2023

Understanding cancer patients' desire to quit tobacco without assistance: A mixed-methods, longitudinal study

Tia Borger
University of Kentucky, tnbo225@uky.edu
Digital Object Identifier: https://doi.org/10.13023/etd.2023.181

STUDENT AGREEMENT:

I represent that my thesis or dissertation and abstract are my original work. Proper attribution has been given to all outside sources. I understand that I am solely responsible for obtaining any needed copyright permissions. I have obtained needed written permission statement(s) from the owner(s) of each third-party copyrighted matter to be included in my work, allowing electronic distribution (if such use is not permitted by the fair use doctrine) which will be submitted to UKnowledge as Additional File.

I hereby grant to The University of Kentucky and its agents the irrevocable, non-exclusive, and royalty-free license to archive and make accessible my work in whole or in part in all forms of media, now or hereafter known. I agree that the document mentioned above may be made available immediately for worldwide access unless an embargo applies.

I retain all other ownership rights to the copyright of my work. I also retain the right to use in future works (such as articles or books) all or part of my work. I understand that I am free to register the copyright to my work.

REVIEW, APPROVAL AND ACCEPTANCE

The document mentioned above has been reviewed and accepted by the student's advisor, on behalf of the advisory committee, and by the Director of Graduate Studies (DGS), on behalf of the program; we verify that this is the final, approved version of the student's thesis including all changes required by the advisory committee. The undersigned agree to abide by the statements above.

Tia Borger, Student

Dr. Jessica L. Burris, Major Professor

Dr. Mike Bardo, Director of Graduate Studies

Understanding cancer patients' desire to quit tobacco without assistance: A mixed-methods, longitudinal study

---

DISSERTATION

A dissertation submitted in partial fulfillment of the
requirements for the degree of Doctor of Philosophy in the
College of Artis and Sciences
at the University of Kentucky

By
Tia Borger
Lexington, Kentucky
Director: Dr. Jessica L. Burris Professor of Psychology
Lexington, Kentucky
2023

orcid.org/0000-0001-5076-4293

ABSTRACT OF DISSERTATION

Understanding cancer patients' desire to quit tobacco without assistance: A mixed-methods, longitudinal study

Introduction: Unassisted attempts to quit tobacco are a well-established reason for quit failure. Nonetheless, many cancer patients prefer to make a quit attempt without using evidence-based tobacco treatment. This study aimed to understand the rationale that underlies cancer patients' desire to quit tobacco without assistance and to track longitudinally the smoking cessation outcomes of patients with this preference. Method: In a mixed-methods, longitudinal study, 35 cancer patients who were current tobacco users and declined tobacco treatment because of the desire to quit on their own provided data via three questionnaires and 1-2 semi-structured interviews across 60 days. Participants were recruited from outpatient cancer clinics. Results: The sample was predominately White, non-Hispanic (85.71%), female (68.57%), unemployed due to disability (57.14%), and rural (54.29%). Key themes that emerged from the qualitative interviews were: self-reliance, willpower, perceived shame, social norms around unassisted quitting, and negative attitudes towards tobacco treatment. The most frequently endorsed barrier to tobacco treatment was "*I know others who have quit without tobacco treatment"* (82.86%, $n = 29$). During the study, participants reported smoking 12.20 ± 7.78 cigarettes per day on smoking days. Fourteen (43.67%) participants reported achieving 50% smoking reduction and 21.88% of participants achieved 3-day floating abstinence; none of these participants used treatment. Discussion: This study with cancer patients who use tobacco identified affective, cognitive, and personality factors related to quitting on one's own, and social and systemic barriers to tobacco treatment use. Future interventions must address these factors to increase uptake of tobacco treatment in this population.

KEYWORDS: Cancer patients, tobacco use, tobacco treatment, tobacco cessation

Tia Borger

(Name of Student)

04/14/2023

Date

Understanding cancer patients' desire to quit tobacco without assistance: A mixed-methods, longitudinal study

By
Tia Borger

Dr. Jessica L. Burris
Director of Dissertation

Dr. Mike Bardo
Director of Graduate Studies

04/14/2023
Date

DEDICATION

To Josh, Calvin, Chance, Griffin, my mom, my dad, grandma, grandpa, Carter and Lambeau for their support throughout graduate school.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1. INTRODUCTION

1.1 Overview of Cancer Survivorship

Even with major advances in population-based prevention (e.g., national decline in smoking rates, large campaigns around sun protection, radon mitigation, and HPV vaccination), early detection of cancer, and personalized medicine, cancer remains one of the biggest threats to the health and longevity of U.S. adults. For U.S. men and women alike, the lifetime risk of developing cancer is currently one in three, and the risk of dying from cancer is currently one in five (American Cancer Society, 2023). Cancer is the second leading cause of death in the U.S. and is among the top five reasons for premature mortality, with an expected 600,000 deaths in 2023 (American Cancer Society, 2023; Weir et al., 2016). Encouragingly, over the past few decades, cancer mortality has dropped by more than 25%, leading to a rise in the number of people living with and beyond cancer. The prevalence of these "cancer survivors" is currently estimated at nearly 18 million and is expected to reach 21 million by 2029 (American Cancer Society, 2023; Bluethmann et al., 2016; Marzorati et al., 2017).

The American Cancer Society (ACS) has guidelines for the health behaviors of cancer survivors, as well as some other organizations, including the Centers for Disease Control (Centers for Disease Control and Prevention, 2004) and the European Cancer Patient Coalition (Mitsimponas & Rauh, 2017). The ACS guidelines make specific recommendations in the areas of physical activity, diet/nutrition, alcohol consumption, cancer surveillance, and tobacco use (Doyle et al., 2009; Smith et al., 2017). Adherence to the ACS guidelines can improve

cancer survivors' quality of life, decrease the frequency and/or severity of common physical problems (e.g., fatigue, pain), reduce the incidence of several chronic diseases, reduce the likelihood of recurrence, and even promote survival from cancer (Blanchard et al., 2003; Feuerstein, 2006; Heitz et al., 2018; Meyerhardt et al., 2006; Song & Giovannucci, 2016). Yet, adherence to these guidelines tends to be the exception and not the rule (Blanchard et al., 2003; Vijayvergia & Denlinger, 2015; Warner et al., 2016). For example, studies with heterogeneous samples of cancer survivors showed that cancer survivors were less likely than non-cancer controls to engage in health-promoting behaviors (Blanchard et al., 2003; Warner et al., 2016). As is, intervention efforts are greatly needed to support cancer survivors in the adoption and maintenance of a health promoting behaviors.

1.2 Smoking Persistence versus Smoking Cessation

While it is true that cancer survivors' adherence to the ACS or similar guidelines on physical activity, diet/nutrition, alcohol consumption, and cancer surveillance can have a meaningful impact on their health and well-being, perhaps no health behavior is more important than tobacco abstinence. The 2014 U.S. Surgeon General's Report on Smoking (US Department of Health and Human Services, 2014) was the first of its kind to clearly articulate that cancer survivors' persistent smoking plays a causal role in numerous adverse health outcomes. This report demonstrated that smoking after a cancer diagnosis is causally associated with higher rates of all-cause mortality, cancer-specific mortality, and second primary cancer and is a major risk for cancer recurrence, poor treatment response,

and severe treatment related toxicity. Additionally, cancer patients who smoke are significantly more likely than non-smokers to have post-surgical complications (e.g., surgical site infection, reintubation, failure to wean from the ventilator), longer hospital stays, and a requisite return to the operating room (Gajdos et al., 2012; Hatcher et al., 2017; Sterba et al., 2017). In addition to these clinical outcomes, there is evidence that cancer patients who smoke report worse quality of life (e.g., greater psychological distress, less physical function) when compared to former and never smokers (Aigner et al., 2016; Garces et al., 2004). It sum, it is undeniable that smoking undermines the health of cancer survivors and places them at risk for a host of negative outcomes.

Importantly, evidence also shows that quitting after a cancer diagnosis is associated with many positive outcomes. To illustrate, in a study with early-stage lung cancer patients ($N = 517$), smoking cessation after diagnosis was associated with decreased risk of overall mortality, cancer-specific mortality, and disease progression (Sheikh et al., 2021). Another example comes from a prospective cohort study with newly diagnosed lung cancer patients ($N = 1{,}124$), where smoking cessation post-diagnosis was associated with a 25% reduction in risk of mortality (Gemine et al., 2019). Similarly, a longitudinal study that followed head and neck cancer patients ($N = 590$) for eight years found a reduced risk of all-cause and cancer-specific mortality for smokers who quit after diagnosis (Choi et al., 2016). Smoking cessation is imperative to the health and wellbeing of cancer patients, and tobacco treatment is therefore a necessary part of cancer treatment and should be integrated as standard of care.

1.3 Tobacco Treatment Use Among Cancer Patients

Despite the empirical support for smoking abstinence, an alarming number of cancer survivors smoke cigarettes and use other tobacco products after their cancer diagnosis. Prevalence rates of smoking vary widely across studies, but in all cases the number clearly exceeds the target of zero percent, and it is often reported that 20-30% of all cancer survivors are current smokers (Gallaway et al., 2019; Swoboda et al., 2019; Westmaas et al., 2014). For many smokers, motivation for and interest in smoking cessation increases after a cancer diagnosis and serious quit attempts may follow (Rzepakowska et al., 2021; Talluri et al., 2020). This is suggestive of cancer diagnosis functioning as a "teachable moment" for smoking cessation (McBride et al., 2003; McBride & Ostroff, 2003; Puleo et al., 2021). However, many of these quit attempts can be described as unaided or unassisted, such that evidence-based tobacco treatment (i.e., FDA-approved pharmacotherapy and advice, counseling, or other assistance from a professional) is not used. The desire to quit tobacco without assistance is problematic as little to no use of evidence-based tobacco treatment is a well-recognized reason for quit failure (Babb et al., 2020). Evidence shows that less than 10% of smokers in the general population successfully quit smoking without using pharmacotherapy and/or behavioral treatment (Babb et al., 2020). There are a variety of reasons why cancer patients may make quit attempts without using evidence-based treatment. Drawing from research with the general population of smokers, potential internal barriers include: the belief that perseverance and motivation alone are sufficient to combat nicotine dependence; prioritization of lay knowledge over professional knowledge; the belief that quitting is a smoker's

personal responsibility; or the belief that quitting alone is the "better" choice in terms of self-identity (Cheesmond et al., 2019; Farley et al., 2016; Morphett et al., 2015; Twyman et al., 2014; Wells et al., 2017). External barriers found in the general population of smokers include lack of proper advice, assistance, and follow-up from healthcare professionals; inadequate social support; lack of community-based resources; and concerns about the affordability of treatment (Farley et al., 2016; Price et al., 2018; Twyman et al., 2014; Warren et al., 2013). As past research focuses on non-cancer patient populations, little is known about why cancer patients may prefer to make unassisted quit attempts and given the urgency and significance of smoking cessation after a cancer diagnosis it is important to understand what drives this preference in cancer patients specifically.

It is important to understand and address the external and system-level barriers that cancer patients face in utilizing evidence-based tobacco treatment, but the importance of personal factors should not be ignored. This is because some evidence shows that only a small number of cancer patients accept treatment when it is offered. Cancer patients' rates for enrollment into smoking cessation clinical trials range from 17% to 84%, with most falling on the lower end of the range (Dahm et al., 2019; Duffy et al., 2010; Martinez et al., 2019; Ostroff et al., 2014). Similarly, rates of treatment acceptance into cancer center-integrated treatment programs range from 17% to 38% (Amato et al., 2018; Davis et al., 2020; Japuntich et al., 2016). Of direct relevance here is a recent population-based study that found only 17% of cancer patients who were tobacco users accepted referral to an in-house tobacco treatment program where free services could be

delivered individually either over the phone or in clinic. That study asked cancer patients who declined treatment why they were not interested in receiving help, and one-quarter responded that they would like to quit "on their own" without assistance (Burris et al., 2021). Together, these findings underscore the need to better understand personal barriers and facilitators that are associated with cancer patients' desire to quit smoking without assistance, especially since treatment use offers a much better chance of quit success.

1.4 Current Study

The current study fills a gap in the literature regarding cancer patients' desire to quit tobacco without assistance. The study examines, in a longitudinal mixed-methods design, the desire to quit on one's own and the barriers and facilitators of this approach to smoking cessation. It also examines how this preference and approach is associated with key smoking cessation outcomes. The aims of this observational study are to 1) uncover the rationale that underlies a cancer patient's stated desire to quit tobacco without assistance and 2) track the smoking cessation outcomes and tobacco treatment use of cancer patients who initially state a desire to quit smoking without assistance. In this study, the quantitative data were used to supplement the qualitative data, which was of primary interest.

CHAPTER 2. METHODS

2.1 Participants

Participants were 35 adult cancer patients who were current (i.e., past month) tobacco users. In addition to an electronic health record (EHR)-documented cancer diagnosis, participants must have answered "no" when asked if they would like help with quitting tobacco, specifically because they want to quit tobacco without assistance. Other inclusion criteria included: 1) reliable phone access, 2) ability to read, write, and understand English, and 3) ability to answer questions about daily life, all of which were based on self-report.

2.2 Procedures

Participants were recruited through a National Cancer Institute-designated cancer center's outpatient clinics. As part of routine clinical protocol at this cancer center, all adults who present for an outpatient visit are asked a series of questions about their tobacco use, with the number and nature of questions dependent upon a patient's response at a given visit. The questions asked of each patient allow for their classification as a never, former, or current tobacco user. If a patient is identified as a current tobacco user, they are asked if they would or would not like assistance with tobacco cessation. Finally, if a patient declines, they are asked to provide a rationale within a fixed set of response options. The data collected as part of this protocol are entered in real time into the EHR. To aid recruitment, a report of current tobacco users who declined referral to the cancer center's tobacco treatment program because they wanted to quit without assistance was generated. Patients identified in this report were contacted by phone,

informed about study aims and procedures, and screened for eligibility. Eligible and interested patients completed written informed consent and HIPAA authorization either via mail-based or secure internet forms. Accrual began in August 2022 and ended in November 2022, with all data collected between August 2022 and January 2023. In total, 35 cancer patients participated in this study. The number of participants recruited for this study was based on prior literature regarding theoretical saturation and sample size, combined with concerns about attrition (Vasileiou et al., 2018). Following study completion, all participants were mailed an informational brochure about tobacco treatment services available to them through the cancer center. Clinical information such as time since cancer diagnosis, cancer site(s), cancer stage, and types of cancer treatment received was assessed via an EHR review. All procedures were approved by the Institutional Review Board at the University of Kentucky (IRB# 78001) and conform to the ethical standards to of the US Federal Policy for the Protection of Human Subjects.

2.3 Assessment Schedule

2.3.1 Baseline

Participants completed a survey and semi-structured interview at baseline (i.e., Day 0). The survey was completed either via phone interview or by mail, and the interview was completed by phone and audio recorded so participants' responses could be transcribed verbatim.

2.3.2 Follow-up

All participants were asked to complete a follow-up survey 30 and 60 days after the baseline (i.e., Day 30 and Day 60). The options to complete these surveys were the

same as the baseline survey. Some participants were purposively sampled to also complete a second interview. The selection of whom to interview at Day 60 was based on two datapoints at the Day 30 survey, specifically the presence or absence of 50% smoking reduction since baseline and the presence or absence of any tobacco treatment use since baseline. Roughly half (42.86%) of participants were selected to complete the second interview, with an attempt to enroll participants in each of the four possible groups. However, no participants fell into the category of both 50% smoking reduction and tobacco treatment use, so five participants from the three other groups were selected to complete the second interview.

2.4 Measures

2.4.1 Interview

A standardized interview guide was used, with the exact number and nature of follow-up questions tailored to each participant's response to a core set of prompts and open-ended questions. The questions assessed participant's knowledge, attitudes, and experiences regarding evidence-based tobacco treatment. Example questions include: *"What does quitting tobacco on your own mean to you?"*, *"What is your experience with quit-tobacco medications?",* and *"When others you know have tried to quit tobacco, what things have they tried?"*

2.4.2 Survey

Past month cigarette smoking was assessed at all three timepoints while tobacco treatment barriers, self-reliance, and demographic questionnaires were administered only at baseline.

2.4.2.1 Tobacco Use

A tobacco use questionnaire (TUQ) asked participants about their tobacco use and quit attempt history. The specific questions were consistent with what is commonly used in research with cancer patients (Land et al., 2016). The questionnaire assessed these variables: time to first cigarette; number of people in the home and friend group who use tobacco; cigarettes per day (using a timeline follow-back approach) in the past week; number of smoking days in the past month; occurrence and number of quit attempts (with differentiation between quit attempts that did and did not yield at least 24 hours of abstinence) in the past year and month; occurrence of 3- and 7-day floating abstinence (i.e., 3 or 7 days in a row of abstinence from cigarette smoking) in the past year and past month; and type of tobacco treatment use in the past month. Motivation and confidence to abstain from tobacco use in the next 30 days were measured via Contemplation Ladders (Biener & Abrams, 1991). Participants rated their motivation and confidence to abstain from tobacco on a scale from 0 = *very definitely no/not at all confident* to 10 = *very definitely yes/extremely confident*, respectively.

2.4.2.2 Tobacco Treatment Barriers

Participants were asked to respond to 20 statements regarding barriers to using tobacco treatment. Examples include: *"I did not want to admit to myself that I needed tobacco treatment"* and *"I believe that nothing would help me in my attempt to give up or reduce tobacco."* The response options for each question ranges from 1 = *not at all true* to 5 = *very true*, with higher total scores (range = 20 to 100) indicating more barriers to tobacco treatment (Gross et al., 2008). Four items were added to reflect

additional barriers to tobacco treatment use that may apply to cancer patients. An example includes: "*Due to other medical appointments, I do not have time to meet with a specialist about quitting*." Cronbach's alpha was found to be .70.

2.4.2.3 Self-Reliance

To assess self-reliance, participants responded to five questions about individualism (Singelis et al., 1995). Examples include: "*I'd rather depend on myself than others*" and "*When I succeed, it is usually because of my abilities.*" Response options included a Likert scale that ranged from 1 = *strongly disagree* to 5 = *strongly agree*, with higher total scores (range = 5 to 25) indicating higher reports of self-reliance. Cronbach's alpha was found to be .86.

2.4.2.4 Demographics

Participants responded to demographic questions (e.g., race, ethnicity, gender, age, marital status, employment status, income, education level, rural status, etc.) from a Behavioral Risk Factors Surveillance System survey (Centers for Disease Control and Prevention, 2021).

2.5 Compensation

Participants received a $15 check for each interview and $10 for each survey they completed. The maximum amount of compensation for time and effort was $60.

2.6 Data Analysis

2.6.1 Qualitative

The analysis of interview responses involved directed content analysis (Hsieh & Shannon, 2005), where prior pertinent research helped guide analysis of the current data. A rigorous and iterative approach to qualitative data analysis occurred. This involved many steps: 1) reading, re-reading, and discussing four randomly selected interviews, 2) identifying key concepts or variables as initial codes, 3) organizing initial codes into a draft codebook and creating operational definitions for each code, 4) double-coding the aforementioned interviews via line-by-line coding (i.e., independent coding by TNB and one other research assistant, with discrepancies discussed and rectified to achieve a final set of agreed upon codes for each interview), 5) finalizing the codebook, which involved hierarchical organization with "lumping" or "splitting" some of the initial codes and adding new codes, 6) revising the four previously coded interviews to reflect the final codebook, 7) double-coding all remaining interviews consistent with the final codebook, and 8) analyzing all coded interviews in NVivo. The process was carried out for the Day 0 interview (N = 35), with revisions to the codebook made as necessary when coding the Day 60 interviews (n = 15).

2.6.2 Quantitative

Descriptive statistics (e.g., frequencies, means) were used to describe the sample on all variables assessed by survey (e.g., cigarettes per day, self-reliance) as well as the clinical information gathered by chart review. No inferential statistics were used for data analysis due to the study objectives.

CHAPTER 3. RESULTS

3.1 Sample Characteristics

Table 1 details the sample's (N = 35) demographic characteristics. On average, participants were 54.43 ± 10.86 years old (range = 32 to 83). Most of the sample was female (68.57%, *n* = 24), with one participant identifying as a transfemale (2.85%). Participants identified as White, non-Hispanic (85.71%, *n* = 30), Black/African American (11.43%, *n* = 4), or White, Hispanic (2.86%, *n* = 1). Over half of the sample resided in a rural county (54.29%, *n* = 19). Over half of the sample had an annual household income of $20,000 or less (54.29%, *n* = 19). Just over one-third of participants had completed some college (37.14%, *n* = 13). Most participants were unemployed due to disability (57.14%, *n* = 20), with about one-quarter being employed (25.71%, *n* = 9). Over half of the sample was separated, divorced, or widowed (54.29%, *n* = 19). Medicaid was the primary type of insurance coverage (54.29%, *n* = 19).

3.2 Clinical Information

See Table 2 for full clinical information. The most common cancer sites were gynecological (28.57%, *n* = 10), lung (21.26%, *n* = 8), and head/neck (14.29%, *n* = 5). Six participants received a diagnosis of stage IV or metastatic cancer (16.22%), and one-quarter of the sample received a diagnosis of stage III cancer (24.32%, *n* = 9). On average, participants were diagnosed 7.46 ± 4.94 months prior to enrollment, with a range from 2 to 18 months. Most of the sample received multiple cancer treatment modalities (e.g., radiation and chemotherapy; 60.00%, *n* = 21). Participants began treatment 6.21 ± 4.66 months prior to enrollment, on average (range = 1 to 17). Almost

one-third of the sample has a history of at least one prior cancer diagnosis (30.30%, *n* = 10).

3.3 Baseline Cigarette Smoking and Tobacco Treatment Use

3.3.1 Past Year

Over half of the sample reported making at least one quit attempt in the past year (54.05%, *n* = 20), with fewer achieving at least one 24 hour quit attempt (48.65%, *n* = 18). Participants reported making an average of 10.03 ± 4.27 total quit attempts (range = 0 to 30), with an average of only 1.57 ± 2.43 lasting at least 24 hours (range = 0 to 12). Most of the sample reported using evidence-based tobacco treatment in the past year (62.86%, *n* = 22), with 60.00% (*n* = 21) using medication (e.g., nicotine replacement therapy, Chantix) and 8.57% (*n* = 3) using behavioral treatment (e.g., Quitline, counseling). Over half of the sample (54.29%, *n* = 19) reported receiving brief advice from an oncologist and/or another healthcare provider in the past year. On average, participants first used tobacco at 15.17 ± 4.35 years old (range = 6 to 25). Fifteen participants (42.85%) reported that there are other people in their home who smoke and all but a few participants (*n* = 28, 80.00%) reported that others in their friend group smoke.

3.3.2 Past Month

Intention and confidence to abstain from tobacco use for the next month were in the moderate-to-low range (4.76 ± 3.68, range = 0 to 10 and 3.32 ± 3.90, range = 0 to 10), respectively. Participants reported smoking on 25.37 ± 10.21 days within the past month (range = 1 to 30), and they reported smoking an average of 13.60 ± 10.72 cigarettes per

day (range = 1 to 40) on smoking days. In the past month, only eight participants (21.62%) made at least one quit attempt and six (16.22%) made at least one quit attempt that lasted at least 24 hours. Participants reported making an average of 1.23 ± 5.37 quit attempts (range = 0 to 30), with an average of 0.33 ± 5.37 24-hour quit attempts (range = 0 to 3). A few participants achieved 3-day floating abstinence (8.57% $n = 3$) and 7-day floating abstinence (8.57%, $n = 3$) in the past month. Five participants reported using evidence-based tobacco treatment in the past month (15.15%), with those five (15.15%) only using medication and none using behavioral treatment. Some participants (20.59%, $n = 7$) also reported receiving brief advice from an oncologist and/or another healthcare provider in the month.

3.4 Baseline Interview and Survey Findings

See Table 4 for the final codebook, which contains info about all themes that arose from the interviews.

3.4.1 What it Means to Quit and to Quit on One's Own

Quitting without assistance was commonly described as the most preferred and most effective way to quit tobacco. The single most important variable that seemed to explain this cessation-related preference and perception was self-reliance. Many participants discussed a strong value of self-reliance and related this to their preference to quit tobacco on their own.

> "I've been able to do everything in my life by- by myself. You know, businesses, everything, and uh, started from nothing an- and build 'em. And uh, you know, so that uh gives you a good feelin' to know that you-you can do that and have done that. It

would make me feel good if I could do it on my own." (101)

"When you gotta get somethin' done, you know, you do it yourself. That's what I always- I've always done anyway, so. I've never asked for help much, not that I didn't, you know, want it, but I wanted to do things myself." (130)

On the survey, participants reported high rates of self-reliance (20.56 ± 4.11, range = 5 to 25), which is consistent with the findings from the interview.

Being able to quit tobacco successfully (with or without tobacco treatment) was also linked to willpower and perceived shame. Participants who were not ready to quit or had made an unsuccessful quit attempt often related these difficulties to a lack of willpower.

"It's a willpower thing for me. And I wasn't ready to quit, and I didn't want to try the patches knowin' that I wasn't ready, so." (124)

"I wish I could do- have that mindset, that willpower, but I-I, um, tried that. I tried it. I took 'em and threw them away and two hours later, I'm at the store buyin' another pack." (115)

Finally, much of the sample talked about others in their social network being disappointed or ashamed if the participant tried to quit tobacco but ultimately failed.

"Uh, they'd be a little disappointed, you know, what I'm saying' cause it's a real bad habit, it really is. Not good for your health. My kids would probably be a little disappointed, you know…" (102)

3.4.2 Personal Experience and Social Norms about Quitting on One's Own

Almost all participants discussed having made at least one unassisted quit attempt in the past, so they could draw on past experiences with this quit strategy: "I've been able to quit on my own before. I can do it again." (136). Even though this was the preferred quit strategy, many talked about the difficulty of trying to quit without tobacco treatment. The two most common quit strategies that participants used while trying to quit on their own were 1) slowly reducing the number of cigarettes they were smoking each day (e.g., "Quitting on my own, I guess, would be gradually going down to eventually completely stopping" (120)) and 2) "cold turkey" (e.g., "If I ever really said I'm gonna stop smokin', I would probably just lay 'em down and say 'forget it.'" (108)).

Most participants also said they knew of others (e.g., friends, family) who had tried to quit tobacco on their own. Many talked about how quitting unassisted was the preferred strategy in their social network, and they knew many people who had successfully quit tobacco in this way.

> "Most people I know that quit that seem to stay with it do quit cold turkey. I know that makes the tobacco leave their body faster, physically, I guess." (127)

> "My wife used to and she's humble as can be. She laid those things down cold turkey and never picked them back up again." (115)

3.4.3 Attitudes Toward Tobacco Treatment

Almost all participants talked about their attitudes towards and barriers to using tobacco treatment. Some participants reported trying medications (e.g., nicotine

replacement therapy, Chantix) in the past, but reported that they were not helpful in their quit attempts and/or the participant discussed experiencing significant side effects and discontinuing the medication. Additionally, both participants who had and had not tried medications in the past had negative attitudes about trying medications in the future.

> "Um, I had a couple of doctors offer me Chantix, but, um, you know, I've heard so many stories, and, you know, read research and stuff, you know, about there being a side effect and it's the psychological kind, I'll be honest, I've been scared of trying that route." (131)

> "And instead of me taking medication I- I- it would probably be best for me to try it on my own because I've tried several and they still haven't worked. I'm still smokin' the same cigarettes, six cigarettes a day." (129)

> "The medications have side effects I can't tolerate. I'm already taking other medicines to avoid headaches. I think I take enough pills. I like my personality the way it- it is. I have seen what those pills do to people. Every time I talk to a doctor, they want to stick a patch on me or give me a pill." (126)

However, a small number of participants stated that they had previous success with medications, and that they would be willing to try that medication again in the future to aid in a quit attempt: "Yeah, but I had, uh, nicotine patches on and used those to get rid of the cravin'. They helped out quite a bit." (123).

In contrast to medication, most participants reported they had never tried behaviorally based tobacco treatment (e.g., counseling, Quitline). Again, both

participants who had and had not tried behavioral treatment in the past said that they would be unwilling to try behavioral treatment in the future.

> "I want to do everything that I can to help UK. They saved my life, but I won't do the counseling. It would be a waste of my time and there's. It's basically in one ear and out the other. Uh, smoking is a physical thing, not a mental thing…" (119)

> "Uh, I can't say I- I've tried it, the counseling, as far as to stop smoking. I just don't want somebody in my ear, you know, 'you gotta quit, gotta quit, gotta quit, gotta quit.'" (133)

Of those participants who had tried counseling in the past, many talked about a bad experience with behavioral treatment or said that treatment was unhelpful: "No, I went to counseling. I mean and that…does what it can do, and it was all nasty, it was gross. Like what your lungs look like and all that. I went and I listened. But as soon as I got outta there, I lit a cigarette." (114).

Many participants discussed hearing about others' past experiences with medications or behavioral treatment, most of which were negative: "It's not, like they've, uh, been real successful with it. I think it's that- I don't think that those patches are a much of a- a means to quitting as a means of cutting back." (130).

Finally, some participants discussed external barriers to receiving tobacco treatment, such as cost of treatment, transportation concerns, or not knowing what treatment would entail.

> "Thought it could help, but I live in- I pretty much live in the woods. Ev- everything is so far away…

everything is so far away. Yeah. It would be pretty hard, uh, I don't really drive that much anymore, you know, and my wife doesn't drive at night, so." (140)

"I have no clue what it would involve. Other than probably somebody tellin' me 'you really need to quit' I really don't know how that would help." (126)

In terms of the survey, the most commonly endorsed (i.e., rated as *very applicable* or *somewhat applicable*) tobacco treatment barriers (of the 20 listed on the measure) were: "*I know others who have quit without tobacco treatment"* (82.86%, *n* = 29), "*I will be able to quit or reduce tobacco use on my own"* (78.13%, *n* = 25), "*I do not want to take any more medications"* (68.57%, *n* = 24), "*I do not want to admit to myself that I need tobacco treatment*" (54.29%, *n* = 19), *"I do not know what tobacco treatment involves"* (54.29%, *n* = 19), and "*I do not need tobacco treatment"* (48.57%, *n* = 17). These findings seem to converge with interview findings.

3.5 Follow-Up Interview and Survey Findings

Participants who had originally planned on not using tobacco treatment, but ultimately changed their minds talked about treatment as a back-up plan to quitting on their own. When asked if they would be interested in trying treatment in the future, they said: "I don't know, I may if I kept with it or if I can't find other means of quitting." (104) Most participants who used medications to aid in a quit attempt found them to be helpful and described some success:

> "Because honestly, if it hadn't of been for the Chantix, I don't think that I could of got rid of the last couple of cigarettes." (111)

> "And that's when I could tell that they really do work. Uh- I guess just the nicotine it's- in- in 'em. It keeps me calm." (118)

However, a few participants who used tobacco treatment did not find them to be helpful and said they would be unlikely to try these medications again. For example, when one participant was asked if they would use nicotine lozenges again, they said: "Maybe not again because I've used it twice, and- and it just hasn't affected me." (109) Notably, a few participants who used tobacco treatment did so because they were in the hospital and could not smoke, not because they were intentional about quitting for good: "That's uh- the patches when I was in the hospital and stuff and couldn't smoke, they give you the patches and that's how I was introduced to them, and they helped during that time." (123)

In contrast, other participants did not use tobacco treatment throughout the course of the study and maintained their commitment to not using tobacco treatment in the future. Some participants attributed this to not wanting to see another doctor while others discussed a sense of pride from not using tobacco treatment to quit.

> "I don't want to go that way. I got enough doctors. I don't want to go where I gotta go somewhere to stop smoking. I don't want to do that." (108)

> "…it got harder and harder to quit, so I'm really proud of myself to be able to quit on my own without any kind of,

you know, patches or Chantix or whatever that stuff is."
(124)

Additionally, participants who did not use tobacco treatment talked again about the value of self-reliance: "I mean, I would like to quit on my own 'cause I mean…uhm, taking stuff to, like, stop other stuff it- it- it's never worked out for me. I really had to do it on my own." (137). Similarly, some discussed needing willpower to quit tobacco: "Well like I said, you know, you just gotta have the willpower that you want to do it and do it, just keep after it. That's what I didn't do." (114) When asked if they would be interested in trying behavioral treatment in the future, all participants who completed the second interview said they were not interested: "I don't think so. I don't feel like it would be helpful for me." (132)

3.5.1 Day 30 Cigarette Smoking and Tobacco Treatment Use

All but one participant completed the Day 30 questionnaire (97.14% retention rate). Intention and confidence to abstain from tobacco use for the next month were both in the moderate range (5.74 ± 2.95, range = 0 to 10 and 5.18 ± 3.24, range = 0 to 10, respectively). Participants reported smoking an average of 12.77 ± 8.42 (range = 1 to 40) cigarettes per day on smoking days, with 23.53% (n = 8) achieving 50% smoking reduction from baseline. Participants reported smoking on 25.71 ± 9.37 days within the past month (range = 0 to 30). In the past month, only three participants (8.82%) made a quit attempt, with two participants (5.88%) achieving a 24-hour quit attempt. Participants made an average of 1.65 ± 6.37 (range = 0 to 30) quit attempts and 1.50 ± 5.53 (range = 0 to 30) 24-hour quit attempts. A few participants achieved 3-day floating abstinence (11.76% n = 4) and 7-day floating abstinence (8.82%, n = 3) in the past month. Seven

participants reported using evidence-based tobacco treatment in the past month (20.59%), with 17.65% (n = 6) using medication and 2.94% (n = 1) using behavioral treatment. No participants reported using both medications and behavioral treatment in the past month. Some participants (41.18%, n = 14) reported receiving brief advice from an oncologist or another healthcare provider in the past month.

3.5.2 Day 60 Cigarette Smoking and Tobacco Treatment Use

All but three participants completed the Day 60 questionnaire (91.43% retention rate). Intention and confidence to abstain from tobacco use for the next month were in the low-to-moderate range (5.12 ± 3.97, range = 0 to 10 and 4.19 ± 3.51, range = 0 to 10), respectively. Participants reported smoking an average of 11.53 ± 8.49 cigarettes per day on smoking days (range = 1 to 40), with 31.25% (n = 10) achieving 50% smoking reduction from Day 30. In the past month, nine participants (28.13%) reported making at least one quit attempt, and five participants (15.63%) reported making a quit attempt that lasted at least 24 hours. Participants reported smoking on 23.41 ± 11.42 days within the past month (range = 0 to 30). Participants made an average of 3.91 ± 10.03 quit attempts (range = 0 to 30) and 1.34 ± 5.52 24-hour quit attempts (range = 0 to 30). A few participants achieved 3-day floating abstinence (21.88% n = 7) and 7-day floating abstinence (18.75%, n = 6) in the past month. Seven participants reported using any evidence-based tobacco treatment in the past month (21.88%), with 21.88% (n = 7) using medication and no participants using behavioral treatment. Some participants (21.88%, n = 7) reported receiving brief advice from an oncologist or another healthcare provider in the past month.

3.5.3 Cigarette Smoking and Tobacco Treatment Use from Day 0 to 60

Participants reported smoking an average of 12.20 ± 7.78 (range = 1 to 40) cigarettes on smoking days. Just under half (43.76%, *n* = 14) of the sample achieved 50% reduction in smoking. Ten participants (31.25%) reported making a quit attempt and six (18.75%) reported making a quit attempt that lasted at least 24 hours. Participants reported smoking on 48.84 ± 19.44 days (range = 0 to 60) and making an average of 5.65 ± 15.23 quit attempts (range = 0 to 60) and 2.94 ± 9.79 24-hour quit attempts (range = 0 to 40). In total, 7 (21.88%) participants achieved 3-day floating abstinence and 6 participants (18.75%) achieved 7-day floating abstinence across the 60 days. Nine participants (25.00%) reported using any evidence-based tobacco treatment, with eight participants (25.00%) using medications and one participant (3.13%) using behavioral treatment. Sixteen (50.00%) participants reported receiving brief advice from an oncologist and/or another healthcare provider.

CHAPTER 4. DISCUSSION

Due to numerous negative health consequences of persistent cigarette smoking after a cancer diagnosis, cancer represents an objective reason to quit smoking (US Department of Health and Human Services, 2014, 2020). Recently, there has been a major push to integrate tobacco treatment into cancer care systems and to proactively encourage cancer patients in efforts to quit for good (D'Angelo et al., 2019, 2021; Jenssen et al., 2019). The gold standard for evidence-based tobacco treatment includes a combination of pharmacotherapy and behavioral treatment. The National Comprehensive Cancer Network (NCCN) Clinical Practice Guidelines state that pharmacotherapy should include at least 14 weeks of combination pharmacotherapy (e.g., nicotine patch and short-acting NRT, nicotine patch and Bupropion), or Chantix alone (Shields et al., 2021). Additionally, studies show that pre-cessation use of NRT increases likelihood of quit success (Rose et al., 2006). In terms of behavioral treatment, research demonstrates that four or more counseling sessions with state Quitlines or individual or group counseling provided alongside pharmacotherapy can increase abstinence rates. Further, the most effective behavioral treatments include both problem-solving/skills training and support throughout the quit process (Shields et al., 2021). Despite this, most cancer patients who smoke (like adults in the general population) either decline tobacco treatment altogether or fail to use tobacco treatment at a dose or duration that would be effective (Borger et al., 2022; Burris et al., 2022; Gravely et al., 2021). Against this backdrop, the current study was done in a sample of cancer patients, many of whom were undergoing active cancer treatment, received brief advice to quit, and had tobacco cessation support available as part of their cancer care. Here, the goal was to understand cancer patients'

desire to quit tobacco without assistance and track their smoking cessation outcomes over time.

This study yielded three major study findings. First, participants viewed quitting on one's own as either a gradual reduction in the number of cigarettes smoked or stopping all at once (i.e., "cold turkey") without pharmacotherapy or behavioral treatment. Past research in the general population suggests that gradual reduction may delay quit dates and does not produce higher quit rates than abrupt cessation (Hughes et al., 2010; Lindson-Hawley et al., 2013, 2016), but participants seem unaware of these nuances. Perhaps more important than shedding light on *how* cancer patients quit on their own, this study highlighted factors that may explain *why* cancer patients might decide to quit without assistance. According to interview findings, participants strongly value self-reliance (Singelis et al., 1995), and many viewed it as integral to the decision to quit without assistance. Perhaps not surprisingly, on a self-report measure of self-reliance, many participants scored at or near the higher end of the scale. Participants also indicated that willpower, described as a cognitive or mental aspect of quitting, is necessary for quit success. In fact, many participants discussed their persistent smoking or past quit attempt failures in terms of a lack of willpower. To mirror this, survey findings suggested that both motivation and confidence to quit tobacco were low-to-moderate (at all timepoints) among participants and success with smoking cessation was fleeting for most. Additionally, many participants discussed feelings of perceived shame or disappointment from others after a failed quit attempt, regardless of whether quit attempts were assisted. Finally, for some participants, treatment was viewed only as a back-up plan to quitting unassisted. Altogether, this suggests that cancer patients might view successfully quitting

tobacco *without assistance* as an ultimate demonstration of self-reliance and willpower and therefore a source of pride. Underscoring the results of this study, qualitative studies with cigarette smokers in the general population identified similar themes (i.e., unassisted quitting as the best method for quit success, self-reliance, self-control, and perceived shame from others after a failed attempt to quit (Morphett et al., 2015; Smith et al., 2015)), which suggests the desire to quit tobacco unassisted is not unique to cancer patients. Thus, personality, cognitive, and emotional factors such as self-reliance, willpower, and perceived shame from others seem to outweigh the potential objective benefits of making an assisted quit attempt.

The second major study finding relates to multi-level barriers to using tobacco treatment. In terms of personal barriers, many participants described past experiences with quitting on their own and reflected on these experiences as their preferred quit strategy, even when unsuccessful. Additionally, people who smoke cigarettes often try the same quit approach repeatedly, even when it is ineffective (Heckman et al., 2017). Interview and survey findings converge on the most common barriers to using tobacco treatment: self-reliance, willpower, social norms, and negative attitudes about tobacco treatment. Second, cancer patients in this study expressed strong social norms around self-reliance and quitting without assistance. Almost all participants talked about others trying to quit "cold turkey," and suggested that those who succeeded also possessed the willpower to do so. Third, misperceptions about tobacco treatment were profound. These included lack of knowledge about effective treatment length and dosage of pharmacotherapy, side effects of pharmacotherapy, the belief that "nothing works," and the view that counseling is "just being told to quit" or synonymous with health education.

These misperceptions were held by both participants who had tried tobacco treatment and those who had not. In fact, a minority of participants endorsed positive attitudes towards tobacco treatment or motivation to use treatment in the future. Those participants discussed how medications helped them to achieve some success in the smoking cessation process, while others reported that medications reduced withdrawal symptoms when they were hospitalized. Even when participants perceived pharmacotherapies as effective, the potential for side effects outweighed the benefits of possible quit success. Past research corroborates these findings by demonstrating that unassisted quitting remains the most common quit preference, even if unhelpful in the long-term (Edwards et al., 2014; Soulakova & Crockett, 2018). In terms of systemic barriers, this study found that only half of the sample received brief advice to quit from an oncologist and/or another healthcare provider throughout the course of the study. The NCCN Clinical Practice Guidelines mandate that every cancer patient at every visit should be asked about their tobacco use, with current tobacco users advised to quit, assessed for willingness to quit, and provided or referred to tobacco treatment (Shields et al., 2021). While this specific group of cancer patients initially declined a referral to tobacco treatment, it is still recommended that providers follow-up with patients about their tobacco use at each visit, as motivation to quit can change day-to-day (Borger et al., 2022; Burris et al., 2022; Hughes et al., 2005). Beyond the cancer center or larger healthcare system, the social disadvantage (e.g., low income, reliance on government-funded insurance, rural residence) that was evident for many cancer patients in this sample could have led participants to believe they could not afford or reasonably gain access to tobacco treatment. In fact, a few participants discussed not having adequate

transportation or financial means to access tobacco treatment, and it is possible that these external barriers were eventually internalized and contributed to a perception to "go it alone". These findings suggest the need to address the numerous multi-level barriers to using tobacco treatment that exist for cancer patients with this tobacco cessation preference.

The third study finding relates to the natural course of smoking cessation outcomes over time in this group of cancer patients. At baseline, participants smoked over a half of a pack of cigarettes per day (12.20 ± 7.78) on average. Roughly two months later, almost half of participants (43.75%) were able to reduce the number of cigarettes smoked per day by half. Gradual reduction in cigarettes smoked was discussed by many participants in the interview portion of the study. Again, research in the general population suggests that this cessation strategy is often an inferior strategy to abrupt, assisted cessation (Lindson-Hawley et al., 2013, 2016). Plus, the health risks of persistent smoking after cancer diagnosis are high, and smoking reduction does not eliminate these dangers. Few participants (21.88%) achieved 3-day floating abstinence, with even fewer achieving 7-day floating abstinence (18.75%), and fewer still achieving 30-day point prevalence abstinence (12.50%). This is almost certainly tied to participants use (or lack thereof) of tobacco treatment. Unsurprisingly, very few participants used tobacco treatment over the course of the study. Only one-quarter of participants (25.00%) opted for pharmacotherapy use and only one participant (3.13%) engaged in behavioral treatment. Among those who opted for pharmacotherapy use, many described using either a low dose or discontinuing use after a few days, which is not the gold standard for medication use. Compared to past observational studies of cancer patients who smoke,

this study found lower rates of tobacco treatment use, quit attempts, 50% smoking reduction, and 7-day floating abstinence, and higher numbers of cigarettes smoked on smoking days (Aigner et al., 2016; Borger, Puleo, et al., 2022; Borger, Shelton, et al., 2022; Gallaway et al., 2019). These findings are expected given the sparse tobacco treatment use of cancer patients who participated in this study. The importance of educating cancer patients who use tobacco about the benefits of evidence-based tobacco treatment and employing motivational interviewing or other techniques to encourage its use cannot be understated.

This study is unique in its attempt to understand the rationale that underlies cancer patients' desire to quit tobacco without assistance. Strengths aside, there are study limitations that must be considered. First, the sample size was insufficient to power inferential statistics or reliably estimate change in smoking cessation outcomes over time. However, study retention was very high (91.43%) for an observational study that for many participants coincided with the receipt of cancer treatment. Second, there were a smaller number of men than would be expected in a study of cancer patients who do not want assistance with quitting since national U.S. data shows that men are less likely than women to accept tobacco treatment (Tibuakuu et al., 2019). Third, even though this study focused on cancer patients who wanted to quit smoking on their own, it still would have been advantageous to collect greater detail about participants' tobacco treatment use (e.g., number of days of use, exact dose of any pharmacotherapies). Finally, this study was conducted at a single cancer center in the southeast U.S. Social norms surrounding tobacco cessation preferences and attitudes towards tobacco treatment may or may not

apply to other areas of the country, though the themes that arose from the interview do appear to align with prior studies.

In conclusion, clinical implications that arise from this study include continued training for healthcare providers on the 5 A's model of tobacco treatment (Shields et al., 2021) as it is necessary to engage patients throughout the tobacco cessation process and to ensure that patients receive multiple offers of quit assistance. In addition, potentially high endorsement of self-reliance should be considered when making an offer for tobacco treatment. Perhaps reducing all external barriers and keeping treatment time-limited would increase feelings of autonomy *while* engaging with evidence-based tobacco treatment. Future research directions include understanding why cancer patients are more interested in using medications to quit instead of behavioral treatment, as this could further explain the high rates of declining tobacco treatment. Additionally, it is important to discern what role psychological distress plays in this cessation preference and smoking cessation outcomes. Demystifying what evidence-based tobacco treatment entails is crucial to dispelling myths and misperceptions in cancer patients, and the general population of people of smoke. Finally, multi-level interventions are needed to increase uptake of tobacco treatment among cancer patients who desire to quit tobacco unassisted. These interventions could include testimonials from other cancer patients who have used tobacco treatment to quit or the provision of "counseling sampling" where patients could try counseling without committing to long-term or high intensity treatments.

Table 1. Sociodemographic Information at Baseline (*N = 35)*

Characteristic	Value
Race	
Black/African American	4 (11.43%)
White, non-Hispanic	30 (85.71%)
White, Hispanic	1 (2.86%)
Gender	
Female	24 (68.57%)
Male	10 (28.57%)
Transfemale	1 (2.85%)
Sexual Orientation	
Heterosexual	33 (94.29%)
Bisexual	1 (2.86%)
Missing	1 (2.86%)
Education	
Less than high school	10 (28.57%)
High school graduate	8 (22.86%)
Some college	13 (37.14%)
College graduate/advanced degree	4 (11.43%)
Relationship status	
Married or partnered	19 (54.29%)
Separated or divorced	14 (40.00%)
Single, never married	2 (5.71%)
Rural status	
Rural	19 (54.29%)
Nonrural	16 (45.71%)
Employment status	
Employed	9 (25.71%)
Out of work	1 (2.86%)
Retired	5 (14.29%)
Disabled	20 (57.14%)
Insurance type	
Medicaid	19 (54.29%)
Medicare	6 (17.14%)
Managed care organization	5 (14.29%)
TRICARE or other	3 (8.57%)
No coverage	1 (2.86%)
Missing	1 (2.86%)
Household income	
Less than $20,000	19 (54.29%)
$20,000 to $49,999	12 (34.29%)
$50,000 or more	4 (11.43%)
Age, years	54.43 ± 10.86

Table 2. Clinical Information *(N = 35)*

Characteristic	Value
Time since diagnosis [a]	7.46 ± 4.94
Site of primary cancer diagnosis	
Gynecological	10 (28.57%)
Lung	8 (22.86%)
Head/neck	5 (14.29%)
Colorectal	3 (8.57%)
Breast	2 (5.71%)
Prostate	1 (2.86%)
Thyroid	1 (2.86%)
Other	5 (14.29%)
Stage at diagnosis	
I	13 (35.14%)
II	5 (13.51%)
III	9 (24.32%)
IV	6 (16.22%)
Missing	2 (5.71%)
Type of cancer treatment	
Chemotherapy	2 (5.41%)
Radiation	4 (10.81%)
Surgery	8 (21.62%)
Multiple	19 (54.29%)
Missing	2 (5.71%)
Time since cancer treatment began [a]	6.21 ± 4.66
Diagnosed with multiple cancers	10 (30.30%)

[a] Time in months

Table 3. Participants' Cigarette Smoking and Tobacco Treatment Use at Baseline

Characteristic	**Past Month**
Number of smoking days	25.37 ± 10.21
Cigarettes per day on smoking days	13.60 ± 10.72
Number of quit attempts	1.23 ± 5.37
Number of 24-hour quit attempts	0.33 ± 5.37
Occurrence of at least one quit attempt	8 (22.86%)
Occurrence of at least one 24-hour quit attempt	6 (17.14%)
Occurrence of 3-day floating abstinence	3 (8.57%)
Occurrence of 7-day floating abstinence	3 (8.57%)
Occurrence of tobacco treatment use	5 (15.15%)
Medication use	5 (15.15%)
Nicotine patch	1 (2.70%)
Nicotine gum or lozenge	1 (2.70%)
Nicotine nasal spray	1 (2.70%)
Bupropion	0 (0.00%)
Chantix	2 (51.41%)
Behavioral treatment use	0 (0.00%)
Brief advice	7 (20.59%)

Table 4. Semi-Structured Interview Codebook

Theme	Codes	Illustrative Quotes [a]
Knowledge and attitudes about tobacco treatment		
	Medications knowledge and attitudes: Participants' knowledge and attitudes towards stop-smoking medications	"Well, uh, I went on Chantix to, uh, to try it and was going good, until I started havin' the bad dreams. Uh, with Chantix and I just had to quit. I had a recurring nightmare that I had every night and, you know, it-it all started right when the cigarettes started tasting really bad so I didn't want 'em anymore. Then the dreams hit, and it was all over." (112)
	Counseling knowledge and attitudes: Participants' knowledge and attitudes towards stop-smoking counseling	"Uh, that's not really helpful either. Um, talkin' about it really, it's not gonna help you. My, in my opinion, you talk about somethin', it makes you want to do it." (137)
Personal experiences and social norms around unassisted quitting		
	Quit on my own in the past: Past history of trying to quit without assistance	"I have quit on my own before and I know it's doable." (107)
	Others quit on their own: Others have tried to quit on their own in the past	"Well, I used to work for a gentleman that, uh, he would just give, uh, he- he just laid 'em down. I said 'what you- how'd you quit?' He said, uh, 'I just laid 'em down.'" (119)
Social experiences with smoking		
	Constraint: Negative interactions with others about quit attempts or smoking behavior	"And you know, really am one of those that-that have somebody in my ear constantly sayin' well you need this and you'd feel better if you did this and that doesn't really work for me." (117)

Table 4, continued.

<u>What is means to "quit on my own"</u>		
	Treatment as back-up plan: Treatment is not primary strategy for quit attempts or is the worst-case scenario	"Just try. Just try to quit on your own, if you can't, then definitely get help the moment you know you can't do it on your own." (111)
	Willpower: Willpower, moral, determination, perseverance, mentality	"In order to do it yourself, I mean yo- you gotta have your mindset right. Cause if you don't, they're not gonna be able to do it." (113)
	Self-reliance: Personality trait related to a strong desire to do things on one's own	"When you gotta get somethin' done, you know, you do it yourself. That's what I always- I've always done anyway, so. I've never asked for help much, not that I didn't, you know, want it, but I wanted to do things myself. If that makes sense." (130)
<u>How I "quit on my own"</u>		
	Reduce to quit: Quitting on their own by cutting down on the number of cigarettes smoked	"Um, the- the, you know, to me it's just a matter of puttin' 'em down and fightin' through it. (138)"
	Cold turkey: Quitting on their own- all at once- without using any medication, counseling, or behavioral strategies	"Um, I thought the right idea would have been to go completely cold turkey." (131)

[a] In parentheses is the participant's identification number.

Figure 1.1. Tobacco Treatment Barriers at Baseline and Tobacco Treatment Use

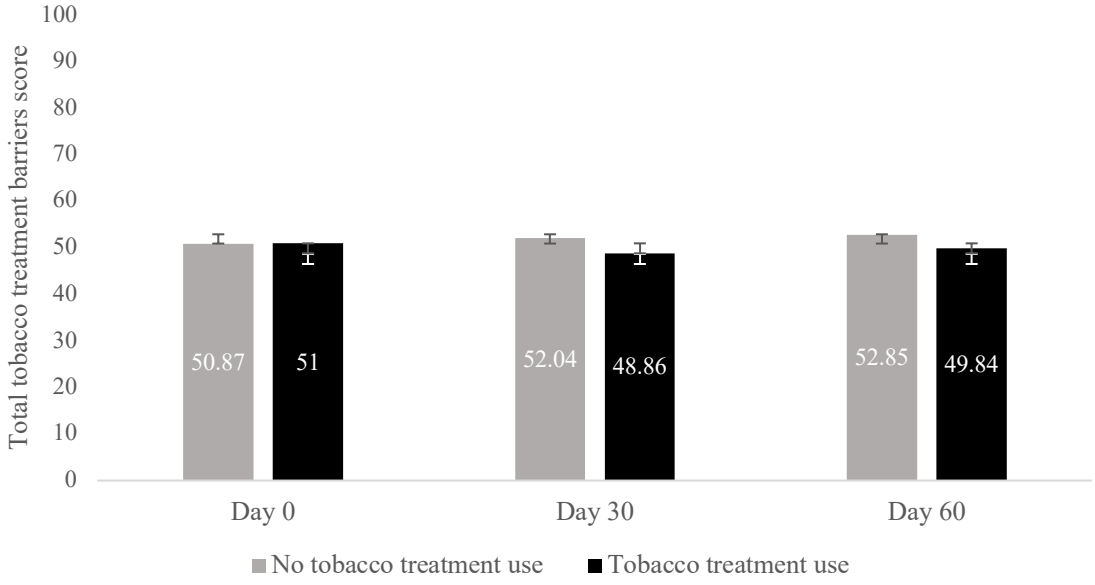


Figure 1.2. Self-Reliance at Baseline and Tobacco Treatment Use

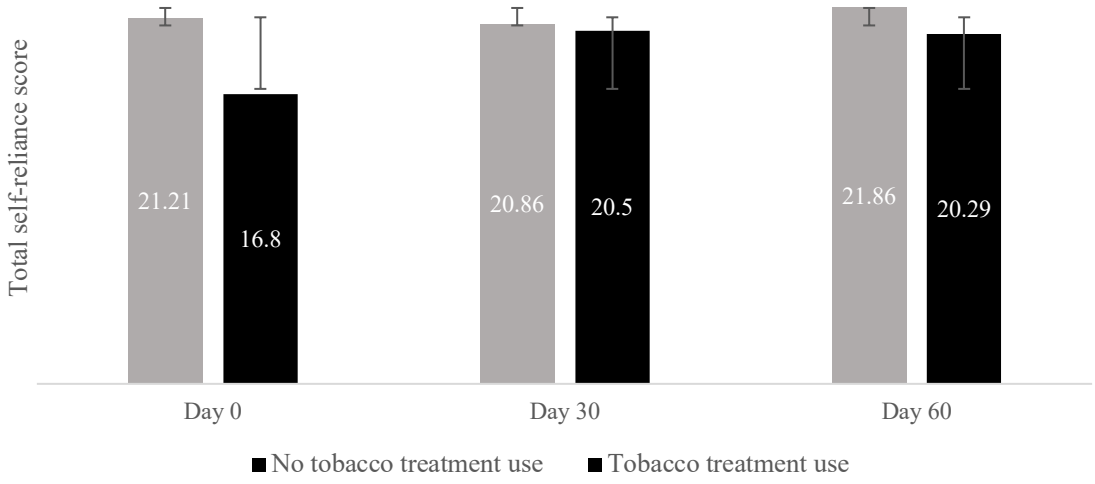


Figure 2. Participants' Smoking Cessation Outcomes over 60 Days

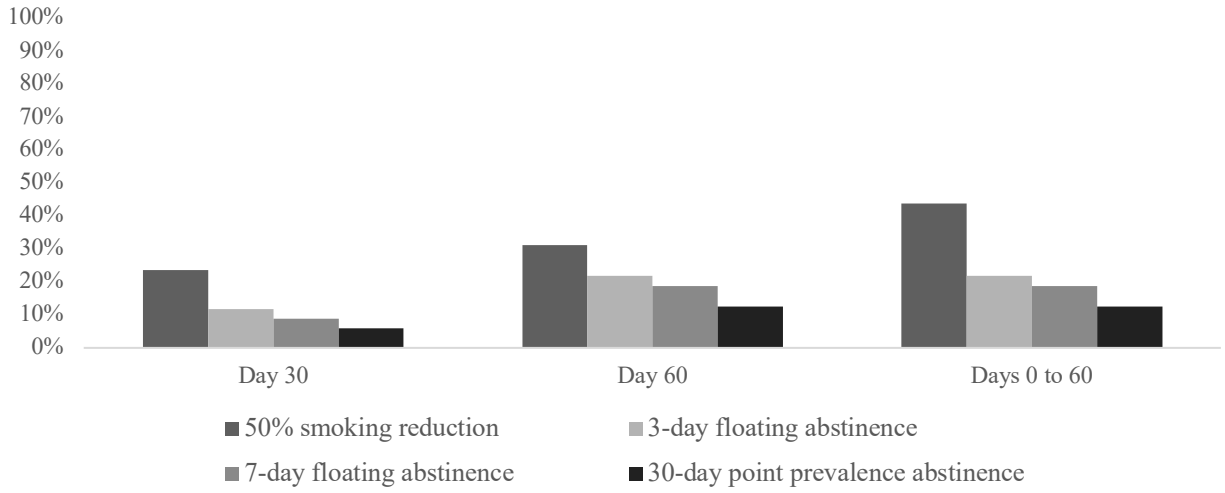
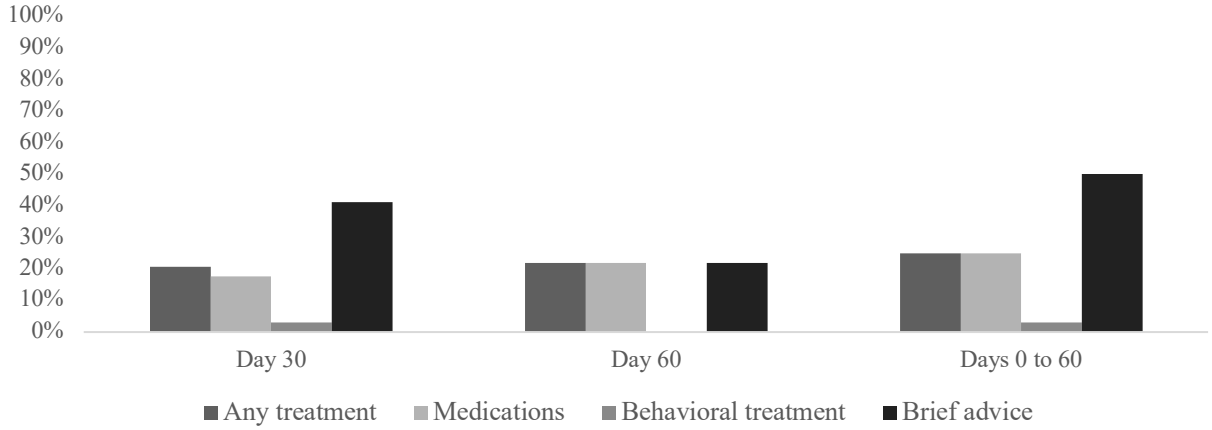


Figure 3. Participants' Tobacco Treatment Use Over 60 Days



REFERENCES

Aigner, C. J., Cinciripini, P. M., Anderson, K. O., Baum, G. P., Gritz, E. R., & Lam, C. Y. (2016). The association of pain with smoking and quit attempts in an electronic diary study of cancer patients trying to quit. *Nicotine and Tobacco Research*, *18*(6), 1449–1455.

Amato, K. A., Reid, M. E., Ochs-balcom, H. M., Giovino, G. A., Bansal-travers, M., Warren, G. W., Mahoney, M. C., & Hyland, A. J. (2018). Evaluation of a dedicated tobacco cessation support service for thoracic cancer center patients. *Journal of Public Management and Practice*, *24*(5), 12–19. https://doi.org/10.1097/PHH.0000000000000674

American Cancer Society. (2023). *Cancer Facts and Figures (2023)*.

Babb, S., Malarcher, A., Schauer, G., Asman, K., & Jamal, A. (2020). *Quitting smoking among adults — United States, 2000 – 2015* (Vol. 65, Issue 52).

Biener, L., & Abrams, D. B. (1991). The contemplation ladder: Validation of a measure of readiness to consider smoking cessation. *Health Psychology*, *10*(5), 360–365.

Blanchard, C. M., Denniston, M. M., Baker, F., Ainsworth, S. R., Courneya, K. S., Hann, D. M., Gesme, D. H., Reding, D., Flynn, T., & Kennedy, J. S. (2003). Do adults change their lifestyle behaviors after a cancer diagnosis? *American Journal of Health Behavior*, *27*(3), 246–256.

Bluethmann, S. M., Mariotto, A. B., & Rowland, J. H. (2016). Anticipating the "silver tsunami": Prevalence trajectories and comorbidity burden among older cancer survivors in the United States. *Cancer Epidemiology Biomarkers and Prevention*, *25*(7), 1029–1036. https://doi.org/10.1158/1055-9965.EPI-16-0133

Borger, T. N., Puleo, G. E., Rivera Rivera, J. N., Montgomery, D., Bowling, W. R., & Burris, J. L. (2022). A descriptive study of cervical cancer survivors' persistent smoking behavior and perceived barriers to quitting. *Psychology of Addictive Behaviors*, *36*(1), 109.

Borger, T. N., Shelton, B. J., Valentino, J., Ostroff, J. S., Cummings, K. M., Studts, J. L., Carpenter, M. J., & Burris. (2022). A daily assessment study of smoking cessation after a head and neck cancer diagnosis. *JCO Oncology Practice*.

Burris, J. L., Borger, T. N., Shelton, B., Darville, A. K., Studts, J. L., Valentino, J., Blair, C., Davis, D. B., & Scales, J. (2022). Cancer patients' tobacco use and treatment referral response: Implementation outcomes at a National Cancer Institute-Designated Cancer Center. *Journal of Oncology Practice*, *18*(2), e261–e270.

Burris, J. L., Borger, T. N., Shelton, B. J., Darville, A. K., Studts, J. L., Valentino, J., Blair, C., Davis, D. B., & Scales, J. (2021). Tobacco use and tobacco treatment referral response of patients with cancer: Implementation outcomes at a National Cancer Institute–Designated cancer center. *JCO Oncology Practice*, OP-20. https://doi.org/10.1200/op.20.01095

Centers for Disease Control and Prevention. (2004). *A National Plan for Cancer Survivorship: Advancing Public Health Strategies*.

Centers for Disease Control and Prevention. (2021). *Behavioral Risk Factor Surveillance System Questionnaire, 2021*.

Cheesmond, N. E., Davies, K., & Inder, K. J. (2019). Exploring the role of rurality and rural identity in mental health help-seeking behavior: A systematic qualitative review. *Journal of Rural Mental Health*, *43*(1), 45–59. https://doi.org/10.1037/rmh0000109

Choi, S. H., Terrell, J. E., Bradford, C. R., Ghanem, T., Spector, M. E., Wolf, G. T., Lipkus, I. M., & Duffy, S. A. (2016). Does quitting smoking make a difference among newly diagnosed head and neck cancer patients? *Nicotine and Tobacco Research*, *18*(12), 2216–2224. https://doi.org/10.1093/ntr/ntw189

Dahm, J. L., Cook, E., Baugh, K., Wileyto, E. P., Pinto, A., Leone, F., Halbert, C. H., & Schnoll, R. A. (2019). Predictors of enrollment in a smoking cessation clinical trial after eligibility screening. *Journal of the National Medical Association*, *101*(5), 450–455. https://doi.org/10.1016/S0027-9684(15)30931-7

D'Angelo, H., Rolland, B., Adsit, R., Baker, T. B., Rosenblum, M., Pauk. D., Morgan, G. D., & Fiore, M. C. (2019). Tobacco treatment program implementation at NCI cancer centers: Progress of the NCI Cancer Moonshot-Funded Cancer Center Cessation Initiative tobacco treatment program implementation at cancer centers. *Cancer Prevention Research* , *12*(11), 735–740.

D'Angelo, H., Webb Hooper, M., Burris, J. L., Rolland, B., Adsit, R., Pauk, D., Rosenblum, M., Fiore, M. C., & Baker, T. B. (2021). Achieving equity in the reach of smoking cessation services within the NCI Cancer Moonshot-Funded Cancer Center Cessation Initiative. *Health Equity*, *5*(1), 424–430. https://doi.org/10.1089/heq.2020.0157

Davis, J. M., Thomas, L. C., Dirkes, J. E. H., & Swartzwelder, H. S. (2020). Strategies for referring cancer patients in a smoking cessation program. *International Journal of Environmental Research and Public Health*, *17*, 6089.

Doyle, C., Kushi, L. H., Byers, T., Courneya, K. S., Grant, B., Mctiernan, A., Rock, C. L., Thompson, C., Gansler, T., Andrews, K. S., & Activity, P. (2009). Nutrition and physical activity during and after cancer treatment: An American Cancer

Society guide for informed choices. *CA: A Cancer Journal for Clinicians*, *56*, 323–353.

Duffy, S. A., Scheumann, A. L., Fowler, K. E., Darling-Fisher, C., & Terrell, J. E. (2010). Perceived difficulty quitting predicts enrollment in a smoking-cessation program for patients with head and neck cancer. *Oncology Nursing Forum*, *37*(3), 349–356.

Edwards, S. A., Bondy, S. J., Callaghan, R. C., & Mann, R. E. (2014). Prevalence of unassisted quit attempts in population-based studies: A systematic review of the literature. *Addictive Behaviors*, *39*(3), 512–519.

Farley, A., Aveyard, P., Kerr, A., Naidu, B., & Dowswell, G. (2016). Surgical lung cancer patients' views about smoking and support to quit after diagnosis: a qualitative study. *Journal of Cancer Survivorship*, *10*(2), 312–319. https://doi.org/10.1007/s11764-015-0477-4

Feuerstein, M. (2006). *Handbook of Cancer Survivorship*. Springer.

Gajdos, C., Hawn, M. T., Campagna, E. J., Henderson, W. G., Singh, J. A., & Houston, T. (2012). The adverse effects of smoking on postoperative outcomes in cancer patients: Smoking and cancer surgery outcomes. *Annals of Surgical Oncology*, *5*(19), 1430–1438.

Gallaway, M. S., Glover-Kudon, R., Momin, B., Puckett, M., Lunsford, N. B., Ragan, K. R., Rohan, E. A., & Babb, S. (2019). Smoking cessation attitudes and practices among cancer survivors- United States, 2015. *Journal of Cancer Survivorship*, *13*, 66–74. https://doi.org/10.1007/s11764-018-0728-2

Garces, Y. I., Yang, P., Parkinson, J., Zhao, X., Wampfler, J. A., Ebbert, J. O., & Sloan, J. A. (2004). The relationship between cigarette smoking and quality of life after lung cancer diagnosis. *Chest*, *126*(6), 1733–1741.

Gemine, R. E., Ghosal, R., Collier, G., Parry, D., Campbell, I., Davies, G., Davies, K., & Lewis, K. E. (2019). Longitudinal study to assess impact of smoking at diagnosis and quitting on 1-year survival for people with non-small cell lung cancer. *Lung Cancer*, *129*(December 2018), 1–7. https://doi.org/10.1016/j.lungcan.2018.12.028

Gravely, S., Cummings, K. M., Hammond, D., Borland, R., McNeill, A., East, K. A., Loewen, R., Martin, N., Yong, H.-H., Li, L., Liber, A., Levy, D. T., Quah, A. C. K., Ouimet, J., Hitchman, S. C., Thompson, M. E., Boudreau, C., & Fong, G. T. (2021). Self-reported quit aids and assistance used by smokers at their most recent quit attempt: Findings from the 2020 International Tobacco Control Four Country Smoking and Vaping Survey. *Nicotine and Tobacco Research* , *23*(10), 1699–1707.

Gross, B., Brose, L., Schumann, A., Ulbricht, S., Meyer, C., Völzke, H., Rumpf, H., & John, U. (2008). *Reasons for not using smoking cessation aids*. *9*, 1–9. https://doi.org/10.1186/1471-2458-8-129

Hatcher, J. L., Sterba, K. R., Tooze, J. A., Day, T. A., Carpenter, M. J., Alberg, A. J., Sullivan, C. A., Fitzgerald, N. C., & Weaver, K. E. (2017). Tobacco use and surgical outcomes in head and neck cancer patients. *Head and Neck*, *38*(5), 700–706. https://doi.org/10.1002/hed.23944

Heckman, B. W., Cummings, K. M., Kasza, K. A., Borland, R., Burris, J. L., Fong, G. T., McNeill, A., & Carpenter, M. J. (2017). Effectivness of switching smoking cessation medications following relapse. *American Journal of Preventive Medicine*, *53*(2), e63–e70. https://doi.org/10.1016/j.amepre.2017.01.038.Effectiveness

Heitz, A. E., Baumgartner, R. N., Baumgartner, K. B., & Boone, S. D. (2018). Healthy lifestyle impact on breast cancer-specific and all-cause mortality. *Breast Cancer Research and Treatment*, *167*(1), 171–181.

Hsieh, H. F., & Shannon, S. E. (2005). Three approaches to qualitative content analysis. *Qualitative Health Research*, *15*(9), 1277–1288. https://doi.org/10.1177/1049732305276687

Hughes, J. R., Keely, J. P., Fagerstrom, K. O., & Callas, P. W. (2005). Intentions to quit smoking change over short periods of time. *Addictive Behaviors*, *30*(4), 653–662.

Hughes, J. R., Solomon, L. J., Livingston, A. E., Callas, P. W., & Peters, E. N. (2010). A randomized, controlled trial of NRT- aided gradual vs. abrupt cessation in smokers actively try to quit. *Drug and Alcohol Dependence*, *111*(1–2), 105–113.

Japuntich, S. J., Ph, D., Luberto, C. M., Streck, J. M., Rigotti, A., Perez, G., Ph, D., Temel, J., Lanuti, M., Dresler, C., Zallen, J. P., Davies, D., & Elyse, R. (2016). Integrating tobacco treatment into thoracic oncology settings: Lessons learned. *Journal of Health Psychology*, *21*(12), 2813–2823. https://doi.org/10.1177/1359105315587136.Integrating

Jenssen, B., Leone, F., Evers-Casey, S., Rinad, B., & Schnoll, R. (2019). Building systems to address tobacco use in oncology: Early benefits and opportunities from the Cancer Center Cessation Initiative . *Journal of the National Comprehensive Cancer Network*, *17*(6), 638–643.

Land, S. R., Toll, B. A., Moinpour, C. M., Mitchell, S. A., Ostroff, J. S., Hatsukami, D. K., Duffy, S. A., Gritz, E. R., Rigotti, N. A., Brandon, T. H., Prindiville, S. A., Sarna, L. P., Schnoll, R. A., Herbst, R. S., Cinciripini, P. M., Leischow, S. J., Dresler, C. M., Fiore, M. C., & Warren, G. W. (2016). Research priorities, measures, and recommendations for assessment of tobacco use in clinical cancer

research. *Clinical Cancer Research*, *22*, 1907–1913. https://doi.org/10.1158/1078-0432.CCR-16-0104

Lindson-Hawley, N., Aveyard, P., & Hughes, J. R. (2013). Gradual reduction vs abrupt cessation as a smoking cessation strategy in smokers who want to quit. *JAMA Clinical Evidence Synopsis*, *310*(1), 91–92.

Lindson-Hawley, N., Banting, M., West, R., Michie, S., Shinkins, B., & Aveyard, P. (2016). Gradual versus abrupt smoking cessation: A randomized, controlled noninferiority trial. *Annals of Internal Medicine*, *164*(9), 585–592.

Martinez, E., Tatum, K. L., Weber, D. M., Kuzla, N., Pendley, A., Campbell, K., Ridge, J. A., Langer, C., & Miyamoto, C. (2019). Issues related to implementing a smoking cessation clinical trial for cancer patients. *Cancer Causes Control*, *20*(1), 97–104. https://doi.org/10.1007/s10552-008-9222-x.Issues

Marzorati, C., Riva, S., & Pravettoni, G. (2017). Who is a cancer survivor? A systematic review of published definitions. *Journal of Cancer Education*, *32*, 228–237. https://doi.org/10.1007/s13187-016-0997-2

McBride, C. M., Emmons, K. M., & Lipkus, I. M. (2003). Understanding the potential of teachable moments: The case of smoking cessation. *Health Education Research*, *18*(2), 156–170.

McBride, C. M., & Ostroff, J. S. (2003). Teachable moments for promoting smoking cessation: The context of cancer care and survivorship. *Cancer Control*, *10*(4), 325–333.

Meyerhardt, J. A., Heseltine, D., Niedzwiecki, D., Hollis, D., Saltz, L. B., Mayer, R. J., Thomas, J., Nelson, H., Whittom, R., Hantel, A., Schilsky, R. L., & Fuchs, C. S. (2006). Impact of physical activity on cancer recurrence and survival in patients with stage III colon cancer: Findings from CALGB 89803. *Journal of Clinical Oncology*, *24*(22), 3535–3541.

Mitsimponas, N., & Rauh, S. (2017). *What does survivorship mean? Let us explain it to you.*

Morphett, K., Partridge, B., Gartner, C., Carter, A., & Hall, W. (2015). *Why don't smokers want help to quit? A qualitative study of smokers' attitudes towards assisted vs. unassisted quitting*. 6591–6607. https://doi.org/10.3390/ijerph120606591

Ostroff, J. S., Burkhalter, J. E., Cinciripini, P. M., Li, Y., Shiyko, M. P., Hay, J. L., Dhingra, L. K., Lord-bessen, J., Holland, S. M., & Manna, R. (2014). *Randomized trial of a presurgical scheduled reduced smoking intervention for patients newly diagnosed with cancer*. *33*(7), 737–747.

Price, S. N., Studts, J. L., & Hamann, H. A. (2018). Tobacco use assessment and treatment in cancer patients: A scoping review of oncology care clinician adherence to clinical practice guidelines in the U.S. *The Oncologist*, theoncologist.2018-0246.

Puleo, G. E., Borger, T., Bowling, W. R., & Burris, J. L. (2021). The state of the science on cancer diagnosis as a "teachable moment" for smoking cessation: A scoping review. *In Press in Nicotine and Tobacco Research*.

Rose, J. E., Behm, F. M., Westman, E. C., & Kukovich, P. (2006). Precessation treatment with nicotine skin patch facilitates smoking cessation. *Nicotine & Tobacco Research* , *8*(1), 89–101.

Rzepakowska, A., Marcinkiewicz, B., Żurek, M., Wiśniewska, D., & Niemczyk, K. (2021). Motivation to smoking cessation in head and neck cancer and dysplasia patients in confrontation with the attitudes of otorhinolaryngologists in delivering anti-smoking therapies. *European Archives of Oto-Rhino-Laryngology*, *0123456789*. https://doi.org/10.1007/s00405-021-07209-2

Sheikh, M., Mukeriya, A., Shangina, O., Brennan, P., & Zaridze, D. (2021). Postdiagnosis smoking cessation and reduced risk for lung cancer progression and mortality: A prospective cohort study. *Annals of Internal Medicine*, *174*(9), 1232–1239.

Shields, P. G., Bierut, L., Arenberg, D., Balis, D., Benowitz, N. L., Burdalski, C. E., Cincirpini, P. M., Davis, J., Edmonson, D., Hitsman, B., Jaklitsch, M. T., Leone, F. T., McCarthy, D. E., Ong, M. K., Park, Elyse, R., Prochaska, J. J., Selzle, J., Sheffer, C. E., Spencer, S., … Wood, D. (2021). *NCCN Clinical Practice Guidelines in Oncology: Smoking Cessation*. https://doi.org/10.1038/sj.bdj.4811025

Singelis, T. M., Dharm, H. C. T., Bhawuk, R. S., & Gelfand, M. J. (1995). Horizontal and vertical dimensions of individualism and collectivism: A theoretical and measurement refinement. In *Cross-Cultural Research* (Vol. 29, Issue 3).

Smith, A. L., Carter, S. M., Chapman, S., Dunlop, S. M., & Freeman, B. (2015). Why do smokers try to quit without medication or counselling? A qualitative study with ex-smokers. *BMJ Open*, *5*, e007301. https://doi.org/10.1136/bmjopen-2014-007301

Smith, R., Andrews, K. S., Brooks, D., Fedewa, S. A., Manassaram-Baptiste, D., Salslow, D., Brawley, O. W., & Wender, R. C. (2017). Cancer screening in the United States, 2017: A review of current American Cancer Society guidelines and current issues in cancer screening. *CA: A Cancer Journal for Clinicians*, *67*(2), 100–121.

Song, M., & Giovannucci, E. (2016). Preventable incidence and mortality of carcinoma associated with lifestyle factors among whites in the United States. *JAMA Oncology*, *2*(9), 1154–1161.

Soulakova, J. N., & Crockett, L. J. (2018). Unassisted quitting and smoking cessation methods used in the United States: Analyses of 2010-2011 tobacco use supplement to the current population survey data. *Nicotine and Tobacco Research*, *20*(1), 30–39. https://doi.org/10.1093/ntr/ntw273

Sterba, K. R., Garrett-Mayer, E., Carpenter, M. J., Tooze, J. A., Hatcher, J. L., Sullivan, C., Tetrick, L. A., Warren, G. W., Day, T. A., Alberg, A. J., & Weaver, K. E. (2017). Smoking status and symptom burden in surgical head and neck cancer patients. *Laryngoscope*, *127*(1), 127–133. https://doi.org/10.1002/lary.26159.Smoking

Swoboda, C. M., Walker, D. M., & Huerta, T. R. (2019). Likelihood of smoking among cancer survivors: An updated Health Information National Trends Survey analysis. *Nicotine and Tobacco Research*, *21*, 1636–1643. https://doi.org/10.1093/ntr/ntz007

Talluri, R., Fokom Domgue, J., Gritz, E. R., & Shete, S. (2020). Assessment of trends in cigarette smoking cessation after cancer diagnosis among US adults, 2000 to 2017. *JAMA Network Open*, *3*(8), e2012164. https://doi.org/10.1001/jamanetworkopen.2020.12164

Tibuakuu, M., Okunrintemi, V., Jirru, E., Echouffo, J. B., Orimoloye, O. A., Mehta, P. K., DeFilippis, A. P., Blaha, M. J., & Michos, E. D. (2019). National trends in cessation counseling, prescription medication use, and associated costs among US adult cigarette smokers. *JAMA Network Open*, *2*(5), e194585.

Twyman, L., Bonevski, B., Paul, C., & Bryant, J. (2014). Perceived barriers to smoking cessation in selected vulnerable groups: A systematic review of the qualitative and quantitative literature. *BMJ Open*, *4*(12), 1–15. https://doi.org/10.1136/bmjopen-2014-006414

US Department of Health and Human Services. (2014). *The health consequences of smoking, 50 Years of Progress: A report of the Surgeon General, 2014*.

US Department of Health and Human Services. (2020). *Smoking cessation: A report of the Surgeon General*. US Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health.

Vasileiou, K., Barnett, J., Thorpe, S., & Young, T. (2018). Characterising and justifying sample size sufficiency in interview-based studies: Systematic analysis of qualitative health research over a 15-year period. *BMC Medical Research Methodology*, *18*(1). https://doi.org/10.1186/s12874-018-0594-7

Vijayvergia, N., & Denlinger, C. S. (2015). Lifestyle factors in cancer survivorship: Where we are and where we are headed. *Journal of Personalized Medicine*, *5*, 243–263.

Warner, E. L., Nam, G. E., Zhang, Y., McFadden, M., Wright, J., Spraker-Perlman, H., Kinney, A. Y., Oeffinger, K. C., & Kirchhoff, A. C. (2016). Health behaviors, quality of life, and psychosocial health among survivors of adolescent and young adult cancers. *Journal of Cancer Survivorship*, *10*(2), 280–290. https://doi.org/10.1007/s11764-015-0474-7

Warren, G. W., Marshall, J. R., Cummings, K. M., Toll, B. A., Gritz, E. R., Hutson, A., Dibaj, S., Herbst, R. S., Mulshine, J. L., Hanna, N., & Dresler, C. M. (2013). Addressing Tobacco Use in Patients With Cancer: A Survey of American Society of Clinical Oncology Members. *Journal of Oncology Practice*, *9*(5), 258–262.

Weir, H. K., Anderson, R. N., King, S. M. C., Soman, A., Thompson, T. D., Hong, Y., Sm, C. K., Soman, A., Td, T., & Hong, Y. (2016). Heart Disease and Cancer Deaths — Trends and Projections in the United States ,. *Centers for Disease Control and Prevention*, *13*, 1–10.

Wells, M., Aitchison, P., Harris, F., Ozakinci, G., Radley, A., Bauld, L., Entwistle, V., Munro, A., Haw, S., Culbard, B., & Williams, B. (2017). Barriers and facilitators to smoking cessation in a cancer context: A qualitative study of patient, family and professional views. *BMC Cancer*, *17*, 348–362. https://doi.org/10.1186/s12885-017-3344-z

Westmaas, J. L., Alcaraz, K. I., Berg, C. J., & Stein, K. D. (2014). *Prevalence and correlates of smoking and cessation- related behavior among survivors of ten cancers: Findings from a nationwide survey nine years after diagnosis*. 931–938. https://doi.org/10.1158/1055-9965.EPI-14-0046

VITA

Tia N. Borger

Department of Psychology

University of Kentucky

EDUCATION

University of Kentucky, Lexington, KY **December 2020**
Master of Science, Clinical Psychology

University of Kentucky, Lexington, KY **May 2018**
Bachelor of Arts, Psychology
Minor in Criminology

RESEARCH EXPERIENCE

Dr. Jessica Burris's Research Lab **August 2018-Present**
University of Kentucky, Lexington, KY
Supervisor: Jessica L. Burris, PhD

Patient-Oriented and Population Sciences SRF **January 2021-Present**
Markey Cancer Center, University of Kentucky, Lexington KY
Supervisor: Jessica L. Burris, PhD

Dr. Meghan Marsac's Research Lab **August 2017-May 2018**
University of Kentucky, Lexington, KY
Supervisor: Meghan Marsac, PhD

Dr. David Berry's Research Lab **August 2016-May 2018**
University of Kentucky, Lexington, KY
Supervisor: David Berry, PhD

Dr. Ramesh Bhatt's Research Lab **August 2015-May 2016**
University of Kentucky, Lexington, KY
Supervisor: Ramesh Bhatt, PhD

CLINICAL EXPERIENCE

Bluegrass Health Psychology **August 2022-Present**
Lexington, KY
Supervisors: Jonathan Cole, PhD and Amanda Merchant, PhD

Lexington Veteran Affairs Hospital- Primary Care **July 2020- June 2021**
Lexington, KY
Supervisor: Bradley Benedict, PsyD

Jesse G. Harris Psychological Services Center **August 2019-June 2022**
University of Kentucky, Lexington, KY
Supervisors: David Susman, PhD and Mary Beth McGavran, PhD

Orofacial Pain Clinic **July 2019-June 2020**
University of Kentucky, Lexington, KY
Supervisor: Charlie Carlson, PhD

Personality and Intelligence Assessment **August 2018-May 2019**
University of Kentucky, Lexington, KY
Supervisors: Greg Smith, PhD and Cristina Crego, PhD

HONORS AND MEMBERSHIPS

Markey Cancer Center Trainee Travel Award, University of Kentucky
Pre-Doctoral Research Award, Department of Psychology, University of Kentucky
National Institute on Drug Abuse T32 Fellowship, T32 DA035200, University of Kentucky, Lexington, KY
Markey Cancer Center Research Day Poster Presentation- 1st place award

PEER-REVIEWED PUBLICATIONS

McLouth, L. E**., Borger, T.,** Bursac, V., Hoerger, M., McFarlin, J., Shelton, S., Shelton, B., Shearer, A., Stapleton, J., Mullett, T., Schoenberg, N., Kiviniemi, M., Studts, J., Goebel, D., Thind, Ranveet, Trice, L., & Schoenberg, N. E. (2023). Palliative care use and utilization determinants among patients treated for advanced stage lung cancer care in the community and academic medical setting. *Supportive Care in Cancer, 31*(3), 190.

Rivera-Rivera, J. N., **Borger, T.,** Sizemore, Y., & Burris. J. L. (2023). Similarities and differences across the underlying dimensions of social functioning in rural and nonrural cancer survivors: A mixed-methods study. *Journal of Rural Health, 39,* 452-462. *https://doi.org/10.1111/jrh.12721*

Borger, T., Shelton, B. J., Valentino, J., Ostroff, J. S., Cummings, K. M., Studts, J. L., Carpenter, M.J., & Burris, J. L. (2022). A daily assessment study of smoking cessation after a head and neck cancer diagnosis. *Nicotine and Tobacco Research, 24,* 1781-1788. PMCID in progress.

Burris, J. L., **Borger, T. N.,** Baker, T. B., Bernstein, S. L., Ostroff, J. S., Rigotti, N. A., & Joseph, A. (2022). Proposing a model of proactive outreach to advance clinical research

and care delivery for patients who use tobacco. *Journal of General Internal Medicine,* Advance Online Publication. doi:/10.1007/s11606-022-07553-x. PMC9360368.

Patterson, J. G., **Borger, T. N**., Burris, J. L., Conaway, M., Klesges, R., Ashcraft, A., Hauser, L., Clark, C., Wright, L., Cooper, S., Smith, M. C., Dignan, M., Kennedy-Rea, S., Paskett, E. D., Anderson, R., & Ferketich, A. K. (2022). A cluster randomized controlled trial for a multi-level, clinic-based smoking cessation program with women in Appalachian communities: Study protocol for the Break Free Program. *Addiction Science and Clinical Practice, 17*, 11. PMC8842942.

Puleo, G. E., **Borger, T. N**., Bowling, W., Burris, J. L. (2021). The state of the science on cancer diagnosis as a "teachable moment" for smoking cessation: A scoping review. *Nicotine and Tobacco Research, 24*(2), 160-168. PMC8807170.

Burris, J. L., **Borger, T. N.,** Shelton, B., Darville, A. K., Studts, J. L., Valentino, J., Blair, C., Davis, D. B., & Scales, J. (2021). Tobacco use and tobacco treatment referral response of patients with cancer: Implementation outcomes at a National Cancer Institute- Designated Cancer Center. *Journal of Oncology Practice, 18*(2), e261-e270. PMC9213199.

Borger, T., Puleo, G. E., Rivera-Rivera, J. N., Montgomery D., Bowling, W. R., & Burris, J. L. (2021). A descriptive study of cervical cancer survivors' persistent smoking behavior and perceived barriers to quitting. *Psychology of Addictive Behaviors, 36*(1), 109-116. PMC8463620.

Puleo, G.E., **Borger, T.,** Montgomery, D., Rivera-Rivera, J.N., Burris, J.L. (2020). A qualitative study of smoking-related causal attributions and risk perceptions in cervical cancer survivors. *Psycho-Oncology, 29,* 500-506. PMC7054153.

Wallace, E. R., Balthrop, K. C., Brothers, S. L., **Borger, T. N.,** Garcia-Willingham, N. E., Walls, B. D., Harp, J. P., Koehl, L. M., Schmitt, F. M., & Berry, D. T. R. (2020). Conners' adult ADHD rating scale infrequency index validation and pilot comparison of administration formats. *Psychological Disorders and Research*, *3*(1), 2-8.

Kindler, C., Kassam-Adams, N., **Borger, T.,** Marsac M. (2019). Child and parent perceptions of participating in multi-method research in the acute aftermath of pediatric injury. *Research Ethics, 15*(3-4), 1-14.