.68, p =.030. Unmarried participants more frequently cited *Dependence* at month 12, χ^2 (1) = 4.83, p =.028, and *Mood Management*, χ^2 (1) = 4.10, p =.043, and *Personal Problems*, χ^2 (1) = 4.33, p =.038, at month 24, as reasons for smoking.

Lastly, lower income participants more frequently cited the *LDC Intervention* as a reason for abstinence at month 24, χ^2 (1) = 5.86, p =.015, whereas higher income participants (≥$10,000/year) more often mentioned *Willpower* at month 6, χ^2 (1) = 6.21, p =.013. Among smokers, the only significant differences across these groups were observed at month 24. Lower income participants more frequently cited *Mood Management*, χ^2 (1) = 8.69, p =.003, as a reason for smoking.

4. Discussion

The present study aimed to examine reasons participants attributed to achieving and maintaining abstinence versus smoking among a sample of Spanish-speaking smokers enrolled in a cessation trial. Overall, personal health and wellbeing, the LDC intervention, and the influence of family and friends were the top reasons for stopping smoking across all timepoints. On the other hand, managing mood (e.g., stress and anxiety), lacking self-efficacy (i.e., willpower), and being dependent were the most frequent for smoking across all timepoints. Content analysis of responses revealed several other reasons to which participants attributed achieving or not achieving abstinence, though their frequencies varied across timepoints. Abstinent participants consistently cited the use of quit aids and reliance on faith and religion as contributors to maintaining abstinence, whereas a lack of motivation to quit and personal problems were increasingly cited as contributors to failed quit attempts and relapse over the timepoints. Differences in responses by demographic variables were explored and revealed the prevalence of themes varied based on sex, marital status, income, and study condition at different timepoints. Notably, women and participants who were unmarried or had lower income were more likely to endorse *Mood Management* reasons for smoking at the 24-month timepoint. These results are expected due to the covariance of these variables.

4.1. Implications for research and intervention development

Qualitative data can help researchers understand the reasons that motivate smokers to quit and the reasons individuals smoke. Understanding participants' perspectives regarding smoking and quitting behavior is especially relevant regarding Hispanic smokers, who may have barriers and facilitators to quitting specific to Hispanic culture. The present analysis has revealed factors that Hispanic smokers perceive as aiding or hindering their ability to successfully quit smoking for good.

Our findings that the top reason participants gave for quitting and staying quit was due to health concerns and the desire to improve their wellbeing is consistent with previous research involving English- and Spanish-speaking Hispanics and non-Hispanic Whites (Carter-Pokras et al., 2011; Pérez-Stable et al., 1998). Notably, our respondents reported worsening of physical symptoms helped them to quit and improvement of symptoms helped them to stay quit. This suggests that the health consequences of smoking and the benefits of quitting should continue to be mentioned throughout the course of an intervention so that they remain salient to participants. Future interventions should continue educating smokers on the importance of quitting for maintaining personal health in the long-term, while highlighting the immediate or short-term health benefits of quitting smoking.

Managing negative emotions has previously been identified as a risk factor for Spanish-speaking Hispanic smokers trying to quit (Zvolensky, Bakhshaie, et al., 2019; Zvolensky, Shepherd, et al., 2019). Affect regulation has been recognized as a key motivator of smoking in general (Baker et al., 2004; Brandon, 1994; Kassel et al., 2003). Our results suggested that work-related and homelife stressors, specifically, may induce and exacerbate feelings of stress and anxiety. Additionally, negative mood was commonly reported along with financial hardships and immigration-related difficulties. It is also noteworthy that participants cited the impact of stressful population level events on their smoking. These included natural disasters (e.g., hurricane Maria and Irma affecting Puerto Rico), as well as the ongoing COVID-19 pandemic. Indeed, Hispanics living in the US are overrepresented in lower socioeconomic groups, have a high proportion of immigrants, and tend to live in areas that have been highly impacted by natural disasters over the past decade (Barbeau et al., 2004; Lopez & Moslimani, 2022; Passel et al., 2022; Sheffer et al., 2012). Hispanic smokers may benefit from interventions that provide coping skills to manage negative moods (e.g., mindfulness, deep breathing) or that address smoking cessation holistically and dynamically in response to current issues and concerns (Vidrine et al., 2013).

Furthermore, consistent with previous literature reporting on reasons for quitting related to *familismo* among bilingual and mainly Spanish-speaking Hispanics (Carter-Pokras et al., 2011; Pérez-Stable et al., 1998; Piñeiro et al., 2018), participants in our study recognized the influence of their loved ones as important to attaining and sustaining abstinence. Contrary to previous findings that report skepticism among

Table 2
Themes for participant attributions for smoking abstinence and illustrative quotes.

Theme	Description	Example
Health and Wellbeing	Physical or mental health concerns, worsening of symptoms due to smoking or improvement due to quitting, increased awareness of the negative consequences of smoking, having a surgical procedure or being hospitalized, quitting to improve quality of life or general wellbeing	*"Fear of diseases and because I am diabetic and hypertensive and I have circulation problems, a kidney cyst and an ovarian nodule."* *"I don't want to spend my old age in a hospital or walking around with an oxygen tube; That's why I quit smoking."* *"What has helped me to stop smoking for good is that I have recognized that my health is much better than before."*
LDC Intervention	Reading the *Libre del Cigarrillo* booklets and pamphlets	*"The books that you sent me and the brochures with the stories of people who were smokers like me helped me a lot to motivate me to quit."* *"The information of the books, every time I had cravings, I grabbed a book."*
Family and Friends	Quitting for family and loved ones, support or pressure from friends and family, concern for the health of others	*"The family support, especially that of [my] daughter, the grandchildren and how happy they were when I told them that I had quit. Family support is essential for me to quit."* *"First, my wife who is unbearable, she is a policeman, and she gets brutal when I smoked a cigarette, she didn't like that I smoked because it harms my health."* *"Convincing myself through the readings that smoking causes a lot of damage, not only to me, but also to my family and friends, and remembering that the passive smoker whom we force to breath our smoke can get cancer of the lung, larynx, or even esophagus because of our fault and irresponsibility."*
External Resources	Use of quit aids and electronic cigarettes, participation in religious/spiritual practices or beliefs, support provided by healthcare providers, experiences of others	*"Nicotine patches and nicotine gum have helped me a lot."* *"The anxiety pills my doctor prescribed and the vape."* *"I also learned about the word of God and I know that God does not like that we have addictions, the holy spirit does not let me be at peace if I smoke."*
Usual Care Intervention	Reading the NCI booklet	*"The book you sent me contains a lot of information to reflect on and stop smoking. It wasn't easy but I did it. Thanks."* *"The clear and simple information that you sent me, through your guide, helped me a lot, thank you."*
Willpower	Having the self-control or willpower to quit or stay quit; having courage, strength, or bravery	*"Self-control and knowing how to moderate my emotional control. But above all, willpower is paramount above all else."* *"I believe that my willpower has been my victory of being free of cigarettes."* *"A lot of courage and believe in yourself because if you do not trust yourself you would never achieve the result [quit smoking]."*
Motivation	Having the desire to quit, making the decision to quit, or setting the goal to quit, wanting to change habits	*"My desire to quit."* *"You have to be very sure of the step you want to take and have a lot of self-confidence, also not fool yourself…"* *"I felt motivated and set short-term goals until it became a habit for me."*
Benefits	Saving money by not smoking; improved hygiene or appearance due to quitting: better breath, skin, and smell; not having to carry packs or look for a smoking area, not being rejected by nonsmokers	*"Smoking is an expensive addiction, approximately $10.00 a day. Either I ate or I smoked."* *"My breath is fine. My body smells good. The money I used to spend on cigarettes is in a piggy bank. I don't waste so much time looking for a place to smoke."* *"The economic and social part is very important; they [the public] increasingly reject smokers."*
Coping Skills	Using learned coping skills to maintain abstinence, removing triggers (i.e., things, places, people, or habits); not hanging out with smokers, not drinking alcohol or coffee	*"I started looking at the options that came in the book and decided to start smoking less, I started exercising more, I stopped buying more cigarettes. I got away from my smoking friends and decided to change the way I live…"* *"Break the routine and keep your mind busy. Besides, avoid associating with people who smoke."* *"I do not drink coffee. When I got cravings, I ate a piece of candy."*

English- and Spanish-speaking Hispanics regarding NRT and other pharmacotherapy (Carpenter et al., 2011; Levinson et al., 2006), our results suggest treatment-seeking Hispanic smokers may be amenable to using quit aids, especially if they have the financial means to attain them. Future interventions should leverage the supporting role family and friends play throughout the quitting process, and those interventions that have incorporated the cultural value of *familismo* should examine its potential utility for improving smoking cessation outcomes. In addition, interventions should consider offering NRT to receptive smokers.

Lack of willpower has commonly been cited as a main reason English- and Spanish-speaking Hispanics believe they cannot achieve and maintain smoking abstinence (Carter-Pokras et al., 2011; Levinson et al., 2006; Marin et al., 1990; Piñeiro et al., 2018; Polednak, 1994). The prevalence of this attribution is supported by our findings. The high frequency of this response is unsurprising considering the common Hispanic belief that smoking is a character failing and quitting is a

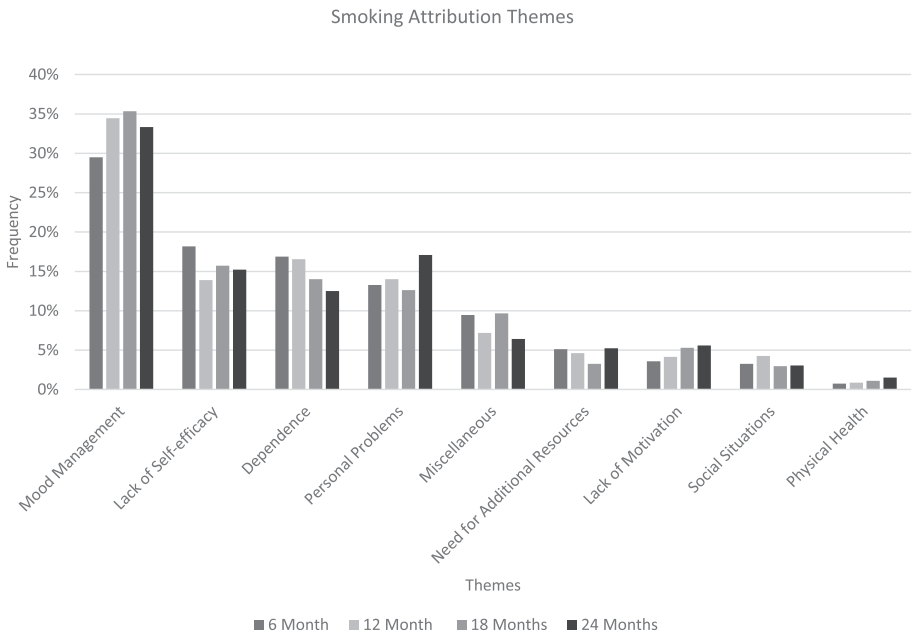

Fig. 2. Frequencies of responses in smokers at each assessment.

personal responsibility (Carter-Pokras et al., 2011; Levinson et al., 2006; Merzel et al., 2015). Interestingly, higher income participants were more likely to attribute their success in quitting to willpower. These findings suggest greater financial stability and its benefits may place smokers in a better position to successfully quit. There is evidence that those who have financial instability are more susceptible to willpower depletion (Spears, 2011). The lay concept of willpower may reflect psychological constructs such as self-regulation and self-control, and our findings are consistent with previous research demonstrating that successful smoking cessation is predicted by measures of task persistence and distress tolerance (Brandon et al., 2003; Brown et al., 2009).

Taken together, our findings expand on past research exploring protective and risk factors among Hispanic smokers by identifying and examining attributional correlates to successful and failed quit attempts. Mood management, specifically coping with stress and anxiety, was consistently identified as the greatest contributor to smoking, and this was particularly relevant for women, unmarried, or lower income participants. Although the finding between mood management and smoking is not unique to Hispanics (Pérez-Stable et al., 1998), our findings suggest the need to tailor intervention components to addressing stressors relevant to Hispanics in the context of relapse prevention (e.g., immigration-related difficulties) and capitalizing on factors Hispanic participants perceive as most important for quitting success (e.g., familial support).

4.2. Methodological triangulation

The collection and analysis of the open-ended items provides an opportunity for methodological triangulation to expand upon the primary outcomes of the parent RCT. Methodological triangulation utilizes various methods to examine a research question, which provides additional knowledge at different levels and increases confidence in findings by providing access to information that may have remained undiscovered if only one methodology were used (Östlund et al., 2011). We implemented qualitative and quantitative methods to analyze free-from responses to compare with the primary quantitative findings from the parent RCT.

The parent trial evaluated the baseline variables of sex and income as prospective moderators of the intervention's effect and only sex was found to be a significant moderator of the intervention (Simmons et al., 2022). Specifically, the *LDC* intervention was found to be efficacious and to have a stronger long-term effect for men than women, with significantly higher abstinence rates than the UC intervention at all follow-ups. Similarly, a review by Smith and colleagues found women to be less likely to quit smoking, with a stronger difference between men and women in studies with longer follow-ups (Smith et al., 2016). The present analyses found women smokers endorsed more *Mood Management* reasons than men at month 24 and that unmarried and lower income participants were more likely to endorse *Mood Management* reasons for smoking. Furthermore, Zvolensky and colleagues have found that anxiety sensitivity and emotional dysregulation among Hispanic smokers is associated with cigarette dependence, barriers to quitting, and problems quitting during previous attempts (Zvolensky, Bakhshaie, et al., 2019; Zvolensky, Shepherd, et al., 2019). Our qualitative analyses confirm these previous findings and may provide greater understanding of the parent trial's findings by potentially explaining the sex differences in long term intervention effect and provides information that can be used in further intervention modifications needed for women. Hispanic women smokers may be more susceptible to emotional stressors, especially when attempting to maintain long-term abstinence. Thus, mood management strategies should be included in future interventions designed to aid women in maintaining abstinence, improve long-term efficacy, and reduce the observed gender inequity.

4.3. Limitations

Findings from this study should be interpreted considering its limitations. Given that the sample for the parent study comprised Spanish-speaking, treatment-seeking, self-selected volunteers, the results are not necessarily generalizable to the full population of Hispanic smokers in the US. However, recruitment occurred throughout the country using several methods, and a large nationwide sample encompassing various Hispanic subgroups was enrolled. Additionally, as the parent study was a longitudinal clinical trial, we only had data on participants who completed follow-up assessments, and it is possible that attributions might be different among those who withdrew from the study or could not be reached.

Table 3
Themes of participant attributions for continued smoking and illustrative quotes.

Theme	Description	Example
Mood Management	Continuing to smoke due to stress, feelings of nervousness or anxiety, negative mood states like worry, anger, or fear, feeling sadness or depression, or feeling loneliness or boredom, coping with a mental health condition	*"Too much stress in my life. My daily life is a roller coaster, with many worries. I have a lot of anxiety and suffer from depression…"* *"I think I am very anxious, apart from this I have many things to resolve, I get depressed, and I try not to pay attention to my depression. I have to keep fighting to resolve my issues…"* *"I find it impossible to quit smoking due to boredom, loneliness, depression. But I still make the effort to stop smoking…"*
Lack of Self-efficacy	Lacking willpower, self-control, or confidence in own ability to quit, seeing quitting as a personal responsibility, being too weak or lacking the courage to quit, procrastinating or putting off quitting	*"I do not have any willpower. I want to leave it [smoking]. I cannot."* *"Because I am weak and the habit wins over me, I have reduced the cigarettes, but I have not been able to quit."* *"Because I keep thinking that I will quit later [eventually]."*
Dependence	Needing cigarettes, enjoying, desiring or craving to smoke because it as an addiction or habit or due to the length of time they have been smoking, experiencing physical or mood state symptoms when not smoking, smoking as a response to stimuli or cues	*"It is a very ingrained habit in me; I don't know how to live without smoking."* *"Because I like it [smoking], and when I try it [quitting], the lack of nicotine makes me pick up the cigarette again."* *"It's been years of smoking and when you smell the smoke you feel like having one and that's when I think I won't stop lighting it."*
Personal Problems	Smoking to deal with life problems like homelife issues or conflicts with family members, work-related problems (i.e., unemployment or overworking), financial insecurity, smoking due to extraneous circumstances (e.g., hurricanes Maria, Harvey, Irma; COVID-19 pandemic), problems relating to immigration or living in a host country (i.e., US)	*"I am a single woman with a temporary job, I help my sick brother in Tijuana [Mexico], and I have a grandson in my care, and I pay rent of 600 dollars and sometimes it is not enough, and I get desperate, nobody helps me. But I'll keep trying, I can."* *"Due to the stress of covid 19 and being locked up at home that has caused me a lot of stress and anguish… I would like to stop smoking anymore but it becomes so difficult."* *"I am very stressed trying to accept my migrant status, that is, adapting to a social environment totally unknown to me."*
Miscellaneous	Being unsure or not knowing why they have not been able to quit or stay quit, finding quitting difficult or hard, seeing quitting as a gradual process, making strides towards achieving abstinence	*"I really don't know, I really want to quit smoking, but I don't know why I haven't been able to quit for good, although I am smoking much less."* *"It is very difficult to stop smoking because it is very addictive. But I keep trying to quit smoking by reducing it."* *"I really don't know, I try hard to quit smoking, I've endured more than 24 h and I relapse I don't know what to do."*
Need for Additional Resources	Not having the necessary support or resources to quit, needing more information, quit aids, or help to quit and stay quit, needing more than self-help materials	*"I couldn't because I didn't have everything I needed and support to quit and I need it."* *"… if I had medication I think it would be a little help. Maybe like patches or gum."* *"I would like to try something else like patches, electronic cigarettes, but I don't know if it would help me quit smoking…"*
Lack of Motivation	Lacking motivation, not being interested in quitting, not feeling ready to quit, not trying, not wanting, or not making the effort to quit	*"I can't find a reason [to quit smoking]."* *"Because the truth is I don't want to quit."* *"I want to quit smoking, but I have no decision of my own, to say once and for all, I don't smoke anymore, and I don't smoke anymore, and that's it."*
Social Situations	Being in social situations or environments, like workplaces or bars, that promote smoking, spending time with other smokers, including friends, partners or other family members, feeling social pressure to smoke	*"Because I go to places where most people smoke for example bingo, casinos, etc.…"* *"…people around me smoke a lot…"* *"I have smokers at my work, even if I forget, my colleagues remind me of the cigarette."*
Physical Health	Smoking because of or to cope with a physical health condition, disease, or issue	*"…desperation due to pain in my body. I suffer from fibromyalgia, arthritis, migraine and others."* *"Because I have a disease that I only feel calm when I smoke, but it is impossible for me to quit [because of] prostate cancer."* *"Because I have a lot of anxiety and pain in my entire back due to the hernias and arthritis that I suffer from…"*

4.4. Conclusions

This study demonstrates the value of analyzing qualitative data often overlooked and unreported in smoking cessation trials. Health concerns was the most cited attribution for abstinence. Management of negative emotions was the most frequent attribution for smoking, especially among women, unmarried, and lower income individuals. Although, attributions for smoking and abstinence revealed by this study were generally consistent with the broader literature on smoking motivation

and cessation among Hispanics, the analyses identified specific content and targets for future interventions addressing the needs of this population.

Funding support

This work was supported by the National Cancer Institute at the National Institutes of Health (grant number R01 CA199143); and the Florida Biomedical Research Program (grant number 5JK03). This work has also been supported in part by the Biostatistics and Bioinformatics Shared Resource and the Participant Research, Interventions, and Measures Core at the H. Lee Moffitt Cancer Center and Research Institute, an NCI designated Comprehensive Cancer Center (P30CA76292). The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

CRediT authorship contribution statement

Laura Casas: Conceptualization, Methodology, Formal analysis, Data curation, Visualization, Investigation, Writing – original draft, Writing – review & editing, Project administration. **Patricia Medina-Ramirez:** Conceptualization, Methodology, Formal analysis, Data curation, Visualization, Investigation, Writing – original draft, Writing – review & editing, Supervision. **Vanesa Carreno:** Formal analysis, Visualization, Investigation, Writing – review & editing. **Patricia Calixte-Civil:** Visualization, Investigation, Writing – review & editing. **Ursula Martinez:** Investigation, Writing – review & editing. **Thomas H. Brandon:** Conceptualization, Methodology, Visualization, Writing – review & editing, Funding acquisition. **Vani N. Simmons:** Conceptualization, Methodology, Visualization, Writing – review & editing, Funding acquisition.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

Acknowledgements

The authors would like to thank the participants and all the research and administrative staff who helped conduct the parent study, and the Moffitt PRISM Core for facilitating access to the qualitative analysis software.

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