

A Mixed-Methods Study of Resilience and Smoking in a Homeless Population

By

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Abstract

The purpose of this study is to examine resilience levels and smoking habits in homeless adults in Rhode Island in hopes of identifying ways to decrease overall smoking prevalence in the state. This mixed-methods study seeks to understand the relationship between homelessness, smoking, and resilience on an individual level. Areas of focus are levels of resilience (measured by two different resilience scales), smoking status and frequency, self-efficacy in quitting, living situation, and basic demographics. Understanding resilience levels, basic smoking behaviors and how homeless individuals struggle with cessation may help inform future cessation program design and implementation for this population.

Smoking, Resilience, and Homelessness: A Review of the Literature

Morayo Ominira Akande

Smoking and Homelessness

The rate of smoking among adults in the general population is approximately 15.1%^[1] while in homeless populations it is estimated to be 73%.^[2] Though the prevalence of smoking is more than three times higher among homeless people than the general population, very few service providers offer adequate programs to reduce tobacco use in this vulnerable population.^[2] It is well known that smoking is harmful to the health of the smoker and those in their environment. Though smoking plagues a large majority of homeless people in Rhode Island, there is only one smoking cessation program that is funded to offer a free smoking cessation program to the uninsured and underinsured residents of Rhode Island.^[3] This lack of cessation support shows the inaccessibility of program options in Rhode Island and begs the question of where those looking for support can find it.

People who are homeless encounter unique barriers to quitting smoking.^[4] Many homeless people suffer from medical conditions as a result of exposure to the cold, poor nutrition, hygiene, and risky behaviors; and smoking often exacerbates many of these conditions. Additionally, homeless people are more likely to smoke discarded cigarette butts, smoke used filters, or share cigarettes in order to save money. These behaviors put them at greater risk for infectious diseases, cancer, respiratory illness, and cardiovascular disease.^[4]

The lack of smoking cessation programs offered to homeless populations and the rate at which smoking disproportionally affects homeless people makes this issue not only a matter of health, but also a matter of social justice.^[4] Homeless smokers are less likely to successfully quit than smokers in the general population, despite comparable numbers of attempts and desire to quit.^[5] Homeless populations face systematic barriers to smoking cessation at multiple levels. Many policy changes have a great impact on smoking prevalence, but issues surrounding their

implementation and impact on smoking among the underserved has not been sufficiently addressed.^[6] Although smoking is a major contributor to premature death in homeless adults, many shelters allocate few resources toward helping smokers quit.^[7] A common theme that appears in the literature is the lack of prioritization of smoking cessation within organizations that serve the homeless.^[8-10] Addressing basic needs, such as housing, food, and clothing is often their major concern.

There is a gap in the literature with regard to smoking cessation in homeless populations, likely because homeless smokers are often excluded from smoking cessation trials and surveillance data collections due to the belief that homeless people will be hard to keep track of and have co-occurring mental health diagnoses.^[11] Therefore, little is known about how to best facilitate cessation in this population.^[12] Because of the high prevalence of smoking, smoking cessation interventions targeting homeless persons have the potential to have tremendous public health impact.^[13] Most studies on homelessness and smoking focus on organizational policies and barriers that inhibit the existence and/or success of smoking cessation programs for this population. Few studies exist that focus on the perceived needs and cessation barriers of homeless individuals. Some studies have interviewed homeless individuals; however, these interviews target feelings, reactions, and behavior changes resulting from organizational policy changes.^[14-16]

This literature review will summarize the extant literature that examines smoking cessation among homeless people on an organizational level, as well as on an individual level. The goal of presenting the major themes will be to contextualize the lack of smoking cessation programs at homeless shelters across the United States. Then, resilience will be defined and evaluated as a potential indicator and facilitator of smoking cessation for homeless populations.

Organizational Barriers

Prioritization of Services

Smoking cessation tends to have a lower priority than other homelessness services, such as finding temporary and permanent housing, food, clothing, and employment. One study found that although there was a consensus among shelter directors on the importance of addressing smoking among their clients, disagreement exists regarding the intensity with which shelters should address smoking cessation.^[17] While there seemed to be an overwhelming consensus for shelters to collect information on drug and alcohol use during intake evaluations with clients, it appears that directors do not ask tobacco use upon intake, demonstrating a lack of emphasis on smoking cessation within this population despite the high prevalence.^[13]

In a study interviewing directors and staff of emergency and transitional shelters in San Diego County, many shelter directors reported that education on smoking cessation could be incorporated into support groups that were already offered to clients and could be offered with access to pharmaceutical support for smoking cessation. However, while directors reported interest in implementing a smoking counseling program, they also reported lack of knowledge and expertise on this topic. They cited a need for funding to hire a new staff member to coordinate and direct smoking cessation counseling programs, since the idea of having “client-driven” programs (i.e. peer-led cessation groups) was not supported by shelter directors. Many directors were of the opinion that their services should not “overload [clients] with additional expectations of smoking cessation” because of competing priorities.^[17]

Because shelter staff are preoccupied with providing primary services to their homeless clients, such as temporary housing, case management, and referrals to health clinics, it is difficult to encourage staff to take on additional responsibilities of designing and operating a smoking cessation program. An alternative to hiring an outsider staff member would be to train shelter

staff to conduct smoking cessation and counseling groups. However, consensus among staff was that such initiatives would need support from the leadership and should include incentives for staff involvement in order for any smoking cessation programs to be sustainable. Given the constraints on staff time, incentivizing staff to become smoking cessation experts and group leaders seemed to be crucial to the sustainability of a smoking cessation program in homeless shelters.^[17]

Implementation Issues

Addressing the culture of smoking in homeless shelters through policy initiatives may support cessation and improve health within the homeless population.^[18] Previous research on smoke-free policies in homeless shelters has shown that most shelters have indoor smoke-free policies.^[17] However, outdoor smoking policies are often inconsistent between shelters within the same district or state. Differences between shelters in the same areas may contribute to confusion and/or make enforcement difficult. In a study that interviewed directors and staff at multiple homeless shelters in San Diego County, it became apparent that there were not standardized smoking policies among the shelters. Some facilities had a permissive smoking culture, while others a smoke-free culture. This was also found among other shelters within the same district.^[17-19] Thus, studies were developed to investigate the likelihood that smoking bans at shelters would reduce social cues to smoke and increase the likelihood of successful smoking cessation among homeless individuals.^[18]

Implementation of smoke-free policies at homeless shelters are difficult for a number of reasons. Issues with staff capacity and compliance at homeless-serving agencies arise in many different studies.^[7, 17] Studies that interviewed directors and staff of homeless organizations reveal a consensus in support for possible smoking cessation programs among the administrative

hierarchy but a disconnect in the importance of implementing and enforcing smoking policies that could potentially reduce smoking among their clients.^[17] Almost all the directors and staff interviewed in the various studies agreed that smoke-free policies were important because they promoted a healthy working environment. However, there was disagreement among directors about whether smoking cessation should be part of the services they provide to their clients.^[17, 18, 20] The dissociation between importance and implementation of smoking cessation policies extends throughout the hierarchy of staff to reveal discrepancies between directors and staff on the importance of the existence and enforcement of smoke-free policies. The difference between directors and staff in multiple studies showed results of inconsistency in policy enforcement and compliance.^[17, 18, 20]

Staff attitudes were identified by shelter directors as an imperative factor in the success of a smoke-free policy on shelter grounds.^[18] However, there was a pattern of philosophical differences among staff on the importance of enforcing smoke-free policies. A study conducted in San Diego County showed that staff reports of colleague disagreements and apathy regarding the importance of addressing tobacco use with clients and addressed these disagreements as some of the barriers to building a smoking cessation program in their facility. Directors reported that difficulty developing strategies to address staff and client smoking violations was one of the other barriers to implementing smoke-free policies.^[17]

Negative staff attitudes toward a smoke-free policy, staff smoking, and lack of knowledge among staff about nicotine addiction pose significant barriers to implementing and enforcing a smoke-free culture in homeless-serving agencies.^[17, 21] The San Diego County study also found that there was a higher proportion of staff who were current smokers as compared to the proportion of shelter directors who were smokers. Approximately half of the staff in this

study reported observing their colleagues smoke with clients, and one of the staff reported having smoked with a client to build a therapeutic relationship, despite all facilities having policies that restricted staff smoking with clients.^[17] The literature often showed reports of homeless service staff and other professionals using smoking to engage with or build a trusting relationship with clients. There were reports of healthcare providers in shelters having a permissive attitude towards smoking within the homeless populations, identifying it as a better alternative to other drugs. This pattern of inconsistent behavior among staff and service providers was felt to lead to boundary issues as well as sending mixed messages to clients on the importance of smoking cessation and smoke-free shelter policies.^[17, 18]

One of the main conclusions of the above study was that in order for smoking cessation programs to be effective in homeless shelters, they needed to include training and incentives for staff to implement and enforce smoke-free policies and cessation services.^[17] Another study examining the attitudes and effects of smoking policy changes at a homeless shelter in Dallas, Texas identified the administrative concerns involving the consequences that may accompany shelter-wide smoking bans (e.g., violations of the smoking ban, greater presence of homeless individuals outside the shelter campus).^[18]

Although directors and staff agreed that smoke-free policies and smoking cessation programs were a good idea, shelter staff were often more likely than directors to agree that smoking cessation was not a feasible goal for their clients.^[17] No study has examined attitudes, beliefs, and practices regarding nicotine dependence treatment and smoking cessation among the staff and management of homeless shelters; therefore, it is unclear whether addressing staff smoking attitudes and behaviors would affect homeless clientele smoking behaviors and cessation efforts.

Client Attitudes

Smoking policies at homeless shelters have the potential to evoke strong reactions by shelter clientele. Some studies showed that homeless smokers felt marginalized by shelter-wide or neighborhood-wide smoke-free policies. Invocation of smokers' rights or preserving one's autonomy to smoke arose in studies that interviewed clientele about shelter smoking policies.^[20] Homeless people may view smoking as one of the few life domains over which they are able to exert control. It has been postulated that in some ways smoking has become an expression of freedom in the face of desperation and a source of comfort in the midst of chaos and instability; thus, smoke-free policies are often perceived as a personal attack on shelter residents and their rights.^[2]

Though it may seem natural for shelter residents who are smokers to disagree with smoke-free shelter policies, many studies observed homeless smokers were often supportive of partial bans on smoking, including time restrictions on smoke breaks.^[20] A study in Dallas consisted of a two-phase process to examine homeless client attitudes regarding the implementation of smoking bans on shelter grounds; one survey occurred before the creation of a smoke-free zone in half of the shelter courtyard, and one was conducted after the policy change. At both points of data collection, the majority of participants supported the creation of the smoke-free zone. Results of the study showed that non-smokers and smokers supported the partial smoking ban. However, non-smokers were more supportive of a shelter-wide ban than were smokers. Specifically, before and after the partial ban, participants reported that the partial ban would/did result in: (1) attempts to move to another shelter, (2) reductions in smoking, and (3) more time spent outside the shelter campus. After implementation of the ban, fewer participants tried to quit smoking and fewer participants increased their smoking outside the shelter grounds than expected.^[18] The results of this study showed that although clientele may

approve of partial smoking bans, solely having a smoking ban did not work in encouraging homeless individuals to quit smoking on their own. An important result from this study was the overall acceptance of the partial smoking ban, with little pushback, violations, or negative consequences, even with 76% of shelter residents being smokers. Findings also showed that 26% of smokers that completed the survey both before and after the implementation reported that they reduced the amount they smoked in the two months following the partial smoking ban, though there were few quit attempts. ^[18]

In a qualitative study on smoke-free policies in San Diego homeless shelters, results showed that of the participants that were current smokers, 67.7% agreed that policies were associated with their reduced smoking, and 38.7% reported that policies were associated with making a quit attempt. Most of the study participants reported that although adherence to a complete ban on smoking would be challenging, it would bring them closer to quitting smoking completely. ^[20]

In sum, these studies demonstrate that smoking bans at homeless shelters are an important component of comprehensive shelter policies and initiatives that aim to reduce smoking prevalence and improve overall resident health. However, many of these studies only examined one shelter or one county in warm climates. A major limitation of these studies is that one shelter may not be representative of all shelters. Further, the warm climate of Dallas and San Diego may have skewed the results of implementing smoking bans on shelter grounds, especially if a similar study were done at shelters in colder, more unpredictable climates.

Lack of Resources

A recurring theme in much of the literature was a lack of funds, personnel, time, and other resources for smoking cessation, which poses a significant barrier to addressing smoking in

homeless service settings.^[17] Though there has been an allocation of funds for smoking cessation, misuse of these funds has occurred. In 1998, 46 of the 50 states in the U.S. and the tobacco industry signed the Master Settlement Agreement (MSA) which provided states with funding for tobacco control and treatment. However, a study done in the early 2000s showed that most states used only about 5% of these funds for their intended purposes.^[22] In many cases, states have been allocated the funds to address smoking prevalence in populations that are greatly affected by tobacco, yet they have not begun to use these funds for smoking cessation programs.^[23] In a study assessing the dissemination and implementation of state policies mandating the provision of tobacco cessation funds, results showed that 62% of the states do not require tobacco cessation nor are working towards a state policy addressing the issue. Many of these states take their allocated funds for smoking cessation and add them to their general funds which may be used for a range of unrelated purposes.^[24] Thus, homeless-serving agencies may not be receiving the proper funding to address smoking-related issues among their clients.

In addition to the misappropriation of funds, there is in general a lack of adequate funding for smoking cessation programs in the United States. In 2011, the Center for Disease Control and Prevention (CDC) described funding for tobacco control programs in the U.S. as “sorely inadequate”.^[25] Unfortunately, there is discussion about decreasing the amount of government spending on smoking cessation programs as a result of the declining prevalence rate in the general population.^[26] Instead of decreasing funding, it may be most appropriate to reallocate smoking cessation funds to programs that target populations at high risk, such as homeless populations. Some organizational initiatives to address the prevalence of smoking within homeless populations are in progress. However, studies show that smoking bans are not enough to have a significant effect on clientele smoking behaviors.^[14, 17, 18, 27] More attention needs to be

directed towards the creation and implementation of cessation programs that can help guide homeless clients to successfully quit smoking.

Individual Barriers

Desire to Quit

The literature demonstrates that there is a significant disparity between the general population and homeless populations with regard to smoking prevalence. Studies show that a history of homelessness doubles the odds of being a current smoker, regardless of other socioeconomic factors or behavioral health conditions.^[28] Despite the drastic difference in smoking prevalence between the homeless and the general population, there does not seem to be a significant difference in the desire to quit smoking.^[2, 28] Therefore, smoking cessation interventions may be highly effective in this population if they were offered.^[29]

Although homeless smokers and the general population have comparable levels of motivation to quit smoking, homeless smokers may have more difficulty maintaining smoking abstinence.^[30] This is in part due to prioritization of other basic needs, a culture of sociality around smoking, and permissive shelter policies that result in frequent exposure to smoking. Recent literature shows that homeless smokers are exposed to substantially more smokers in their environment and are more likely to report smoking in response to social norms than other socioeconomically disadvantaged smokers.^[18] Since they are surrounded by other smokers, they likely do not have adequate social support for sustained abstinence.

Cessation Barriers due to Homelessness

A significant factor related to smoking and being homeless is lack of stability. Often, homeless individuals stay at multiple shelters and move around frequently throughout the day in order to eat meals, request services, and have places to stay.^[31] Instability and lack of consistent

widespread smoking cessation programs at homeless-serving agencies may be major barriers to smokers who are interested in cessation. Even if cessation programs existed within a shelter, some homeless smokers may be unable to attend face-to-face or group appointments based on the location of the shelter.^[12] Many homeless smokers do not have access to a telephone or computer to utilize quit lines or web-based materials.^[16] In general, there is a lack of cessation programs available to this population, and when available, there are significant barriers among homeless clients attempting to access these services.^[32]

Nicotine Addiction vs. Other Drugs

Multiple studies have interviewed homeless smokers and documented a perception that nicotine was more addictive than other substances of abuse, and that current strategies to address nicotine addiction were inadequate.^[2, 16, 20, 30] In a qualitative study in San Diego County, homeless adults noted and described the culture of smoking within shelters and substance recovery groups, highlighting that although nicotine was recognized as an addictive substance, treating nicotine addiction was not a priority when compared with treating alcohol or illicit drug use.^[20] In addition, some participants reported receiving advice from their healthcare providers or substance use counselors to avoid smoking cessation while attempting cessation of other substances. Participants said that not enough service providers discussed smoking cessation with them and that multiple types of treatments needed to be offered to smokers.^[20]

Homeless smokers commonly have psychiatric and substance use disorder comorbidities that are associated with higher nicotine dependence which may confer additional barriers to quitting.^[16] Smoking cessation is often not recommended in homeless settings because of the widespread belief that it is too difficult to address two addictions concurrently. This is referred to in the literature as “tobacco exceptionalism”, a practice in which tobacco use is condoned when

compared with the use of other drugs, and it is described in multiple studies.^[20, 33] Justification behind tobacco exceptionalism may not be evidence-based as at least one study found a positive impact of smoking cessation attempts in conjunction with recovery from other addictions.^[13]

Smoking Frequency and Homelessness

In a study analyzing multiple cessation treatment programs and their effectiveness on homeless light smokers (defined as 1-10 cigarettes per day) and moderate/heavy smokers (defined as >10 cigarettes per day), potential ways to design cessation programs were presented. Heavy smokers were more likely to prefer individual interventions, while light smokers showed significant interest in approaches like group counseling. Compared to moderate/heavy smokers, light smokers were less likely to believe that medications would be effective for quitting. Results from this study stated that a combination of pharmacotherapy, counseling, and nicotine replacement may be the most effective approach to cessation.^[12] Not only was there a difference in recommended treatments based on smoking frequency, but there were disparities related to likelihood of cessation among these groups as well. Light smokers reported lower cessation barriers related to tobacco dependence and cravings when compared to moderate/heavy smokers. These differences may help explain why light smokers may be more successful at quitting despite the fact that they are less likely to be asked about smoking or receive physician advice to arrange cessation services relative to heavy smokers.^[12]

Fears Related to Quitting

Multiple studies reported that many homeless smokers had an eventual goal of quitting smoking, however barriers to quitting outweighed facilitators to quitting. Common self-reported barriers to quitting were anticipation of cravings, stress, mood swings, boredom, lack of cessation support, fear of weight gain, and acceptance of smoking in homeless settings.^[12, 13, 15]

Being able to identify such fears and perceived barriers may help tailor cessation programs and encourage more participation and retention in smoking cessation programs. In general, there is a notable lack of research on barriers and facilitators to quitting among homeless smokers on an individual level. The majority of research focuses on organizational structure and policies. The few existing studies that examined homeless smokers found that while there was often a desire to quit, there were very few services offered and multiple unaddressed barriers to assist homeless smokers with cessation. [2, 4, 5, 28]

Resilience and Homelessness

The History of Resilience

Over the past few decades, international research on resilience has increased substantially as a reaction to dissatisfaction with ‘deficit’ models of illness and psychopathology. [34] Policy and practice research is becoming increasingly interested in resilience and its potential influence on health, well-being, and quality of life. Major international funders, such as the Medical Research Council and the Economic and Social Research Council in the UK have identified resilience as an important factor for lifelong health and well-being. [35]

The complexity of defining the construct of resilience has been widely recognized and has created difficulties when developing an operational definition of resilience. [36-38] Different approaches to measuring resilience across studies have led to inconsistencies in prevalence estimates as well as identifying the nature of potential risk factors and protective processes related to resilience. Vanderbilt-Adreiance and Shaw did a multi-study review of resilience as it relates to levels of psychological risk in children and noted that the proportions found to be resilience varied from 25% to 84%. [39] This creates difficulties in comparing prevalence across studies, even if study populations experience similar adversities. This range of discrepancy also

raises questions about the extent to which resilience is being measured as opposed to an entirely different character trait.^[35] The inconsistency in conceptualization of resilience has greatly hindered the advancement of resilience research, underscoring the need for better theory-grounded measurement tools.^[40] Recognizing that resilience can be developed through personal experience and specialized training, a group of researchers conceptualize the trait as the “capacity to adapt and bounce back from adversity and stressful events.”^[41, 42]

The relationship between resilience and health has been studied in various capacities, including psychology, health behavior, health promotion, disease prevention and treatment. Converging evidence from diverse sources suggests that resilience manifests a person’s strengths in physical, emotional and social domains.^[43] Compared with individuals who are less resilient, more resilient individuals can withstand longer hours of hunger, coldness, thirstiness and tiredness^[44], are less likely to feel panic and stress after exposure to traumatic and adverse social and psychological events^[45], and recover faster and better from the impact from such exposures.^[46]

Because of the vast variability in defining and studying resilience, this literature review will mainly focus on how psychological resilience has been studied in different populations. Resilience is still a fairly new concept, and its lack of definability results in inconsistencies among research. Below is a review of literature that looks at resilience specifically as “a process of negotiating, managing and adapting to significant sources of stress or trauma.”^[47] Resilience will vary between individuals, groups, and studies, but the overarching theme of resilience in the following literature review stays relatively true to this interpretation.

Resilience could be an important character trait that distinguishes if a person will or will not overcome adversity. If so, it is even more important to determine if resilience is a skill that

can be learned and strengthened. This literature review will evaluate the different examinations of resilience that exist in the literature in hopes of better understanding the role that resilience may play in future behavior-change studies.

Development of Resilience Measures

Resilience in human development has often been referred to in the literature as positive adaptation in the context of significant adversity.”^[48] Summarizing the first four decades of resilience research, protective and promotional factors are consistently associated with resilience in a multitude of situations and populations, but particularly in young people. Factors such as self-regulation skills, good parenting, and other self-driven protective and promotional behaviors are examined under diverse conditions. Strategies of fostering resilience have been explored, focusing on reducing risk, building strengths or assets, and mobilizing adaptive systems that protect and restore positive human development. There is a rapidly growing research effort across disciplines to integrate resilience and prevention efforts.^[48]

Diverse criteria have been used for assessing good adaptation skills in resilience studies. Most resilience assessments aim to define resilience through tools that explore positive behavior, such as presence of social and academic achievements, presence of behaviors desired by society, happiness or life satisfaction, and the absence of undesirable behavior, including mental illness, emotional distress, criminal behaviors, or risk-taking behaviors.^[48]

There are two main approaches to characterizing resilience development^[49]: *variable-focused* and *person-focused* approaches. Person-focused approaches incorporate the type of resilience that is being examined in this review and focuses on identifying resilience in people and trying to understand how they differ from people who are not faring as well in the face of adversity. This approach attempts to reflect the whole person in terms of adaptive functions and

surrounding environment. ^[48]

Ward's psycho-social interactive model of resilience, used as a mode of evaluation in multiple resilience studies, was developed as a tool to enhance the relationship between provider and patient in a clinical setting. This model demonstrates that resilience is an interaction between factors in the internal domain, comprising of psychological characteristics and resources, and the external domain, comprising the social environment that surrounds the individual. This interactive model also considers time as an important part of understanding the relationship between internal and external predictors. ^[50] Ward applies this interactive resilience model in predicting never-smokers or former-smokers in a study of 93 participants from populations with high and enduring smoking rates in Adelaide, Australia. Ward examined how some people in these groups managed to quit or never start smoking in the face of adversities in comparison to those who took up smoking. Key findings showed that 'additive' and 'subtractive' resilience strategies, which focus on the practices, roles, and activities that individuals either "took on" or "left behind" in order to quit smoking or remain abstinent were essential in connecting resilience to smoking cessation. For participants who had never smoked, the main resilience strategies were through supportive family and friends over the course of their lives. Building a strong sense of self, a reasonably strong community, being more willing to seek help from others and more willing to be help-givers, and a variety of other strategies such as exercise, reading/learning, and general preoccupation were identified as positive strategies to refrain from smoking. ^[50]

Resilience and Homelessness

There is limited discussion of resilience in homeless populations in the literature. The existing studies focus mostly on homeless youth, who are regarded as an extremely high risk group, susceptible to suicidal ideation, substance abuse, and high rates of mental illness. There is

a growing body of knowledge exploring resilience in homeless youth, and a smaller subset of knowledge examining the relationship between perceived resilience and health risk behaviors in homeless youth.

One quantitative study on homeless youth explores the association between perceived resilience and health risk behaviors, such as suicidal ideation, substance abuse, sexual risk behaviors and violence related behaviors. The findings revealed that perceived resilience was negatively related to suicidal ideation, substance abuse, and violence. Perceived resilience served as a protective factor for suicidal ideation and having multiple sexual partners, suggesting that youth with lower levels of perceived resilience were more likely to engage in various health risk behaviors. ^[51]

Another study conducted on homeless youth in central Texas in 1998 identified correlates of resilience. In this study, lack of resilience was significantly related to hopelessness, loneliness, life-threatening behaviors, and connectedness, but not to gender or sexual orientation. Fifty percent of the variance in resilience was explained by hopelessness and connectedness. Participants who perceived themselves as resilient, although disconnected from other people, were less lonely, less hopeless, and engaged in fewer life-threatening behaviors than those who perceived themselves as not being resilient. Though the results of this study could help design resilience programs for homeless adolescents, they should be interpreted with caution because of its small sample size. ^[52]

Resilience and Smoking

Resilience is still a relatively new concept with regard to smoking cessation. The lack of resilience and smoking research, especially among homeless populations, leaves a large gap in knowledge. In order to better serve the homeless, it is important to know if resilience plays a role

in their lives.

In order to understand the role that resilience could play in smoking cessation, it is important to trace the path through which it could have an effect. First, it should be understood that cigarette smoking is often a mechanized coping strategy – people smoke as self-medication against negative emotions.^[53] There is a high co-morbidity between smoking and negative emotions^[54], particularly anxiety and depression.^[55] Negative emotions are associated with multiple stages of the smoking trajectory, including initiation, progression from experimenting to regular smoking, and from regular smoking to nicotine dependence.^[55-57] Negative emotions are also associated with failure in smoking cessation treatment.^[58] It is of great significance to consider negative emotions when investigating factors related to smoking.^[59]

Negative emotions, such as anxiety and depression, may oftentimes serve as mediators between stress and smoking. Daily stress and traumatic events have been demonstrated to be significant predictors of negative emotions, and smoking is used as a coping strategy to deal with negative emotions.^[60] The direct relationship between stress and smoking has been supported by multiple empirical studies.^[61-68] Additionally, stress may be indirectly associated with smoking and nicotine dependence through negative emotions.

Resilience has been linked to reduced risk of tobacco use.^[69] Findings have shown that higher resilience traits, such as perception of self, perception of future, social competence and family cohesion decrease the probability of regular smoking among teenage boys and girls.^[69] Though the difference between teenagers and adults is likely considerable, this link between resilience and smoking frequency could mean resilience is a moderator of stress and could therefore replace smoking in moderating stress levels. By some definitions, more resilient individuals will be less likely to be affected by stress.^[70] Even if affected by adverse or

traumatic events, individuals with high resilience may be less likely to feel anxiety or depression and more likely to overcome these emotions after such events than individuals with low resilience.^[71] Accumulative data from previous studies indicate a significant effect of resilience in moderating a wide range of stress on negative emotions, including daily stress, stressful life events, trauma, maltreatments, and violent events.^[72-76]

One study looked at the role of negative emotions in mediating the link between stress and smoking and whether resilience modified this indirect link. Results showed that two negative emotions (anxiety and depression) fully mediated the link between stress and intensity of smoking and nicotine dependence. These negative emotions were negatively associated with resilience. Thus, it was concluded that resilience interacts with stress and negative emotions to affect the risk of smoking and nicotine dependence among Chinese adults. However, further research, especially studies that incorporate longitudinal analysis, is needed to verify these findings and illuminate the etiology of smoking and provide evidence to assist in the design and implementation of smoking prevention and treatment programs.^[59]

Implications of resilience on smoking and prevention have been recognized in the literature.^[77] Recent research indicates that individuals with higher levels of resilience are less likely to initiate smoking,^[69] to smoke cigarettes in the past month^[78], and to become nicotine dependent.^[75] Although these studies have promising results, the relationship between resilience and smoking is still unclear. There is still very little known about the underlying mechanisms by which resilience may reduce the risk of cigarette smoking and nicotine dependence.^[59] The majority of research on resilience and smoking surrounds the effect of resilience on smoking abstinence, however there is minimal research on how resilience influences quitting. So far, only a few studies have alluded to increased resilience having a tangible effect on smoking cessation.

However, the connection between resilience and smoking had been supported by studies, and this relationship encourages looking into resilience and smoking cessation.^[79]

In-depth interviews of Indigenous adults (N=31) investigated the effect of stress on smoking and identified internal and external resilience factors that were used by non-smokers to refrain from initiating smoking.^[50] Here, resilience was characterized in terms of an individual's internal psychological properties (e.g. problem solving, determination, etc.) and factors related to their social environment (e.g. support from friends, historical culture) that could influence smoking abstinence. Using Ward's psycho-social interactive model of resilience as a theoretical lens to help guide the analysis, both internal and external resilience factors were found in the data regarding smoking abstinence.

Theories of resilience were employed to determine how non-smoking individuals were better able to manage stressful events without smoking compared to individuals who were smokers.^[80] This study found that perceived stress may encourage smoking behavior, and resilience to stress may play an important role in smoking abstinence for former- and never-smokers. The findings from this study revealed that all three groups (smokers, former smokers, and never-smokers) were equally exposed to smokers and the social influences to begin smoking. Most of the participants reported experiencing stress to adverse and demanding situations that were difficult for them to cope with, where the demands were exceeding their ability to manage.^[80] For former-smokers, experiencing stress was not always a reason for smoking uptake, but there was a strong relationship throughout their lives between smoking frequency and perceived levels of stress. Several participants reported the influence of others who encouraged them to smoke. One never-smoker highlighted the significance of social norms and how smoking has the ability to shape one's self-identity and social constructs. This same concept of social norms

appears multiple times in studies about homelessness and smoking in the United States. [2, 28, 81, 82]

Internal and external resilience factors were identified for non-smokers, including being in control or determined, problem solving, and access and willingness to seek social support. Social support may be crucial to compensate for high levels of stress, especially because a sustained level of perceived stress is known to erode an individual's self-control, determination and willpower. [83] In the end, this study implores the continued exploration of resilience to stress as a solution to quitting smoking.

A different study aiming to determine the best way to implement smoking-cessation programs for Indigenous adults concluded that targeting individual resilience was the best method. Many participants in this study spoke of various unsuccessful quit attempts but attributed long term success to an increased sense of self-efficacy in smoking cessation and in life more broadly. [84] For many participants, stress remained in their lives, however they had developed what Ward [50] refers to as “resilience strategies” to cope with such challenges. Participants also stated that quitting smoking was linked to their sense of ownership over the decision-making process. Overall, the findings from this study corroborated that life stress was a key driver of smoking behavior and resilience was a key driver of successful quitting. [84]

Building Resilience

Studies on resilience models suggest that cessation programs will be most effective when they harness powerful adaptation skills within individuals. [48] The models and findings arising from research on building resilience suggest many strategies for smoking intervention programs. The overarching theme is that moving from a deficit-model to a positive model is the key to fostering resilience in individuals and groups. [48] Though there is still much research that needs

to be done, studies exist that promote the idea that resilience can be developed. Thus, it is important to consider the role resilience may play in smoking cessation, especially in terms of resilience and smoking interventions.

The potential for resilience levels to be increased through the development of certain skills is extremely relevant to the design of smoking cessation programs. Though there are still many unknowns about resilience, its relevance and importance have been increasing over the years, so much so that institutions have begun researching the potential to increase resilience levels within individuals. One of largest institutions that have been pursuing the development of resilience is the United States Army.

In recent years, resilience has been explored among military populations to try to understand the connection between resilience and mental health status. Emotional resilience training programs began introduction into the United States Army in 2009 as a response to the increase in mental health problems among veterans of the Iraq and Afghanistan wars. This training draws from schools of cognitive and positive psychology, emphasizes positive thinking techniques, and is used for soldiers, family members of soldiers, and the Department of the Army civilians.^[85] The goal of this program was to proactively respond to the stressors that soldiers and their families face as a result of service.

In a review of the Army's 10-day Master Resilience Training (MRT) program, levels of psychological health (measured by the Global Assessment Tool) were found to be significantly higher in those who completed the MRT program. Comparisons between combat teams who received and did not receive MRT were made, and even with other variables controlled, MRT graduates had much higher psychological health than the control group.^[86] The importance that the military has put into resilience training and the positive results from these programs are

indicators that resilience can be developed within an individual and its beneficial uses may be an important trait to explore in other populations. ^[85]

Resilience applies differently to different populations, but there are themes among the strategies suggested in the literature about how to increase resilience. Research shows that optimistic people live longer and happier lives; and therefore, reflection and realization of good things that happen every day provides an effective way for one to avoid slipping into a negative mental state. ^[87] Thus, practicing reflection and introspectiveness is a great way to build resilience. ^[88-90] Strategies such as this one can be incorporated into smoking cessation programs and could potentially benefit constituents in cessation and other areas of life. ^[79] As more studies on resilience are conducted, it will be increasingly important to identify how to build resilience through exercises, personalized strategies, and program design.

Moving Forward

Navigating adulthood is challenging and it is often complicated by a variety of developmental, psychological, and sociological changes. ^[91] This challenge is exacerbated for homeless adults by the absence of basic resources, sexual and physical victimization, substance misuse, psychological challenges, and unstable living conditions. In attempt to understand and meet the needs of this population, services typically operate from a deficit or problem-focused perspective, and research examining the resilience of homeless adults is scarce. ^[92] Thus, more efforts to build knowledge of resiliency among this vulnerable group should arise in order to aid this population. ^[93]

It is well-established in the literature that encouraging smoking cessation among homeless persons is extremely difficult. However, there are several recent articles that examined the prospect of alternative or intermediate outcomes for smoking cessation. Seeking complete

abstinence from cigarettes may not always be the most effective way to encourage smoking cessation. Reducing the number of cigarettes per day may be an effective way to get homeless persons to start considering quitting altogether. Although there is no direct health benefit related to reduced tobacco use, reduction efforts may increase confidence in quitting, enhance skills for behavior change, and motivation to quit, potentially yielding better cessation outcomes.^[16]

A smoking ban alone at homeless-serving agencies is not enough to reduce the prevalence of smoking within homeless populations. Other cessation resources, like counseling and support groups, to accompany the smoke-free policies are necessary in order to ensure the maximum possible results of reducing smoking within this population. Although there is inherent belief that shelter-wide smoking bans (including both indoor and outdoor bans) would improve the health of shelter residents, there was resistance from both shelter staff and clientele on the implementation of shelter-wide smoke-free policies. Partial smoking bans may be a low-cost way to reduce environmental tobacco smoke exposure and may ultimately have an effect on shelter culture as it relates to smoking.^[18] In addition, smoking bans may prompt homeless smokers to think about reducing or quitting smoking. However, smoking cessation programs should accompany smoking bans to promote a smoke-free atmosphere.^[14, 17-20]

There are no studies of cessation program design within homeless shelters, though there are many suggestions made by researchers based on studies that interview homeless service staff and clients. Shelter directors reported that in order to create a successful smoking cessation program with active participation, financial incentives, credit toward meeting mandatory requirements for the program, or passes to leave the facility for outdoor excursions were the types of incentives that might be successful with participants.^[17, 18] Financial incentives have been suggested for cessation programs in the past and contribute to lack of program offerings

because shelters often lack funding to support monetary incentives. Lack of funding also inhibits shelters from offering nicotine replacement therapy (NRT) at no or reduced cost. ^[4]

There was much consensus within the literature around the importance of smoking cessation services offered among homeless service providers. Thus, it is the role of shelter directors to provide leadership in incorporating smoking cessation counseling as a formal service to shelter clientele and in modifying beliefs and attitudes among staff on the importance of addressing tobacco addiction. Unfortunately, most homeless-serving agencies do not receive adequate funding to finance such services. Partnering with community-based organizations and health centers to provide comprehensive cessation counseling and pharmaceutical support for smoking cessation and streamlining policies to incentivize efforts of smoking cessation among staff and clients may increase the feasibility of smoking cessation programs in homeless service settings. ^[17]

By incorporating resilience training into cessation programs, there is a potential to be able to eliminate continuous financial incentives to maintain program adherence. ^[94] Adding resilience training into cessation programs creates a more holistic approach to smoking cessation and could potentially improve overall livelihood in homeless constituents. ^[95] Combined with resilience-building, the nicotine-reduction method may play a key role in increasing levels of resilience by giving individuals tools to identify positive attributes in their accomplishments of reducing cigarette intake. ^[16]

Providing tobacco treatment to homeless populations is a complex issue. Understanding the chronic nature of smoking and nicotine dependence as well as potential cessation barriers to the population can assist in identifying appropriate treatment options. ^[16] There is a lack of knowledge on homeless smokers' thoughts about their smoking behaviors, smoking cessation,

and how resilience may play a role in successful smoking cessation. Targeted research on homeless smokers' perceived needs is important to inform future studies and interventions.

A Mixed-Methods Study of Resilience and Smoking in a Rhode Island Homeless Population

Morayo O. Akande

Introduction

Smoking and Homelessness

The rate of smoking among adults in the United States has been decreasing since 1965 and is currently about 15.1%^[1]; however, the prevalence of smoking in homeless populations has remained consistent for decades and is an estimated 73%.^[28] Though the prevalence of smoking is nearly five times higher among homeless people than the general population, few studies have been conducted to examine this, and few homeless service providers offer adequate programs to reduce tobacco use in the population.^[28]

Although the desire to quit smoking in homeless populations is similar to smokers in the general population, homeless people encounter unique barriers to quitting smoking, such as a lack of accessibility to cessation programs and adequate support systems.^[5] In addition, many homeless people suffer from medical conditions as a result of exposure to the cold, poor nutrition, poor hygiene, and risky behaviors; and smoking may exacerbate many of these conditions. Further, homeless people are more likely to smoke discarded cigarette butts and used filters or to share cigarettes to save money. These behaviors put them at greater risk for infectious diseases, cancer, respiratory illness, and cardiovascular disease.^[1, 30] These predispositions highlight the importance of addressing smoking cessation among this population. Targeted and tailored smoking cessation efforts towards homeless populations could result in a significant decline in smoking prevalence among this population.^[13]

Smoking cessation programs in Rhode Island are limited. Though many types of nicotine replacement therapy (NRT) products are covered by public insurance programs, cessation programs designed for cigarette and tobacco use are limited. Further, smoking cessation for the homeless is not a top priority among service providers or homeless constituents.^[32] By

understanding character traits and attitudes among homeless adults with varying smoking habits, homeless-service agencies may be able to better understand factors related to smoking in this population and design and execute tailored, effective smoking cessation programs and policies.

Resilience

Over the past few decades, international research on resilience has increased substantially as a reaction to dissatisfaction with ‘deficit’ models of illness and psychopathology.^[34] Policy and practice research is becoming increasingly interested in resilience and its potential influence on health, well-being, and quality of life. Major international funders, such as the Medical Research Council and the Economic and Social Research Council in the UK, have identified resilience as an important factor for lifelong health and well-being.^[35]

The complexity of defining the construct of resilience has been widely recognized and has created difficulties when developing an operational definition of resilience.^[36-38] Different approaches to measuring resilience across studies have led to inconsistencies in prevalence estimates as well as identifying the nature of potential risk factors and protective processes related to resilience.^[35, 39] This study defines resilience as “the character trait that allows for the process of negotiating, managing, and adapting to significant sources of stress or trauma.”^[35]

Within the psychological field, general studies on resilience focus on a multitude of associated factors such as exposure to risk^[39], positive outlook^[96], ability to bounce back after acute trauma^[97], and the relationship to negative emotions^[58]. Studies on resilience within homeless populations focus particularly on homeless teens and related factors such as loneliness, suicidal ideation, and psychological distress.^[98] Some qualitative data explores the role resilience plays in youth managing and surviving homelessness.^[93, 96, 99-101] One study on homeless youth explores the association between perceived resilience and health risk behaviors. The study found

that perceived resilience was negatively related to suicidal ideation, substance abuse, and violence.^[51]

Another study conducted on homeless youth in central Texas in 1998 identified correlates of resilience. Lack of resilience was significantly related to hopelessness, loneliness, life-threatening behaviors, and feelings of connectedness. Participants who perceived themselves as resilient, although disconnected from other people, were less lonely, less hopeless, and engaged in fewer life-threatening behaviors than those who perceived themselves to be less resilient.^[52]

Results from these studies indicate that interventions that focus on building resilience should be accompanied with peer support, therapeutic rapport, developing healthy coping strategies^[93], and investigating the degree to which resilience is affected by chronic exposures versus acute exposures to risk or trauma.^[100] Though no studies within homeless populations have demonstrated that developing certain skills may increase resilience levels, other institutions have explored and provided evidence supporting the idea that resilience can be learned and developed.^[88] There is a need for more resilience studies that explore methods of increasing resilience and the subsequent effects on health-risk behaviors.^[102]

Smoking and Resilience

Understanding the role that resilience could play in smoking cessation is important. Smoking is often a mechanized coping strategy, in that many people report smoking to self-medicate as a means of managing negative emotions.^[53] There is a high level of co-morbidity between smoking and negative emotions^[54], particularly anxiety and depression.^[55] Negative emotions are associated with multiple stages of the smoking trajectory, including initiation, progression to regular smoking, and from smoking to nicotine dependence.^[55-57] Negative emotions are also associated with failure in tobacco cessation treatment.^[58] It is of great

significance to consider negative emotions when investigating factors related to smoking.^[59]

Negative emotions, such as anxiety and depression, may oftentimes serve as mediators between stress and smoking. Daily stress and traumatic events have been demonstrated to be significant predictors of negative emotions, and smoking is used as a coping strategy to deal with negative emotions.^[60] The direct relationship between stress and smoking has been supported by multiple empirical studies.^[61-68] Additionally, stress may be indirectly associated with smoking and nicotine dependence through negative emotions.

By some definitions, more resilient individuals will be less likely to be affected by stress.^[70] Even if affected by adverse or traumatic events, individuals with high resilience may be less likely to feel anxiety or depression or more likely to overcome these emotions after such events than individuals with low resilience.^[71] Cumulative data from previous studies indicate a significant effect of resilience in moderating a wide range of stress on negative emotions, including daily stress, stressful life events, trauma, maltreatments, and violent events.^[72-76] Studies have shown that as individual resilience increases, levels of depression, anxiety, and stress decrease.^[103] Therefore, there is a possibility that individual resilience can affect smoking behavior and cessation.

Resilience and smoking patterns have been examined in the literature.^[77] Recent studies indicate that individuals with higher levels of resilience are less likely to initiate smoking,^[69] to have smoked cigarettes in the past month^[78], and to become nicotine dependent.^[75] Although these studies have promising results, the relationship between resilience and smoking cessation is still unclear. There is little known about the underlying mechanisms by which resilience may reduce the risk of cigarette smoking and nicotine dependence.^[59]

Resilience has been linked to reduced risk of tobacco use. Findings have shown that

higher resilience traits, such as perception of self, perception of future, social competence, and family cohesion, decrease the probability of regular smoking among teenage boys and girls.^[69] Though the differences in smoking patterns among teens and adults are likely considerable, the association between resilience and smoking frequency could indicate that resilience is a moderator of stress and may influence response to stress and therefore smoking behaviors.

Smoking and Resilience in Homeless Populations

The literature examining the relationship between resilience and smoking cessation in homeless populations is limited. There is, however, emerging interest in the relationship between these topics in the field of smoking cessation.^[104, 105] By understanding the prevalence of resilience among homeless smokers, future studies may explore the possibility of building resilience as a strategy to promote smoking cessation.

To our knowledge, there are no studies that have examined levels of resilience in homeless adults who smoke. Thus, there is a significant gap in the literature regarding resilience and its relationship to smoking behaviors within homeless populations. Some studies have examined resilience in non-smokers.^[50, 77, 79] In-depth interviews of Indigenous adults (N=31) investigated internal and external resilience factors that were used by non-smokers to refrain from initiating smoking. The resilience factors that were identified included being in control or determined, problem solving, and access and willingness to seek social support. Social support may be crucial to compensate for high levels of stress, especially because a sustained level of perceived stress is known to erode self-control, determination and willpower.^[83] This study provides support for further exploration of resilience and its relationship to smoking and smoking cessation.

Study Description

This study is an extension of a study recently completed on smoking cessation within Rhode Island homeless populations. The previous study (conducted June 2015 to April 2016) examined the perceived needs and barriers to quitting smoking faced by homeless persons in Rhode Island in hopes of identifying ways to decrease smoking prevalence within the Rhode Island homeless population. The mixed-methods study sought to understand the relationship between homelessness and smoking on an individual level. There were many needs and barriers identified in the study, including the lack of cessation programs available to the homeless, lack of support for quitting, and the social acceptance that smoking facilitates within this population. Many participants reported that they would be more willing to try to quit and probably more able to succeed in quitting smoking if they found stable housing.

The primary aim of the current study is to examine levels of resilience, self-efficacy for quitting, and smoking frequency in homeless adults in Rhode Island and to explore how these concepts are associated with smoking behaviors in homeless adults who smoke. The primary research questions were, “Do levels of resilience correlate with levels of self-efficacy and smoking frequency?” and “Is there a correlation between number of previous quit attempts and levels of resilience, self-efficacy, and smoking frequency?” Specifically, the hypothesis of this study was that participants with higher levels of resilience on average would have lower smoking frequencies, measured as cigarettes per day.

Methods

Setting and Participants

A convenience sample of smokers (N=60) was recruited from Crossroads Rhode Island homeless organization in Providence, Rhode Island. Crossroads is the largest multi-service

homelessness agency in Rhode Island, serving men, women, and families. Crossroads consists of a main agency building, which includes a health clinic, career lab, and the Community Room (a 24-hour day respite); a housing structure called The Tower which provides single room occupancy for 176 adults; and three shelters serving homeless men, women, and families separately.^[106] All participants in the study, identified both through the prescreening process and questions on the survey, qualified for the study by either living in The Tower, frequenting Crossroads shelters, or currently living in places “not meant for human habitation” (i.e. outdoors). Individuals were eligible to participate in this study if they: (1) were at least 18 years of age, (2) spent at least three of the last seven nights in a shelter or outdoors, or were a resident of temporary/transitional housing and, (3) spoke and understood English. There were no specified exclusion criteria.

Procedures

The Brown University Institutional Review Board (IRB) approved the procedures for this study. Participants were recruited through study flyers posted on the bulletin boards at the Crossroads main building, and at the entrances to The Tower and each shelter during October 2016. The survey was pretested by the Principal Investigator (PI) with three homeless adults (n=3) and the pretest participants were asked to identify any survey items that were confusing, over-demanding, or invasive. No changes were required of the survey instrument based on feedback. Recruitment and enrollment was conducted on three days during October 2016. Surveys were conducted by the PI and four research assistants in a conference room at Crossroads, which was chosen as the survey location to provide a familiar place for participants to partake in the survey and to ensure their comfort.

Oral consent was obtained after the interviewer read aloud the informed consent

document and the participant followed along. Participants presented for the survey on the same day they completed it, and they completed the study screening process prior to participating in the survey. The surveys were administered orally by the interviewer and each participant was either provided with a copy to follow along, or invited to read along on a shared copy with the interviewer. Each question was asked in full, and all answers were circled by the interviewer based on the verbal responses provided by the participant. Each participant was assigned a study ID. The ID system was created to ensure confidentiality of the collected data. Each survey lasted approximately ten minutes, and each participant received a \$7 retail gift card as compensation for completing the survey.

Measures

Homelessness

Level of homelessness was measured using questions from a the Homeless Management and Information System (HMIS) data collection template used for annual assessment of homeless individuals in Rhode Island.^[107] Demographic data collected included length of current homeless situation, number of times homeless in the last three years, current living situation, and where the participant spent the previous night.

Smoking Stage of Change

The Stages of Change scale was adapted from the transtheoretical model (TTM) questionnaire for smoking cessation^[108], and was used as a measure of readiness to quit. The TTM is a common framework for studies of smoking cessation. Using the TTM, several instruments were developed to measure to what extent interventions could make changes in people's behavior.^[108] Participants were asked, "On a scale of 0-3, how do you rank where you are in terms of quitting smoking?" Possible responses corresponded with the four stages of

change: (0) precontemplation, (1) contemplation, (2) action, and (3) maintenance.

Readiness for Smoking Cessation

The Contemplation Ladder was used to measure participants' level of readiness to consider smoking cessation. It is a brief measure of motivation or readiness to change, where zero (0) is the least motivated and ten (10) indicates a high level of motivation. The scale has been significantly associated with reported intention to quit, number of previous quit attempts, perceived encouragement to quit, and socioeconomic status.^[109] The Contemplation Ladder is a visual analog scale comprised of 11 rungs and 5 anchor statements (at items 0, 2, 5, 8, 10), representing stages of change. The response options range from zero (0) to three (3) corresponding with precontemplation, four (4) to six (6) indicating contemplation, seven (7) and eight (8) indicating a stage of preparation, nine (9) and ten (10) indicating taking action and maintenance respectively.^[109]

Nicotine Dependence

The Fagerstrom Test for Nicotine Dependence (FTND) is a validated instrument for assessing the intensity of physical addiction to nicotine. The instrument contains six items that evaluate the quantity of cigarette consumption, compulsion to use, and nicotine dependence. Items in the scale are yes/no scored from 0 to 1 and multiple-choice scored from 0 to 3. The items are summed to yield a total score of 0-10. A higher score on the FTND indicates a higher level of nicotine dependence.^[110, 111]

Smoking Frequency

Smoking frequency was measured in three ways: (1) number of days per week smoked, (2) number of cigarettes smoked per day, and (3) number of years smoked. For analyses, number of cigarettes smoked per day was used as the indicator for smoking frequency. This variable was

treated as continuous for *t*-tests, and as categorical for ANOVA and Chi-squared tests using the following categories: (1) light smoker: smoked <10 cigarettes per day, (2) moderate smoker: smoked 10-20 cigarettes per day, and (3) heavy smoker: smoked >20 cigarettes per day. These categories were chosen based on the natural cutoffs in the data.

Resilience

Resilience was measured using two validated scales. The first scale used was the 25-item Resilience Scale (WYRS) developed by Wagnild and Young (1993).^[112] The scale was developed to measure five interrelated components: equanimity, perseverance, self-reliance, meaningfulness, and existential aloneness. Positive correlations with adaptational outcomes (physical health, morale, and life satisfaction) and a negative correlation with depression have been found and support concurrent validity of the WYRS,^[112] and other studies support the internal consistency, reliability, and concurrent validity of the WYRS as an instrument to measure resilience.^[112, 113] The maximum possible score on the WYRS is 175. A score of 130 or lower is considered low resilience, while a score of 161 or higher is indicative of a higher level of resilience.

The Connor-Davidson Resilience scale (CD-RISC) comprises 25 items, each rated on a 5-point scale. Scoring is based on summing the total of all items, each of which is scored from 0-4. Total scores can range from 0 to 100, with higher scores indicating greater resilience.^[114] The reliability, validity, and factor analytic structure of the scale were evaluated in multiple different populations, with a validity score of 80.7 in the general population. Previous studies indicate that resilience is modifiable and can improve with treatment, with greater improvement corresponding to higher levels of global improvement.^[114]

The CD-RISC has been used before to evaluate resilience levels in homeless populations,

but never specifically for homeless smokers.^[115] Similarly, the WYRS has been used in resilience studies within homeless populations.^[116] Previous resilience and homelessness studies using these scales evaluate resilience in homeless adolescents, often looking for a correlation with suicidal ideation. There are few quantitative studies on resilience in homeless adults and no studies specifically focusing on resilience in homeless adult smokers.

Importance and Confidence in Quitting

The Importance/Confidence scale measures the importance in quitting smoking and the perceived confidence in one's ability to quit smoking.^[117] The scale was developed from a motivational interviewing (MI) model for health behavior change.^[118] The scale consists of two parts; importance in quitting smoking and confidence in one's ability to quit smoking. For each section, there are two quantitative questions with a ten-point scale (0-10) asking the participant to rank how important quitting smoking is and how confident they would be in their ability to quit from "not important at all" (0) to "extremely important" (10). Both quantitative questions have two qualitative follow-up questions: "Why are you at a [X] and not at a 0?" and "What would you need to happen to get from an [X] to a 10?". The purpose of the qualitative questions is to understand the perceived barriers to considering smoking cessation and the perceived needs to attempt cessation.^[118] The qualitative data yielded from this measure can provide important insight into why participants have low self-efficacy or desire to quit smoking, providing additional details which improve the meaning of the quantitative responses.

Data Analysis

All data were entered into an Excel document separately by four research assistants and cross-checked for accuracy. R version 3.3.1 statistical software was used for all data analysis. Correlations were used to examine associations between resilience, self-efficacy, smoking

frequency, and quit attempts. Sample *t*-tests were run to determine if resilience levels differed in participants based on their smoking frequency. Chi-squared tests were used to examine differences in resilience and self-efficacy between participants by smoking frequency. Analysis of Variance (ANOVA) tests were conducted to analyze if there were any differences in resilience levels between demographics. Regression analyses were conducted to determine if resilience and self-efficacy were possible predictors of smoking frequency.

Results

A total of 60 participants completed surveys. One survey was discounted after it became known that the participant had completed the survey on a different date. The final sample size of complete observations for this data analysis was fifty-nine (N=59).

Demographic Characteristics

The demographic characteristics of the study sample and comparisons to the HMIS sample in Rhode Island are shown in Table 1. This study sample had relatively more women, was younger, had more married participants, and had more stable/safe living conditions compared with the HMIS data. The study sample was approximately 50% males, 48% female, and 2% transgender. The median age was 40.0 years with a range of 19-68 years. The mean age of study participants was 42.1 (SD=12.9) years. The racial makeup of the study sample was 32 (54.2%) white, 20 (33.9%) African-American, and 7 (11.9%) other races. Just over three-quarters of the participants identified as non-Hispanic (n=45, 76.3%). There was a wide range of education levels with 17 (28.8%) having less than a high school education, 24 (40.7%) having a high school diploma or GED, and 18 (30.5%) with at least some college education. Over three-quarters (n=48, 81.4%) of the participants were unemployed, disabled, or other; more than half

of study participants (n=38, 64.4%) identified as single. Of the 59 study participants, 34 (57.6%) reported that they were currently staying in an emergency shelter or safe haven, 9 (15.3%) reported sleeping in places not meant for human habitation, and 16 (27.1%) reported staying in some sort of housing (i.e. transitional housing, section 8 housing, single-room occupancy housing, or staying temporarily at a friend/family/hotel).

Smoking Characteristics

Of the 59 study participants, 49 (83.1%) were current smokers, 4 (6.8%) had never smoked, and 6 (10.2%) were former smokers (defined as having quit in the last 30 days or more). Of the 49 current smokers, 46 (93.9%) reported smoking daily. The average number of cigarettes smoked per day was 15.2 (SD=14.9, Median=10), with a range of 2-100 cigarettes per day. The mean age that participants started smoking cigarettes was 16.0 years old (Median=14 and Mode=13), with a range of 7-36 years old. The average number of years participants had been smoking was 25.0 years (Median=22.5) with a range of 2-55 years. The mean FTND score was 4.78, indicating a moderate level ^[119] of nicotine dependence.

Of the current smokers, 14 (28.6%) had never tried to quit and 35 (71.4%) had tried to quit at least once in their lifetime. Only 4 (8.2%) indicated that they intended to never quit smoking. The majority of smokers indicated that they either “may quit smoking one day” (n=19, 38.8%) or “am thinking about quitting smoking soon” (n=22, 44.9%). Four smokers (8.2%) indicated that they had started or soon intended to start quitting smoking. When asked to use the Contemplation Ladder to rank where they fell on a scale of 0-10 in thinking about quitting smoking, the mean rank was 5.6 (Median=5 which is equivalent to “Think I should quit but not quite ready”). On average, smokers reported a 6.8 (SD=3.1) in importance of quitting smoking. Similarly, smokers reported a 6.4 (SD=3.1) in confidence in their ability to quit smoking.

Resilience Levels

Results from the two resilience scales were highly and significantly correlated ($r=0.71$, $p<.001$). The mean WYRS score in the total sample was 146.5 (Median=151) with a range of 88-175. Overall, on the WYRS, 15.0% of the study sample classified as low resilience. The mean CD-RISC score in the total sample was 81.5 (Median=83) with a range of 35-100. A natural cutoff in CD-RISC scores was determined at 70; therefore, those with a score of 70 or below were classified as low resilience. On the CD-RISC scale, 18.6% of the sample was classified as low resilience.

For smokers, the mean WYRS score was 144.7 (Median=148.5), while nonsmokers had a mean of 160.4 (Median=155). One-fifth (20.4%) of smokers had high resilience, while 18.4% of smokers had low resilience. In contrast, all nonsmokers had moderate-high resilience with 40% having high resilience levels. Similarly, using the CD-RISC scale, smokers had a mean CD-RISC score of 80.7 (Median=83.5), while nonsmokers had a mean score of 87.6 (Median=90). Again, nearly one-fifth of smokers (18.4%) had low resilience, and only two nonsmokers had low resilience.

Using ANOVA, resilience levels were found to be significantly different between age groups. In the WYRS, there was a positive significant difference was identified between age groups [25-34] and [35-44] ($t=2.24$, $p=0.03$). In the CD-RISC, there was a negative significant difference was identified between age groups [18-24] and [25-34] ($t=-2.61$, $p=0.03$).

Differences in resilience scores were examined by gender and education level. We found that 82.1% of females had moderate to high resilience on the WYRS (75.0% on the CD-RISC) compared to 86.7% of males (86.2% on CD-RISC). Only 17.9% of females and 13.3% of males had low resilience on the WYRS, and the CD-RISC showed similar results. The one transgender participant had high resilience on both scales. The majority (88.1% on WYRS; 82.9% on CD-

RISC) of those with a high school degree, GED, or some college had moderate to high resilience levels. Of those with lower than high school education, 23.5% demonstrated low resilience on both scales. Differences in resilience by gender and education level were nonsignificant.

We next examined differences in resilience levels by smoking frequency and found significant differences between smoking frequencies using either resilience scale. Moderate smokers differed significantly from heavy smokers (WYRS: $t=-2.60$, $p=0.05$; CD-RISC: $t=-5.98$, $p<0.001$) with heavy smokers having the highest resilience scores (WYRS: $M=162.0$, $SD=14.5$; CD-RISC: 97.3 , $SD=4.3$). Moderate smokers had the lowest resilience scores (WYRS: 141.2 , $SD=19.3$; CD-RISC: 77.4 , $SD=14.6$), and light smokers fell between the other two (WYRS: 149.0 , $SD=21.1$; CD-RISC: 85.1 , $SD=12.4$).

There were no significant correlations between resilience levels and smoking frequency, nor was the correlation between smoking frequency and self-efficacy significant. Also, levels of resilience and self-efficacy for quitting were not significantly correlated with number of previous quit attempts. However, the number of quit attempts was significantly correlated with contemplation of quitting ($r=0.29$, $p<0.05$) and importance of quitting ($r=0.33$, $p<0.05$). CD-RISC resilience levels were significantly correlated with importance of quitting ($r=0.37$, $p<0.05$).

Multiple regressions were conducted to predict average daily quantity of cigarettes smoked by total resilience score, importance of quitting, and confidence in quitting. There were no significant predictors of average daily cigarette quantity. Because there was a significant correlation between the CD-RISC resilience score and importance of quitting, as well as a significant correlation between importance of quitting and contemplation of quitting, we examined predictors of importance and contemplation of quitting. Resilience (on the CD-RISC

scale) was found to be a significant predictor of how one ranks importance of quitting ($\beta=0.79$, $SE=0.03$, 95%CI [0.02, 0.14], $p=0.011$). There were no significant predictors of contemplation.

Qualitative Results

The qualitative results from the Importance/Confidence scale highlighted that the most common reason participants did not rank quitting as high importance was because they did not want to quit. Participant responses for why quitting was not important were:

- *“Because it is my crutch and I need it”*
- *“I’m not interested in quitting”*
- *“I don’t want to quit just yet, but I want to quit someday”*

Alternatively, the most common response to why quitting was important was for health reasons. Other emergent themes as to why participants ranked quitting smoking as high importance was for family reasons or because they did not like to feel addicted to smoking. Responses for why quitting was important were:

- *“My health is important, but smoking keeps me calm”*
- *“My daughter. I don’t want her to have breathing problems”*
- *“It’s an addiction for me and I don’t want that.”*

The number one barrier participants reported for why quitting was not a 10/10 important was due to the level of stress they felt they experienced. Many participants indicated that something drastic would have to happen in their lives for them to seriously consider quitting smoking. When asked what was needed in order to rank quitting as a 10/10 on the importance scale, participants reported: finding stable housing, removing themselves from familiar social settings, and being diagnosed with a serious illness.

Qualitative data showed that participants were not confident in their ability to quit smoking because of their perceived difficulty in breaking the habit or addiction, fear of depression that may result from not smoking, and feeling like the choice to quit was someone

else's choice and not their autonomous decision. Responses regarding lack of confidence include,

- *“Because I keep on doing it. I’m programmed like a computer to smoke”*
- *“Because I’m at a standstill in overwhelming stress and intermediate depression.*
- *“I’ve [quit] before and for a long period of time, but the stress causes lack of initiative to quit.”*

When asked what they would need to feel 10/10 confident in their ability to quit smoking, many participants stated that having a suitable replacement for smoking (e.g. something to take up the time, relieve the stress, and occupy their hands) was needed. Many participants also stated housing was their number one priority and if their living situation was solved, they would be ready and confident in their ability to quit smoking. When answering what was needed to get to a 10/10 confidence, some responses were,

- *“Be out of the shelter and have a place to live”*
- *“New workout or diet plan”*
- *“Making sure I stay positive. Be more active in staying positive.”*

Other emergent themes to increase confidence for quitting were having social support (“People to help me quit”) or banning cigarettes so the temptation to smoke would be eliminated.

Many participants talked about their current living situation and its relationship to their smoking status, suggesting that the two were related. Participants spoke of how the stress of homelessness drove them to continue smoking and inhibited them from seriously considering quitting. There were expressed needs for resources such as NRT, support groups, and sponsors to help with their cessation. One participant stated, “I need to find a way to get on the patch or other NRT or some support to talk my way [through quitting] and know how I’m feeling about it.”

Discussion

The purpose of this study was to evaluate levels of resilience, self-efficacy for quitting, and smoking frequency among homeless adults in Rhode Island. We found that among homeless

adults the prevalence of smoking is extremely high with approximately 93% of our study sample being current or former smokers. Interestingly, three-quarters of those who participated reported having tried to quit at least once in their lifetime. Ranking of importance of quitting and confidence in ability to quit were moderately high, but the qualitative responses highlight the many barriers to successful cessation for this population. Unfortunately, despite the high desire to quit, there are almost no resources or programs available for this population to utilize. ^[3, 28] There is also a perceived lack of social support for smoking cessation within this population identified in this study and others. ^[50, 83]

Overall, the study data suggests that there are a substantive number of homeless smokers who want to quit. However, there are many perceived barriers and fears that inhibit them from quitting on their own. Our results may inform homeless-serving agencies to address these barriers and fears, tailor smoking cessation programs to the needs of the homeless, and help to empower smokers with the confidence they need to successfully quit smoking.

Resilience levels were moderately high in our entire sample reflecting a characteristic that is likely necessary for individuals to negotiate being homeless. Only 15-18% of participants were found to have low resilience. Resilience did not have a linear trend with age, but instead showed an increase as young adults (18-24 years) became adults (25-34) and a decrease as adults approached middle ages (35-44). This trend could have multiple interpretations. We hypothesize that resilience levels coincide with development stages. Another explanation could be that young adults have more self-confidence and hopefulness, but their resilience decreases as adversities arise; then resilience increases again as they discover how to overcome these adversities. This is an interesting result and more studies should be conducted to examine this pattern.

While 20% of smokers demonstrated high resilience, we found that twice that number

(40%) of nonsmokers had high resilience. This is consistent with a study of Indigenous adults that identified internal and external resilience factors that helped nonsmoking individuals better manage stressful events than smokers. The study revealed that factors such as being in control or determined, problem solving, and access and willingness to seek social support were instrumental in nonsmokers' ability to remain smoking abstinent.^[50]

We hypothesized that participants with higher levels of resilience on average would have lower smoking frequencies, however our results did not support this. Heavy smokers had the highest resilience levels compared to both moderate and light smokers. Smoking frequency was not correlated with resilience, nor did resilience predict smoking frequency. These results possibly reflect the addictive potential of nicotine, in that even in those individuals with high resilience there is high frequency of use and nicotine dependence.

The finding that heavy smokers had higher resilience scores than moderate and light smokers is surprising. The qualitative data suggests that perhaps smoking provides support in this population, allowing smokers to feel more capable of dealing with their stressful lives. Responses like "...smoking keeps me calm" and "[I smoke] because I'm at a standstill in overwhelming stress..." allude to the possibility that smoking is used as an effective coping strategy; and previous studies have highlighted the effectiveness of smoking as a coping mechanism.^[60] The perceived relief from stress that smokers experience may be strong, reinforcing their smoking behaviors and their level of resilience. Responses like, "My health is important, but smoking keeps me calm" and "[I smoke] to decrease stress levels" highlight the reasoning smokers have for their smoking habits. Nonetheless, the interrelationship between smoking, negative emotions (such as stress), and resilience is complicated and requires further exploration.

In this study, no significant relationships were found between resilience and self-efficacy in quitting.; however, other studies show a strong relationship between resilience and ability to not initiate smoking.^[50, 83] Thus, resilience seems to influence self-efficacy in nonsmokers and former smokers, helping them continue their smoking abstinence. More research is needed to further evaluate the potential relationship between resilience and self-efficacy within active smokers in this population.

A clear relationship between resilience and readiness to quit is could not be defined by the results of this study. Though resilience levels were not significantly correlated with readiness (i.e. stages of change rank or contemplation), they were significantly correlated with importance of quitting. As one had higher resilience levels, their rank of importance of quitting was higher. Interestingly, rank of importance and confidence in quitting was negatively associated with readiness to quit. As one ranks the importance in quitting and their confidence in quitting higher, their readiness to quit decreases. Though this may seem counterintuitive, this relationship could be attributed to a delayed readiness. The qualitative results indicate that though smoking cessation is of high importance, finding stable housing is the top priority. Though participants may express their desire to quit smoking at some point in the future and have confidence in their ability to quit, they may not feel ready or capable of quitting because of their unstable living conditions. Other studies support these results, reporting that though smoking cessation is a priority among this population and desire to quit is high, confidence or ability to quit is hindered by lack of stable living situation.^[2, 5, 13, 16, 28, 120]

Resilience levels were a significant predictor of importance of quitting. For every one-unit increase in total resilience score, importance of quitting increased by 0.79 units on average. This is an important relationship, because it identifies the role that resilience plays in a smoker's

outlook on cessation and its importance in their lives. However, in addition to stable housing, cessation support is needed for this population to feel confident and ready to quit.

Though smoking plagues a large majority of homeless people in Rhode Island, there is only one smoking cessation program that is funded to offer a free smoking cessation program to the uninsured and underinsured residents of Rhode Island.^[3, 28] The lack of smoking cessation programs offered to homeless populations and the rate at which smoking disproportionately affects homeless people makes this issues not only a matter of health, but also a matter of social justice.^[23] Though there is still more research needed to establish the relationship between resilience and smoking cessation within homeless populations, the evidence for smoking cessation within this population is growing and it is becoming more imperative for programs and funding to start focusing on this plague.

Homeless populations face a multitude of stressors, and smoking is often a relief from that stress, as reported by our study participants. Multiple studies support the needs identified in this study, and cessation support services are in high demand from this population.^[28, 121] To build confidence in one's ability to quit smoking, strategies and skills to help handle and reduce stress must be provided in order to replace the stress-relief that smoking provides.

This study has some key strengths. It is the first study to examine relationships between smoking status, self-efficacy in quitting, and resilience in a homeless population. The use of two resilience measures provides preliminary validity and reliability of the Resilience Scale^[112] and Connor-Davidson Resilience Scale^[114] in a homeless population of smokers. It also demonstrated that the two scales performed equally well and were highly correlated with each other. The survey was pretested, ensuring comprehensibility. The measures used and questions asked were specifically chosen based on an extensive literature review and informed by our

previous study within the same population. This study provides further insight into smoking among the homeless population, and the descriptive results may further inform future studies of homeless smokers, their smoking behaviors, and importance of resilience.

Limitations

This study has some limitations. The study sample was small, perhaps limiting our ability to find significant relationships among studied variables. The study examined homeless persons at one site in a small city in the Northeast and, therefore, the findings may not be generalizable to other homeless populations. Though all participants who live in the Crossroads Tower were eligible to participate in this study, discrepancies exist as to whether the Tower should be categorized as transitional or permanent housing. Tower occupants are required to pay rent and receive a state-funded “Road Home” subsidy to reside there. The U.S. Department of Housing and Urban Development categorizes the Tower as permanent housing. However, Rhode Island Housing, which provides the funding for the subsidies, classifies the Tower as transitional housing. This discrepancy may have affected the results of this study and may have limited our ability to draw comparisons to other studies examining homelessness and smoking in the literature. Finally, although we used validated measures for resilience, nicotine dependence, and self-efficacy, the measures were not developed for the homeless and do not have demonstrated reliability and validity in this population. The FTND may not be a reliable instrument to use when evaluating nicotine dependence among homeless populations because the design of the questions is not always applicable to those who may be staying in emergency shelters or safe havens. For example, the first question of the FTND asks, “How soon after waking do you smoke your first cigarette?” and gives three time intervals to choose from. This question assumes respondent autonomy when in fact, most emergency shelters are smoke-free areas and once a

person leaves the shelter, they may not reenter. Therefore, a homeless smoker could wish to smoke “within the first 5 minutes” of waking up, but because of shelter policies they may not smoke their first cigarette until 1-2 hours after waking. Other similar assumptions in some of the validated measures may also not apply to homeless populations.

Conclusion

This study contributes new information related to smoking cessation and resilience in homeless adults. Overall, resilience levels in homeless adults are moderate to high, and homeless nonsmokers have higher resilience levels than homeless smokers. It is important for future work to examine the differences in resilience levels among the homeless, examine how resilience may be related to success in smoking cessation, and finally to examine whether resilience levels may be enhanced in an individual. Developing an in-depth understanding between smoking, homelessness, social support, and stress management, and resilience is essential to identifying ways to decrease smoking prevalence in this population. There remains a lack of understanding the relationship between resilience and smoking within homeless populations. Additional work is needed to evaluate differences in resilience levels among persistent smokers and nonsmokers in this population to successfully identify the benefit to incorporating resilience into smoking cessation program design.

Table 1

Demographic Characteristics

	Study Results (n=59) n (%) or M (SD)	HMIS data (n=3,604) ¹ n (%) or M (SD)
Sex ²		
Male	30 (50.8%)	2025 (69.3%)
Female*	28 (47.5%)	896 (30.7%)
Transgender	1 (1.7%)	--
Race		
White	32 (54.2%)	2249 (63.5%)
Black/African-American	20 (33.9%)	926 (26.2%)
Asian	1 (1.7%)	29 (0.8%)
American Indian/Alaska Native	2 (3.4%)	40 (1.1%)
Native Hawaiian/Pacific Islander	2 (3.4%)	6 (0.2%)
Other	2 (3.4%)	--
Multi-Racial	--	289 (8.2%)
Ethnicity		
Hispanic/Latino	14 (23.7%)	850 (24.6%)
Non-Hispanic/Latino	45 (76.3%)	2717 (75.4%)
Years of Age*	42.1 (12.9)	--
18-24	4 (6.8%)	74 (3.2%)
25-34	14 (23.8%)	281 (12.3%)
35-44	18 (30.5%)	624 (27.0%)
45-54	11 (18.6%)	751 (32.5%)
55 and up	12 (20.3%)	578 (25.0%)
Employment Status ³		
Unemployed	48 (81.4%)	2116 (86.0%)
Employed Full or Part-Time	8 (13.6%)	344 (14.0%)
Other	3 (5.0%)	--
Years of Education		
< High School	17 (28.8%)	--
High School/GED	24 (40.7%)	--
> High School	18 (30.5%)	--
Marital Status ⁴		
Single	38 (64.4%)	2354 (76.4%)
Married*	7 (11.9%)	160 (5.2%)
Separated	3 (5.1%)	137 (4.4%)
Divorced	10 (16.9%)	383 (12.4%)

Widowed	1 (1.7%)	46 (1.6%)
Veteran Status ⁵		
Yes	1 (1.7%)	293 (10.3%)
No	58 (98.3%)	2557 (89.7%)
Living Status		
Emergency Shelter/Safe Haven*	34 (57.6%)	1044 (64.8%)
Transitional Housing*	11 (18.6%)	32 (2.0%)
Not Meant for Human Habitation	9 (15.3%)	534 (33.2%)
Other	5 (8.5%)	--
Smoking Status		
Current Smoker	49 (83.1%)	--
Former Smoker	6 (10.2%)	--
Never Smoker	4 (6.7%)	--
Smoking Frequency		
Light Smoker (<10 cigs/day)	12 (24.8%)	--
Moderate Smoker (10-20 cigs/day)	33 (67.1%)	--
Heavy Smoker (>20 cigs/day)	4 (8.1%)	--
Wagnild and Young Resilience		
Total Score	146.5 (19.5)	--
Non-Smokers total	154.9 (14.7)	--
Smokers total	144.8 (20.1)	--
Connor-Davidson Resilience		
Total Score	81.5 (14.4)	--
Non-Smokers total	84.7 (13)	--
Smokers total	80.9 (14.6)	--

Note: *means there is a significant ($p<0.05$) difference between the study sample and the HMIS data.

¹Total number of respondents differs for some of the characteristics. ² N=2,930. ³HMIS data for employment status is from 2013. ⁴ HMIS data for marital status is from 2012, N=3,239. ⁵ N=2,930.

Table 2

Correlations among resilience and indicators of self-efficacy and readiness to quit

Variable	M	SD	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. WYRS total	146.5	19.5	---								
2. CD-RISC total	81.5	14.4	0.71**	---							
3. Number of Quit Attempts ¹	4.7	7.2	0.27~	0.22	---						
4. Stages of Change rank	---	---	-0.12	-0.26~	-0.21	---					
5. Contemplation ladder	5.6	3.0	0.12	0.36	0.29*	0.59**	---				
6. Importance of Quitting	6.8	3.1	0.26~	0.37*	0.33*	0.64**	0.40*	---			
7. Confidence in Quitting	6.4	3.1	0.20	0.26~	0.21	-0.36*	0.26~	0.27~	---		
8. FTND total	4.8	2.2	0.01	-0.05	0.12	-0.07	0.06	0.05	-0.18	---	
9. Smoking Frequency	15.2	14.9	0.17	0.23	0.11	-0.06	0.25	0.12	0.07	0.49**	---

¹This is a self-reported measure for number of quit attempts within their lifetime.

~p<.10; *p<.05; **p<.001

Table 3

Correlations among resilience measures and demographic characteristics

Variable	M	SD	1.	2.	3.	4.	5.	6.	7.
1. WYRC total	146.5	19.5	---						
2. CD-RISC total	81.5	14.4	0.71**	---					
3. Age	42.1	12.9	-0.02	0.08	---				
4. Education	11.9	2.7	0.20	0.19	---	---			
5. Number of Years Smoked	25.0	13.0	-0.08	-0.08	---	-0.08	---		
6. Length of Current Homelessness								---	
7. Number of times homeless			-0.06	0.10	---	0.02	0.02		
			-0.05	-0.18	---	-0.04	-0.42*	-0.25~	---

Note: ~p<.10; *p < .05; **p < .001

Table 4

Average resilience levels by demographic characteristics

	Wagnild and Young Resilience Scale (n=59) M (SD)	Connor-Davidson Resilience Scale (n=59) M (SD)
Sex		
Male	145.6 (16.3)	81.2 (13.8)
Female	146.6 (22.5)	81.2 (15.2)
Transgender	172.0 (NA)	96.0 (NA)
Race		
White	143.5 (18.2)	79.9 (12.6)
Black/African-American	150.1 (20.2)	84.2 (17.4)
Other	144.6 (12.7)	79.6 (18.4)
Ethnicity		
Hispanic/Latino	151.1 (16.2)	85.5 (13.3)
Non-Hispanic/Latino	145.1 (20.4)	80.3 (14.6)
Age		
18 – 24	146.3 (10.8)	74.3* (5.9)
25 – 34	154.3* (12.9)	85.2* (11.1)
35 – 44	139.3* (24.2)	78.4 (19.2)
45 – 54	141.9 (19.3)	82.0 (12.7)
55 and older	152.6 (17.6)	83.7 (12.4)
Employment Status		
Unemployed	146.2 (19.1)	81.5 (14.2)
Employed Part- or Full-Time	152.0 (31.6)	80.7 (20.6)
Years of Education		
< High School	141.4 (20.5)	78.2 (17.4)
High School/GED	145.3 (20.5)	79.8 (11.9)
> High School	152.9 (16.2)	86.7 (13.5)
Relationship Status		
Single	146.1 (20.9)	81.4 (15.1)
Married	141.9 (15.5)	79.1 (14.0)
Separated	153.3 (21.1)	76.0 (15.0)
Divorced	146.4 (16.6)	83.1 (12.7)
Widowed	175.0 (NA)	100.0 (NA)
Smoking Status*		
Current Smoker	144.8 (20.1)	80.9 (14.6)
Former Smoker	152.8 (15.1)	84.4 (11.5)
Never Smoker	158.0 (15.7)	85.0 (16.5)
Smoking Frequency		
Light Smoker (<10 cigs/day)	149.0 (21.1)	85.1 (12.4)
Moderate Smoker (10-20 cigs/day)	141.2 (19.3)	77.4 (14.6)
Heavy Smoker (>20 cigs/day)	162.0 (14.5)	97.3 (4.3)

Note: Both resilience scales were dichotomized to categorize low resilience versus moderate to high resilience.

*A significant ($p<0.05$) difference between demographic groups.

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