Examination of Risk and Protective Factors Associated with Suicidal Ideation Among Sexual and Gender Minority Midlife and Older Adults

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Abstract

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Purpose: Sexual and gender minority (SGM) individuals have an elevated risk for suicidal ideation (SI) compared to their heterosexual and cisgender peers. However, existing research has primarily focused on SGM youth and young adults, with limited attention given to the aging SGM population. This thesis aims to examine the multifaceted risk and protective factors associated with lifetime SI among SGM midlife and older adults. By integrating the Health Equity Promotion Model and Fluid Vulnerability Theory, this study explores: (1) how social positions, such age, gender, race/ethnicity, sexual orientation, and socioeconomic status, contribute to baseline risk of SI; (2) whether historical/environmental factors, including experiencing discrimination and victimization, influence SI; (3) the role of psychological and behavioral factors that function as risk or protective mechanisms affecting acute risk of SI.

Methods: A secondary analysis was conducted utilizing data from the 2014 National Health, Aging, and Sexual/Gender Study, conducted by the Goldsen Institute. A total of 2,425 SGM individuals born before the year of 1965 were included in the analysis. Descriptive statistics were computed to summarize the sociodemographic characteristics, and a multivariable logistic regression model was applied to examine the strength and direction of the associations between SI and the hypothesized predictors from historical/environmental, psychological, and behavioral domains, after controlling for demographic variables.

Results: The results indicated that transgender identity, lifetime discrimination, and lifetime victimization emerged as significant baseline risk factors for SI. In the acute risk domain, SI was mainly impacted by depression, drug addiction, and lack of nutrition, while resilience and physical activity served as protective factors. It is worth noting that several factors that are commonly considered to be SI predictors, such as age, sexual orientation, educational attainment, income level, anxiety, and alcoholism, were not significantly associated with SI in the current study.

Discussion and Implications: These findings revealed the importance of understanding SI among SGM midlife and older adults through an intersectional and life course lens. Specifically, SI among this marginalized population should be viewed as a response to the broader, accumulated adversities from both personal experiences and structural-level inequities across the lifespan. Clinically, these results underscore the need for developing trauma-informed, culturally responsive SI intervention strategies that focus on behavioral health and personal resilience for this marginalized community. From a policy standpoint, this study demonstrates the importance of strengthening antidiscrimination protections and promoting equitable access to healthcare services across senior service settings for SGM older adults.

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Introduction

According to data provided by the Substance Abuse and Mental Health Services Administration (SAMHSA), in 2022, more than 49,000 individuals lost their lives by suicide, making it one of the nine leading causes of death in the United States. This alarming statistic demonstrates the importance of treating suicide prevention as a public health concern. However, the number of people reporting suicidal ideation (SI) far exceeds the actual suicide deaths. In the same year, an estimated 13.2 million people reported having serious thoughts about taking their lives (SAMHSA, 2024), reflecting the fact that suicidality surpasses the visible outcomes such as attempts and completions.

Traditionally, suicide prevention has been focused on the acute interventions, such as implementing crisis-oriented interventions to reduce immediate life-threatening behaviors (Clark, 1997; Dry et al., 1973; Stanley & Brown, 2012; Stallman, 2017). While these approaches are crucial, there is growing attention in the literature that early detection and SI-targeted interventions can effectively reduce the chances of individuals acting on suicidal behaviors (Batterham et al., 2015; van Spijker et al., 2014; Klonsky et al., 2016; Czyz et al., 2018). SI is a broad term that refers to thoughts regarding voluntarily ending one's life (Harmer et al., 2024). Its intensity can range from a passive thought that lasts for minutes to persistent, active intentions that involve fully developed plans, methods, locations, and specific timeframes. Even though not everyone with SI acts on their suicidal urges, a number of research studies have shown that just like previous suicide attempts, suicidal thoughts – especially with high intensity or recurrence – serve as strong indicators that predict future suicidal behaviors (Kuo et al., 2001; Borges et al., 2007; Han et al., 2015).

Suicidal Ideation among Midlife and Older Adults

While comprising a smaller proportion of the overall population, the suicide rates among older adults are disproportionately higher compared to the younger age groups (Garnett et al., 2023). As noted by the U.S. Centers for Disease Control and Prevention (2024), the suicide rates peak in later life, with individuals aged 75-84 experiencing rates of 19.4 per 100,000 and the oldest-old (85+) exhibiting the highest rate at 22.7 per 100,000 in 2023 – nearly six points higher than rates observed among youth (aged 15-24). These alarming statistics carry significant concerns given the current demographic shift toward population aging.

As of 2022, older adults comprised only 17.3% of the U.S. population (Administration for Community Living, 2024). However, this population is expected to experience rapid growth over the next two decades. This expansion is primarily driven by the ongoing transition of the "baby boomer" generation (born between 1946 and 1964) reaching retirement age, a process that began in 2011 (Caplan, 2023). More importantly, this particular birth cohort carries the characteristics of having historically higher rates of suicidal behavior (Conwell et al., 2012). Therefore, the rapid population aging and the presence of elevated vulnerability of older adults underscore an urgent call for attention to reduce SI among the geriatric population at the societal level.

Beyond the natural declines of physical health and cognitive functioning associated with the natural aging process, there are several age-specific risk factors that significantly influence SI among midlife and older adults. For instance, depression is commonly found as a substantial predictor of suicidal risk among older adults, as it increases the vulnerability to negative mental health outcomes, physical illness, and suicidal behaviors within this population (Obuobi-Donkor et al., 2021; Fiske et al., 2009). Similarly, Bentley and their colleagues (2016) found a significant

association between suicidality and high levels of anxiety among older adults, as it may prevent escape-based responses and impair coping mechanisms, eventually intensifying older adults' suicidal thoughts.

From a behavioral health perspective, drug addiction, including illicit substance use and misuse of prescription drugs, was found to be significantly associated with SI among US older adults based on analysis utilizing data from the National Survey on Drug Use and Health (Schepis et al., 2018). Similarly, alcoholism, characterized as chronic, heavy-drinking behaviors, represents a risk factor highly relevant to SI among older adults (Blow et al., 2004). Additionally, older adults experiencing nutritional vulnerability, particularly food insecurity and nutrition inadequacy, were documented to report nearly three times the odds of SI compared to their food-secure counterparts. (Smith et al., 2022). Collectively, these findings highlight the importance of investigating psychological and behavioral determinants that influence SI among midlife and older adults.

Suicide Ideation within the SGM Community

A substantial body of research has consistently demonstrated that sexual and gender (SGM) individuals are at a heightened risk for suicidal ideation compared to their heterosexual and cisgender peers (Haas et al., 2010; Marshal et al., 2011; Yildiz, 2018; Ream, 2019). The Minority Stress Model (MSM) provides a valuable theoretical framework for understanding these disparities. MSM posits that the mental health outcomes of the marginalized populations are heavily influenced by the exposure to chronic stigma-related stressors, such as discrimination, victimization, and social exclusion at the interpersonal, intrapersonal, as well as structural levels (Meyer, 2003). While there has been a growing societal recognition of SGM

rights in recent decades, the persistent systematic inequalities and institutional discrimination continue to adversely affect the mental health of SGM individuals.

The MSM has been widely incorporated in explaining factors related to suicidal risk within the SGM community. For instance, Merish and colleagues (2013) found robust connections between SGM-related victimization, problematic substance use, and lifetime SI. Similarly, an analysis based on data collected through the Epidemiologic Survey on Alcohol and Related Conditions revealed that SGM individuals reported twice the rate of psychiatric disorders and were three times more likely to attempt suicide compared to heterosexual individuals (Bolton & Sareen, 2011). A more recent meta-analysis of 44 population-based studies further emphasized these patterns and concluded that minority stress, such as victimization and family rejection, significantly contributed to the increased rates of SI and suicide attempts among the sexual minority population (de Lange et al., 2022).

However, it is worth noting that this growing body of literature has primarily focused on the suicidal risk among SGM youth and young adults, with limited attention on examining suicidality among SGM midlife and older adults. While it is reasonable to expect that similar findings would translate to the older population, as some patterns may extend across age cohorts, it does not fully capture the unique challenges and living experiences among SGM midlife and older adults. Thus, SI among the aging SGM population is limited when conceptualized solely as an individual pathology. Rather, it should be examined as a response to the broader, accumulated adversities from both personal experiences and structural inequities across an individual's lifespan.

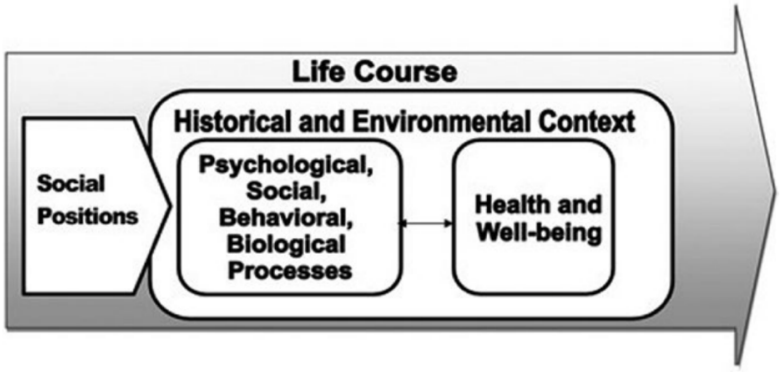
Theoretical Understanding of Suicidal Ideation Among SGM Midlife and Older Adults

Understanding SI among SGM midlife and older adults requires a comprehensive theoretical framework that addresses both individual and environmental-related risk and protective factors throughout the life course. Two complementary theoretical models provide this foundation: the Health Equity Promotion Model and Fluid Vulnerability Theory.

The Health Equity Promotion Model addresses mechanisms that account for the health and well-being of the SGM aging population from a life-course perspective. (Fredriksen-Goldsen & Kim, 2017). This macro-to-micro framework illustrates the complex interplay between structural factors, social positions, and individual health outcomes (see Figure 1). Within this model, the structural context mainly relates to environmental-based discrimination and victimization, while social positions are determined by demographic variables such as age, race/ethnicity, and socioeconomic status. The intersection of these contextual and positional factors generates unique health-promoting and adverse pathways, influencing the health outcomes of the SGM older population through behavioral, psychological, social, and biological mechanisms. Specifically, lifetime exposure to discrimination and victimization both serve as critical indicators for chronic vulnerability, enhancing the long-term impact of structural inequities on this marginalized community (Fredriksen-Goldsen et al., 2014). Conversely, psychological resources such as resilience and mastery function as crucial protective factors that foster adaptability and promote mental well-being to overcome adversities (Fredriksen-Goldsen & Kim, 2017; Nelson et al., 2024).

Figure 1

Health Equity Promotion Model



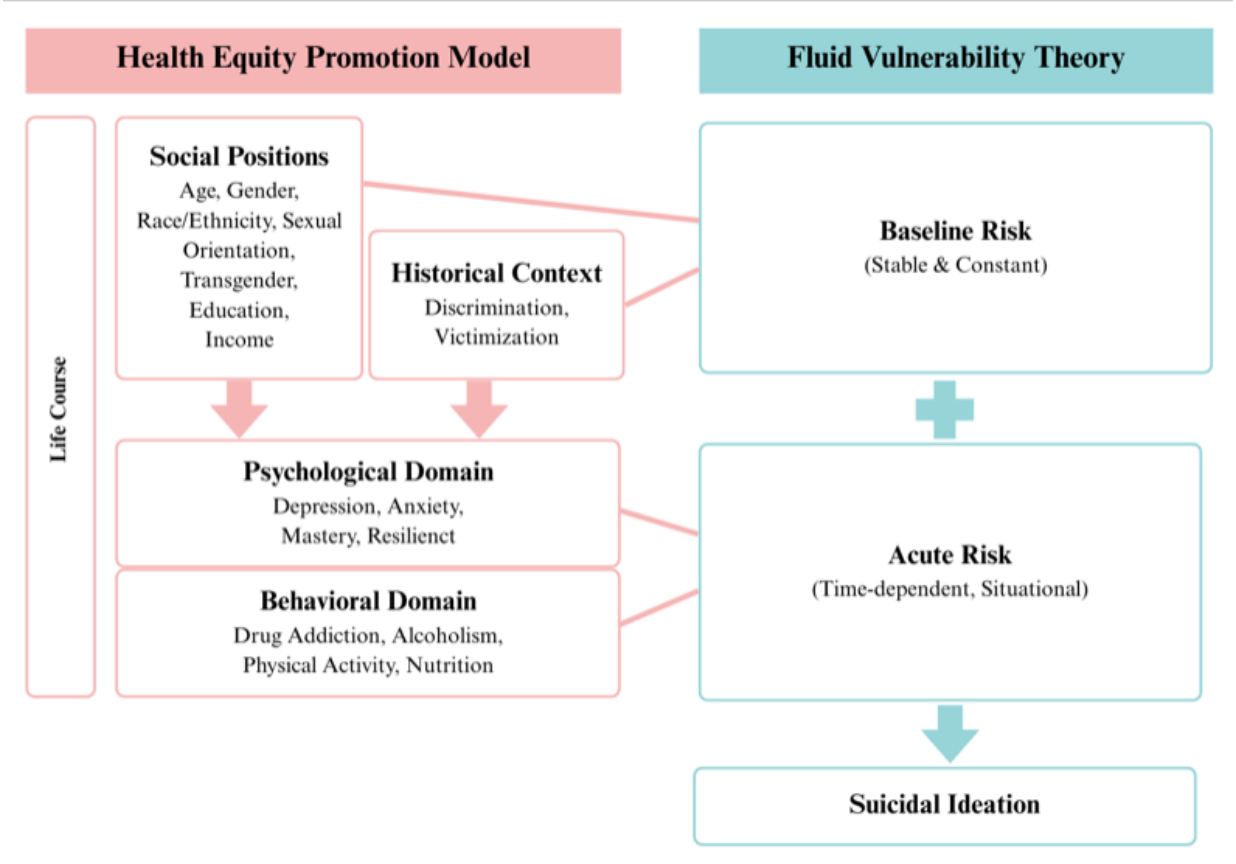
The second theoretical framework, Fluidity Vulnerability Theory, was developed to explain the formation and development of suicidal risk at the personal level (Rudd, 2006). Fluidity Vulnerability Theory views suicide risk as a dynamic, individualized process that involves two distinct yet interrelated dimensions: baseline risk and acute risk. The baseline risk encompasses stable and constant characteristics, not substitutes for rapid or drastic changes, such as age, race/ethnicity, gender, and other broader environmental factors. The acute risk, on the other hand, includes the time-dependent, situational risk and protective factors that fluctuate over time, such as emotional distress and behavioral health. According to Fluidity Vulnerability Theory, suicidal thoughts and behavior emerge when the acute stressors surpass an individual's coping ability, particularly for those with elevated baseline risk.

While the Health Equity Promotion Model and Fluidity Vulnerability Theory both offer insights for explaining the suicidal risk for SGM midlife and older adults, each is individually lacking certain aspects of fully capturing the unique experiences and challenges faced by this population. While Fluidity Vulnerability Theory uses risk and protective factors to address the dynamic nature of suicide risk level, it does not consider the structural/environmental stressors

specifically related to one's sexual and gender identity. Likewise, the Health Equity Promotion Model thoroughly addresses the socio-environmental inequalities and identity-related challenges faced by SGM older individuals across the lifespan, but is unable to explain the fluctuations in the suicide risk or identify the intersecting determinants for SGM-specific SI risk. The integration of these two frameworks provides a more comprehensive foundation for understanding the SI among SGM midlife and older adults in the current study. It allows the identification of intersectional determinants of risk and protective factors from both macro and micro perspectives, across both stable and acute domains of vulnerability (see Figure 2).

Figure 2

Integrating the Health Equity Promotion Model with Fluid Vulnerability Theory



Aim/Hypothesis

By combining the two theories, the current study aim to (1) explore baseline vulnerability from the social position perspective, assessing individual-level demographic characteristics, including age, race/ethnicity, gender, sexual orientation, transgender status, and socioeconomic status; (2) investigate how historical/environmental factors influence an individual's baseline risk through structural-level variables, including discrimination and victimization; (3) examine acute vulnerability by evaluating psychological and behavioral domains. Within the psychological domain, depression and anxiety are examined as risk factors, while mastery and resilience are analyzed as protective factors. Behavioral risk and protective factors include drug addiction, alcoholism, physical activity, and nutritional adequacy.

Despite the variables in the current study having been empirically identified as unique and significant predictors of mental health outcomes among SGM midlife and older adults (Fredriksen-Goldsen & Kim, 2017), these variables have not yet been empirically tested as predictors of SI within this population. Therefore, grounded in the integration of the Health Equity Promotion Model and Fluidity Vulnerability Theory, the current study hypothesizes that:

> Historical/environmental factors (lifetime discrimination, lifetime victimization), psychological factors (depression, anxiety, mastery, and resilience), and behavioral factors (drug addiction, alcoholism, physical activity, and nutrition) will be significantly associated with suicidal ideation among SGM midlife and older adults, after controlling for sociodemographic characteristics.

Methods

Data and Sample

The current study analyzed data from Aging with Pride: National Health, Aging, and Sexuality/Gender Study (NHAS), a longitudinal investigation conducted by the Goldsen Institute at the University of Washington, School of Social Work. The NHAS project is the first nationwide research study that comprehensively examines the aging experiences and health trajectories of SGM midlife and older adults living in the United States. The entire dataset is de-identified, and the researcher had no access to any personal information.

The first wave of the NHAS study occurred in 2014, and a total of 2,450 individuals who identify as lesbian, gay, bisexual, or transgender participated in the study. All participants were born in 1964 or earlier. The sampling design was primarily focused on ensuring the representation of systematically disadvantaged communities across various age groups, gender identities, sexual orientation, race/ethnic background, and geographic locations. The recruitment process was facilitated by 17 community-based organizations across the United States that specialize in serving SGM older adults. The outreach strategy was a combination of chain referral and community network, suitable for building communication channels with historically underrepresented and hard-to-reach populations.

Participants were asked to complete a self-administered survey that was available in both English and Spanish. To better accommodate participants' preferences and increase accessibility, the survey was offered either online or in paper form through mail. The survey took approximately 40-60 minutes to complete, and each participant received $20 for their contribution. All study procedures were reviewed and approved by the University of

Washington's Human Subjects Division to ensure adherence to ethical standards for researching with human subjects.

Measures

***Suicidal Ideation*.** Suicidal ideation was operationalized as the prevalence of serious consideration of suicide at any point across participants' lifespans. Assessment utilized a single-item statement, "Have you ever seriously thought about committing suicide?". To facilitate the statistical analysis, responses were dichotomized into 0 (No reported lifetime suicidal ideation) and 1 (Reported lifetime suicidal ideation).

Key Predictors

Historical/Environmental Predictors. *Lifetime discrimination* based on actual or perceived SGM status was evaluated using a five-item scale (Fredriksen-Goldsen & Kim, 2017). Items included statements such as "I was not hired for a job," "I was fired from a job," and "I was denied or provided inferior care such as health care." Participants reported frequencies of the incidents (0 = Never, 1 = Once, 2 = Twice, 3 = Three or more times). The composite score was calculated by adding up all five items (range 0-15), with higher scores reflecting greater exposure to lifetime discrimination ($\alpha = 0.77$).

Lifetime victimization was assessed through a nine-item scale, developed by Fredriksen-Goldsen and Kim (2017). It captured experiences such as verbal insults, threats or actual acts of physical violence, threats by weapons, sexual assault, property damage, and being hassled by police. Participants indicated the frequencies of each experience using the identical four-point rating scale as the discrimination measurement. Scores were then summed across all items, ranging from 0-27, with higher values representing higher frequencies of victimization ($\alpha = 0.85$).

Psychological Predictors. *Depression* and *anxiety* were operationalized as lifetime chronic conditions by assessing participants' diagnostic histories. Participants were asked to respond to a standardized question, "Has a doctor or medical professional ever told you that you had any of the following?" followed by a comprehensive checklist of conditions, including depression and anxiety. Data were coded as 1 (confirmed diagnosis) and 0 (no diagnosis).

Mastery was defined as "an individual's perception in regards of their ability to control significant factors that could influence their lives" (Pearlin et al., 1981). It was operationalized through a four-item scale developed by Lanchman and Weaver (1998). Sample items included: "I can do just about anything I really set my mind to," "When I really want to do something, I usually find a way to succeed at it," "Whether or not I am able to get what I want is in my own hands," "What happens to me in the future mostly depends on me." Responses were recorded on a six-point Likert scale from 1 (strongly disagree) to 6 (strongly agree). Later, the final score was calculated by averaging all items, with higher scores reflecting greater levels of perceived mastery.

Resilience, defined as "the ability to effectively recover after experiencing hardship or adversity", was measured using a three-item scale (Fredriksen-Goldsen & Kim, 2017). Items included "I tend to bounce back quickly after hard times," "It is hard for me to snap back when something bad happens," "I usually come through difficult times with little trouble." The same six-point Likert rating scale for mastery measurement was utilized, where 1 = strongly disagree, and 6 = strongly agree. Final item scores were averaged to generate a composite resilience score, where the higher values represent greater internal resilience ($\alpha = 0.73$).

Behavioral Predictors. *Drug addiction* and *alcoholism* were assessed as lifetime chronic conditions, utilizing the checklist question used for the affective system. Participants indicated

whether they received a previous diagnosis of the two conditions from doctors or medical professionals. Each item was coded as 1 for confirmed diagnosis and 0 for no diagnosis, as binary indicators for lifetime drug addiction or alcoholism.

Physical activity was assessed using a single-item question asking if participants met the adult physical activity health guidelines provided by the Centers for Disease Control and Prevention (CDC). The health guideline recommended at least 150 minutes of moderate-intensity physical activity (CDC, 2015). Answers were dichotomized into 1 for meeting the guideline and 0 for not.

Nutrition was evaluated through a self-reported item: "How often do you experience insufficient food intake due to loss of appetite, digestive problems, or chewing or swallowing difficulties?" Responses were rated on a five-point Likert scale ranging from 1 (never) to 5 (always), with higher scores indicating higher frequencies of insufficient nutrition.

Demographic Characteristics

Due to the diversity and uniqueness of sociodemographic characteristics of the targeted population, several key demographic variables were included as crucial parts of the analysis. These variables were selected based on relevance to both mental and physical well-being in aging and marginalized populations.

Age. Participants were asked to report their age as a continuous variable by providing their year of birth.

Gender. Participants' current gender identity was assessed by the question "Which of the following best represents how you CURRENTLY think of yourself?" Answers were grouped into three categories: (1) Female; (2) Male; (3) Not listed above. Participants who identified as

female were coded as 1, those who identified as male were coded as 2, and identity was not listed were coded as 3.

Race/Ethnicity. Race and ethnicity were categorized in four mutually exclusive groups: (1) Hispanic; (2) non-Hispanic White (hereafter "White"); (3) non-Hispanic Black (hereafter "Black"); and (4) non-Hispanic other people of color (POC). The "other POC" category included individuals identified as Asian, Native Hawaiian or Other Pacific Islander, American Indian, Alaskan Native, Multiracial, and people who selected "not listed above" as their racial/ethnic background.

Sexual Orientation/Identity. Sexual orientation/identity was classified into the following categories: (1) lesbian or gay, (2) bisexual, straight/heterosexual, and sexually diverse.

Transgender. Transgender identity was assessed through a single yes/no question: "Do you consider yourself to be transgender?" Answers were dichotomized as transgender (coded as 1), and non-transgender (coded as 2).

Educational Attainment. Educational attainment was determined by participants' highest level of completed education and then categorized as (1) some college education or more, and (2) high school diploma or less.

Income. The income level was assessed by participants' reported annual household income before tax, and then dichotomized based on the Federal Poverty Guidelines (FPG). Individuals with household income at or below 200% of the FPG were coded as 0, while those with income above 200% of the FPL were coded as 1(2013 Poverty Guidelines, n.d.).

Data Analysis

The statistical analysis was conducted using STATA MP version 18.0 (StataCorp, 2023). Descriptive statistics were computed to summarize the sociodemographic characteristics of the

sample, including gender, race/ethnicity, sexual orientation, income, educational attainment, transgender status, and age. Frequencies and percentages were reported for categorical variables, while mean, standard deviations, and range were used for continuous variables. To address potential sampling biases inherent in the survey design, survey weights provided by the NHAS study team were applied in all analyses involving demographic variables. Chi-square tests were performed to examine bivariate associations between suicidal ideation and each demographic variable.

The primary analytical approach was conducted through a multivariable logistic regression model. The model examined the strength and direction of the associations between SI and the hypothesized predictors from environmental/historical, psychological, and behavioral domains, while controlling for demographic covariates. Participants with missing data on the suicidal ideation variable were excluded from the analysis, and the final analytic sample only contains participants with complete information on the dependent variable and key covariates.

Results

Sample Demographics

Overall, 2,450 participants completed the first wave of the NHAS data collection. After excluding 25 people who did not respond to the lifetime SI item, the final analysis contained 2,425 individuals. The participants' age ranged from 50 to 98 years, with a mean of 66.14 (*SD* = 8.79). The sample consisted of 44.87% of women (*n* = 984), 56.7% of men (*n* = 1,375), with the rest 2.7% of participants selected "Gender Diverse" (*n* = 66).

In terms of race/ethnicity, the current sample was predominantly White (77.1%, *n* = 1,869), followed by 8.8% Black (*n* = 214), 7.7% Hispanic (*n* = 187), and 6.4% other people of

color (n = 155). Lesbian and gay participants made up 85.8% of the sample (n = 2,081), while bisexual, straight/heterosexual, and sexually diverse participants were counted for 14.2% (n = 344). A total of 198 participants (8.2%) self-reported as transgender, and 2,227 individuals (90.6%) marked themselves as not. All straight/heterosexual participants in the sample were transgender.

Regarding educational attainment, 90.6% (n = 2,198) of participants completed some college or more education, while 9.4% (n = 227) had a high school diploma or less. For income level, 63.5% (n = 1,540) of participants lived above the 200% FPG, and 36.5% (n = 885) had an annual household income lower than the 200% FPG. A more detailed demographic summary is provided in Table 1.

Background Characteristics and Lifetime Suicidal Ideation

Pearson's chi-square tests were conducted to examine the associations between key demographic variables and lifetime SI. All the tests used weighted survey data to ensure the representativeness of the general population.

In terms of gender, the result indicated that no significant association (χ^2 (2) = 10.762, p = .189) was found between gender and SI. Even though non-binary individuals reported a slightly higher rate of SI (7.71%) compared to those without SI (4.79%), the differences did not reach significance. Similarly, no significant differences were found between race/ethnicity and the prevalence of SI (χ^2 (3) = 16.04, p = .145). However, it is worth noting that the non-Hispanic POC participants had a higher proportion of SI (5.79%, [95% CI 0.04 to 0.10]) than the absence of SI (2.96%, [95% CI 0.02 to 0.05]).

The association between sexual orientation and SI was significant (χ^2 (1) = 12.78, p = .046). More specifically, among the participants who identified their sexual orientation as other

than lesbian and gay, 31.56% (95% CI 0.27 to 0.37) reported a history of having SI, while 24.95% (95% CI 0.21 to 0.29) reported no history of SI. The differences indicated that in this sample, people with a sexual orientation other than lesbian and gay were more likely to report thoughts of suicide.

The association between transgender status and SI was significant (χ^2 (1) = 75.164, p < .001). Among the individuals reported to have SI in the current sample, 24.52% (95% CI 0.20 to 0.30) were identified as transgender, compared to 11.19% with the absence of SI. This result suggested that transgender individuals experienced a higher prevalence of IS compared to their non-transgender peers.

No significant association was found between the levels of education and SI (χ^2 (1) = 3.049, p = .358). Although individuals with lower education had a slightly greater portion in regards of SI (27.79%, [95% CI 0.23 to 0.33] versus 24.62%, [95% CI 0.21 to 0.29]), the difference was not statistically significant.

Finally, there was a significant association between income and SI (χ^2 (1) = 33.631, p = .001). Among participants who reported SI, 43.14% (95% CI 0.40 to 0.48) were living at or below the 200% FPG, which was higher than the people who reported no SI (31.6%, [95% CI 0.28 to 0.36]). This finding illustrates that the relationship between lower income and SI is unlikely due to random chance.

Findings from the Logistic Regression Model

Social Position Related Variables

Table 2 presents the findings from the logistic regression analysis exploring the associations between variables related to social position and lifetime SI. After controlling for other demographic characteristics, age did not show a significant relationship with SI (p =

0.166). A slight trend of reduction in SI was found with an increase in age, but the differences were not statistically significant. No significant difference in SI prevalence was found between female and male participants ($p = 0.428$). Notably, participants who identified as gender diverse reported significantly 61% lower odds of lifetime SI compared to the male reference group (OR = 0.392, [95% CI 0.19 to 0.80], $p = 0.010$).

As for race/ethnicity, compared to white participants, participants categorized as non-Hispanic Black ($p = 0.986$) and "Other POC" ($p = 0.081$) had higher odds of SI, but these associations did not reach statistical significance. In contrast, Hispanic participants had 37% lower odds of SI compared to non-Hispanic white participants, which was statistically significant (OR = 0.633, [95% CI 0.43 to 0.94], $p = 0.023$).

Transgender status was one of the significant predictors among the demographic variables (OR = 3.68, [95% CI 2.35 to 5.78], $p < 0.001$). Participants who self-identified as transgender had more than 3.6 times of odds of reporting SI compared to non-transgender participants. Different from the preliminary bivariate analysis conducted using Chi-square tests, sexual orientation ($p = 0.912$) and income level ($p = 0.188$) were no longer significantly related to lifetime SI in the current model. Educational attainment did not demonstrate a significant relationship with SI in either the Chi-square or logistic regression analysis.

Key Predictors of Lifetime Suicidal Ideation

In addition to demographic variables, Table 2 also demonstrated associations between historical/environmental, psychological, and behavioral factors and lifetime SI. Among all the risk factors, depression showed up as the strongest predictor in the model. Participants with chronic depression had nearly 3 times higher odds of SI compared to their peers without such mental health condition (OR = 2.923, [95% CI 2.33 to 3.66], $p < 0.001$). Similarly, individuals

with drug addiction had more than twice the odds of experiencing SI, which was statistically significant (OR = 2.233, [95% CI 1.12 to 4.46], $p = 0.023$).

Meanwhile, adverse environmental factors also demonstrated positive relationships with SI. Each unit increase in lifetime discrimination was related to a 6.1% increase in the prevalence of SI (OR = 1.061, [95% CI 1.01 to 1.11], $p = 0.011$). Lifetime victimization was also a significant predictor (OR = 1.075, [95% CI 1.05 to 1.10], $p < 0.001$), as higher levels of victimization experience would increase the odds of SI by 7.5% in this study. As for the nutrition factor, higher frequencies of insufficient nutrient intake led to higher reported SI as well (OR = 1.155, [95% CI 1.01 to 1.32], $p = 0.035$).

Several protective factors were also identified within the current sample. For instance, resilience was the most powerful protector, as each unit of increase resulted in a 22.3% decrease in SI (OR = 0.78, [95% CI 0.70 to 0.87], $p < 0.001$). Higher levels of physical activity were significantly related to the reduced odds of SI (OR = 0.747, [95% CI 0.59 to 0.94], $p = 0.015$). Mastery appeared to be marginalized significant ($p = 0.057$), suggesting its potential protective effect in reducing the odds of SI.

After controlling for other variables, chronic anxiety was not significantly associated with the prevalence of SI in the current model ($p = 0.697$). Similarly, even though the relationship in this analysis remained statistically insignificant ($p = 0.387$), alcoholism suggested an increasing trend toward SI.

Discussion

Utilizing a robust, national dataset, the present study is one of the first to examine the risk and protective factors associated with lifetime SI among midlife and older adults who identify as

SGM. By integrating the Health Equity Promotion Model and Fluid Vulnerability Theory, this research seeks to identify the intersecting determinants of SI risk within this population. Specifically, the study aims to achieve three interrelated goals: (1) to understand how social positions, including age, gender, race/ethnicity, sexual orientation, and socioeconomic status, contribute to baseline vulnerability; (2) to assess whether historical/environmental factors, including discrimination and victimization, influence SI; (3) to explore the psychological and behavioral factors that function as either risk or protective factors affecting acute vulnerability of SI. By examining these domains, this discussion aims to unpack the layered nature of SI risk among SGM midlife and older adults.

Findings revealed that within the domain of baseline risk, transgender identity, lifetime discrimination, and lifetime victimization emerged as significant risk factors, while Hispanic racial background and gender diversity were associated with lower odds of SI. In regard to the acute risk, depression, drug addiction, and lack of nutrition were significantly associated with higher SI, whereas resilience and physical activity functioned as protective factors. Taken together, these findings underscore the profound negative impact of structural marginalization and the importance of promoting behavioral health and personal resilience as SI prevention strategies for the SGM aging population. The following sections of the discussion will examine each domain in detail, starting with social positions, followed by historical and environmental factors, and finishing with psychological and behavioral determinants, highlighting their impacts and implications for future practice, policy formation, and research directions.

Social Positions as Baseline Risk

Transgender Identity. Consistent with existing literature, in the current study, participants who identified as transgender exhibited significantly higher odds of reporting SI compared to

their cisgender counterparts (Marshall et al., 2015; Kirakosian et al., 2023; Haas et al., 2014). This finding aligns with prior evidence that transgender individuals tend to experience higher levels of psychological stress and poorer physical health than their non-transgender counterparts due to excessive marginalization (Fredriksen-Goldsen et al., 2011; Budge et al., 2013). Therefore, the stressor associated with transgender status, at both interpersonal and societal levels, would increase the vulnerability to SI (Clements-Nolle et al., 2006; Rood et al., 2015).

Gender Diverse. According to previous findings, gender diverse communities tend to report higher levels of SI (Kirakosian et al., 2023; Chang et al., 2020). However, in the current study, gender diverse participants reported significantly lower SI compared to the reference group (men). This counterintuitive result should be interpreted with caution, as most of the participants in the gender diverse category were also identified as transgender. Given the high overlap rate between the two variables, it is likely that multicollinearity was present in the model, masking the direction and the actual association between gender identity and SI risk.

Hispanic Ethnicity. Hispanic participants were found to have significantly lower odds of reporting SI compared to their white counterparts. While this phenomenon could be explained by culturally specific protective factors, such as strong family connections and social support within Hispanic communities (Palloni & Arias, 2004), alternative explanations should also be taken into consideration. The “Salmon Bias” hypothesis suggests that some immigrants would prefer to migrate back to the country of birth at an older age, resulting in an underestimation in the host country’s statistics (Abraído-Lanza et al., 1999). It is possible that a portion of Hispanic SGM older adults with deteriorating health or psychological distress were not included in the current study due to migrations; therefore, they became underrepresented in the current study.

Age. Age was not a significant predictor for SI in this study. As the changes in mental health status tend not to stay the same across an individual's lifespan, the investigation of the association between age and SI remains complex and inconclusive. Some studies suggest a U-shaped trend of well-being, where older adults exhibit greater resilience and increased social support, thus reducing the possibility of having SI (Blanchflower & Oswald, 2008; Thomas et al., 2016). Conversely, others have emphasized the challenges associated with aging, including inevitable declines in physical health and cognitive function, as well as major life changes that increase the vulnerability to geriatric mental health disorders, leading to higher risks of SI (López Ulloa et al., 2013; World Health Organization, 2023).

Race/Ethnicity. Despite having slightly higher odds of reported SI, the relationship between being POC and reporting SI did not reach statistical significance. The absence of a significant association may reflect the presence of culturally specific protective factors, such as greater resilience or a stronger social supporting network within communities of color (Nelson et al., 2024). Alternatively, this result may indicate the complex intersectionality of racial/ethnic identity and SGM status and require more detailed investigation regarding multiple marginalized identities.

Other Demographic Factors. In the current study, *gender*, *sexual orientation*, *educational attainment*, and *income level* were not significantly associated with SI among SGM midlife and older adults. No notable gender differences emerged in the reported SI between women and men, which may reflect that in later life, psycho-social factors such as loneliness and social isolation play a more vital role in influencing the will to live compared to health indicators (Carmel, 2001). Regardless of gender identity or sexual orientation, the shared experience of pervasive minority stress, discrimination, and trauma among SGM older individuals could create

similar vulnerabilities to adverse mental health outcomes and result in comparable levels of reported SI among SGM older individuals. In addition, indicators for socioeconomic status, including educational attainment and income level, were not significantly associated with SI. Notably, in the current sample, more than 90% of participants obtained some college or higher degrees, but more than one-third were living at or below 200% FPG. In alignment with the previous finding, compared to their peers, higher levels of education did not translate into better financial security for SGM older adults (Fredriksen-Goldsen et al., 2019). This disconnection between education and economic stability may reflect barriers in employment and wage levels that remained underexplored for the SGM population.

Historical/Environmental Factors as Baseline Risk

As expected, both lifetime discrimination and lifetime victimization emerged as significant predictors of SI among SGM midlife and older adults in this study. These findings highlight the enduring negative impacts of historical and environmental marginalization on this population. Discrimination can manifest at micro, mezzo, and macro levels. The present study focused on structural forms of discrimination, specifically in the areas of workplace protection, housing rights, and healthcare access. In alignment with previous findings (Kachen et al., 2021; Cramer & Kapusta, 2017), SGM individuals who encounter higher frequencies of discrimination reported elevated levels of SI, largely due to an undermined sense of safety and belongingness within their communities.

Furthermore, experiences of lifetime victimization related to perceived sexual or gender identity were also significantly associated with heightened SI. These incidents often involve verbal assaults and physical threats at the interpersonal level and could explain the heightened risks of poor mental health outcomes within the SGM community (Fredriksen-Goldsen et al.,

2013). Consistent with previous work, the current study identified victimization as a significant risk factor for SI among SGM individuals (Busby et al., 2019; Pharr & Batra, 2024). The cumulative effect of the traumatic experiences creates a chronic, identity-related stressor across an individual's lifespan, ultimately contributing to the baseline vulnerability among the SGM community (Wight et al., 2012).

Psychological Risk and Protective Factors Influence Acute Risk

Chronic depression emerged as a significant psychological risk predictor for SI in the current study. Participants who have received a clinical diagnosis of depression were more likely to report having suicidal thoughts. This finding is consistent with a robust body of research that identified depression as one of the key factors contributing to SI within the aging population (Ponte et al., 2014; Almeida et al., 2012; Ashton, 2004). More importantly, previous studies also highlighted the association between the increased suicidal risk and chronic depression among the SGM individuals among other age groups (Chang et al., 2020; Kirakosian et al., 2023). Therefore, the current finding further supports the interconnectedness of marginalized identities, depression, and suicidal thoughts.

In contrast, chronic anxiety did not directly predict SI in a significant way. This result aligns with several psychological autopsy studies, which documented an insignificant relationship between diagnosed anxiety disorder and late-life suicide (Conner et al., 2001; Conwell et al., 2010; Waern et al., 2002). However, an ample amount of evidence also points out the important role anxiety plays in the formation of SI among SGM youth and young adults (Brent et al., 1988; Cochran et al., 2003; Wang et al., 2021, Busby Grant et al., 2023). This discrepancy could reflect differences in stress exposure or coping mechanisms across the lifespan. In addition, depression and anxiety not only have a high co-occurring rate but also

manifest similar symptoms (Gorman, 1996). The complex nature of the combined effects would contribute to the difficulty in clinical diagnosis and the mixed findings in statistical analysis.

Resilience was one of the key psychological protective factors that reduced the odds of SI. As the mental capability of bouncing back from adverse situations while maintaining normal functioning, resilience has been consistently associated with reducing SI and diminishing negative mental health outcomes caused by discrimination and depression among SGM adolescents and adults (Southwick & Charney, 2012; Giraud et al., 2024). This observed reverse relationship between SI and resilience across different age groups within the SGM community highlights the importance of developing both individual and collective strength as part of the suicide prevention efforts. On the other hand, mastery was marginally significant, suggesting its potential as a protective factor that helps with the generation of positive mental health outcomes for the SGM aging community (Gardner et al., 2013).

Behavioral Risk and Protective Factors Influence Acute Risk

Lacking nutrition was found to be significantly related to the increased odds of SI. As one of the behavioral risk factors, this vulnerability could be understood from two interrelated dimensions: food insecurity, which refers to insufficient food consumption, and poor overall dietary quality, characterized by limited access to fresh, nutritious food. A recent analysis utilizing data from the Global Aging and Adult Study revealed a positive correlation between SI and food insecurity among adults aged 50 and older (Smith et al., 2022). Meanwhile, Li and colleagues (2009) observed higher rates of lifetime SI among individuals with limited consumption of fruits and vegetables, suggesting that poor dietary quality is linked to negative mental health outcomes. Given that the SGM aging population is disproportionately affected by

economic disadvantages and poverty (Hoy-Ellis & Fredriksen-Goldsen, 2024), they may face elevated nutritional vulnerability that contributes to acute SI risk.

Drug addiction was one of the key behavioral risk factors related to lifetime SI. An ample number of studies have documented that the emergence of SI is significantly associated with chronic drug use among all age groups (Miller et al., 1992; Darke et al., 2010; Trémeau et al., 2008; François Kazour et al., 2015). Among SGM midlife and older adults, the elevated use of illicit substances and misuse of prescription drugs could be attributed to cumulated minority stress across the life course (Han et al., 2020; Capistrant & Nakash, 2019; Han, Miyoshi, et al., 2020). In addition, this population also faces unique challenges related to the aging process, which potentially increase the tendency to engage in substance use as coping strategies, therefore, further increasing the acute risk of SI.

Contrary to expectations, alcoholism turned out to be a non-significant predictor for SI in the present study. This finding diverged from previous findings where high-risk drinking patterns were consistently found within the SGM aging community, leading to elevated risk of SI (Cochran et al., 2000; Drabble & Trocki, 2005; Parks & Hughes, 2005). Several factors might explain this discrepancy. First, the decline of alcohol use after the age of 50 was identified among a couple of studies (Platt et al., 2010; Drabble et al., 2005), particularly among sexual minority older women with a history of alcohol misuse (Fredriksen-Goldsen et al., 2017), therefore, potentially reduce the risk of SI in older cohort. Alternatively, alcohol use is often related to social interactions, where engaging in social drinking may act as a protective factor against social isolation and support positive mental health outcomes (Bryan et al., 2017). Another consideration would be the potential issue of multicollinearity within the model, whereby the

presence of drug addiction may have obscured or overshadowed the explanatory power of alcohol use on SI.

Physical activity functioned as a significant behavioral protective factor against lifetime SI. Consistent with the previous study, participants who met the physical activity health guidelines reported significantly lower rates of SI, while a lack of physical activity resulted in an increase in SI (Vancampfort et al., 2018). More importantly, high levels of physical activity not only imply good physical health and higher levels of quality of life but also serve as a protective factor against discrimination and victimization among SGM midlife and older adults (Fredriksen-Goldsen et al., 2014).

Implication

The current study holds several implications for both suicide prevention and the public health landscape. From a clinical perspective, healthcare providers should consider utilizing screening tools that assess chronic depression and SI among SGM midlife and older adults. Due to the elevated risk of psychological distress in this population, early detection is crucial for interrupting the formation of suicidal behaviors. In addition, the findings highlight the importance of developing trauma-informed, culturally responsive care/practice when working with the SGM aging community in response to the negative influences caused by chronic marginalization. This requires providers and social workers to be equipped with substantial knowledge regarding the effects of minority-related stress, discrimination, and victimization, which uniquely shape the living experience and life challenges of this group. Moreover, resilience-enhanced programs that promote personal strength and community engagement should also be considered a key prevention strategy. Increasing SGM midlife and older adults' coping

skills alongside building social support systems may effectively reduce the acute vulnerability associated with mental health crises and SI.

From a policy perspective, the study advocates for the enhancement of anti-discrimination policies across all senior service settings. The purpose of such policies is to promote inclusive healthcare models that prioritize the mental health status of SGM midlife and older adults in both primary care and community care settings. Meanwhile, it is also important to ensure equal access to healthcare services that understand and affirm the gender identity and sexual orientation of SGM midlife and older adults. Furthermore, policymakers need to consider allocating resources that promote physical activity, reduce substance misuse, and address nutrition needs among aging SGM populations, especially for the lower-income communities. Programs that emphasize both health promotion and cultural adaptation can enhance physical well-being while serving as protective factors against SI and mental distress.

Limitation

This study is not without limitations. First of all, the original study was not specifically designed to investigate SI. Therefore, the dataset did not contain items for in-depth suicidal research, such as perceived burdensomeness, hopelessness, or past attempts. Lacking such factors may limit the study's capability to capture the full range of factors contributing to SI. Secondly, due to the nature of the cross-sectional study design, no causal relationship could be made. Despite identified significant associations, the directions of the pathways to SI cannot be determined. Third, the survey was offered in English and Spanish only. Therefore, people who are not proficient in those two languages were excluded from the study. The language limitation could influence the generalizability of the findings. Finally, the use of self-reported data introduces the possibility of self-report bias. Participants may have under- or over-reported their

experiences due to the tendency to present themselves in a more positive way to fit in certain social norms and expectations (Althubaiti, 2016).

Future direction

Based on the limitations of the present study, several suggestions for future research are recommended to further explore the SI among SGM midlife and older adults. First, future studies should consider longitudinal research designs to map out the formation and the development of SI over time. Such designs will allow the assessment of potential causal relationships and directional pathways between key risk factors and SI. Second, it will be important to consider separating participants into different age groups. Since SGM midlife and older adults represent a population aged from 50 to 100 and up, the age-specific risk and protective factors may vary significantly between generations. Therefore, understanding the underlying distinctions of different age groups can help form targeted intervention strategies. Third, there is a need for studies to explore culturally specific risk and protective factors by examining racial/ethnic subgroups within the SGM aging community. Given the differences in cultural norms, discriminatory experiences, and access to support, studies focus on the experience of racial/ethnic disparities can help the development of culturally appropriate prevention and intervention programs for the targeted SGM aging subgroups.

Conclusion

This study contributes to the exploration of the intersecting determinants associated with SI among SGM midlife and older adults. Guided by the Health Equity Promotion Model and Fluid Vulnerability Theory, the findings illustrate the key factors that shape both baseline and acute vulnerabilities of SI across personal, structural, psychological, and behavioral domains. Baseline vulnerability was influenced by social positions, such as transgender identity, as well as

exposure to historical/environmental adversities, including discrimination and victimization. These various forms of marginalization create chronic psychological stress and distress that accumulate across a SGM individual's lifespan. Meanwhile, acute SI vulnerability was linked with psychological factors (e.g., depression, resilience) and behavioral factors (e.g., physical activity, nutrition inadequacy, and drug addiction). Most importantly, the interactive effect of these domains demonstrated the importance of an intersectional lens in understanding the fostering and impeding of SI within the SGM aging community. Based on the influences of social position, historical marginalization, mental health disparities, and behavioral health risks, SI cannot be effectively addressed through a single approach. Instead, it requires the development of an integrative, trauma-informed, culturally responsive SI prevention strategy that considers the unique challenges and living experiences of SGM midlife and older populations.

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Table 1

Participant Demographic Characteristics

Demographic Variables	**Responses (%)**	***n*** **SI Absent % [95% CI]**	**SI Present % [95% CI]**	χ^2	***p*-value**
Gender				10.762	$p = .190$
Male	1,375 (56.70)	50.34 [46, 54]	51.51 [46, 57]		
Female	984 (40.6)	44.87 [41, 49]	40.78 [36, 46]		
Gender Diverse	66 (2.7)	4.79 [3, 76]	7.71 [5, 11]		
Race/Ethnicity				16.040	$p = .145$
Non-Hispanic, White	1,869 (77.1)	79.04 [75, 82]	74.17 [69, 79]		
Non-Hispanic, Black	214 (8.8)	8.00 [6, 11]	10.15 [7, 14]		
Hispanic	187 (7.7)	9.96 [8, 13]	9.89 [7, 4]		
Non-Hispanic, POC	155 (6.4)	2.96 [2, 5]	5.79 [4, 9]		
Sexual Orientation				12.782	$p = .0461$*
Gay or Lesbian	2,081 (85.8)	75.05 [71, 79]	68.44 [63, 73]		
Bisexual, Heterosexual, Sexual Diverse	344 (14.2)	24.95 [21, 29]	31.56 [27, 40]		
Transgender				75.164	$p < .001$***
Non-transgender	2,227 (91.8)	88.81 [85, 92]	75.48 [70, 80]		
Transgender	198 (8.2)	11.19 [8, 15]	24.52 [20, 30]		
Education Attainment				3.049	$p = .358$
Some College or More	2,198 (90.6)	75.38 [71, 79]	24.62 [21, 29]		
High School or Less	227 (9.4)	72.21 [67, 77]	27.79 [23, 33]		
Income				33.631	$p = .001$**
Income > 200% FPG	1,540 (63.5)	68.40 [64, 72]	56.86 [52, 62]		
Income <= 200% FPG	885 (36.5)	31.60 [28, 36]	43.14 [38, 48]		

Note. $N = 2425$.
FPG = federal poverty guideline

Table 2

Linear Regression Models Examining Predictors of Lifetime Suicidal Ideation Among SGM Midlife and Older Adults

Lifetime Suicidal Ideation	**Odds Ratio**	**95% Confidence Interval**		***p*-value**
Age	0.99	0.98	1.00	$p = 0.166$
Gender [a]				
Female	1.09	0.89	1.33	$p = 0.428$
Gender Diverse	0.39	0.19	0.80	$p = 0.01$**
Race/Ethnicity [b]				
Non-Hispanic, Black	1.00	0.70	1.44	$p = 0.986$
Hispanic	0.63	0.43	0.94	$p = 0.023$*
Non-Hispanic, POC	1.44	0.96	2.16	$p = 0.081$
Sexual Orientation	1.02	0.75	1.38	$p = 0.912$
Transgender	3.68	2.35	5.78	$p < 0.001$***
Educational Attainment [c]	1.24	0.87	1.77	$p = 0.243$
Income [d]	1.16	0.93	1.44	$p = 0.188$
Key Predictors				
Discrimination	1.06	1.01	1.11	$p = 0.011$*
Victimization	1.08	1.05	1.10	$p < 0.001$***
Depression	2.92	2.33	3.663	$p < 0.001$***
Anxiety	0.95	0.75	1.22	$p = 0.697$
Mastery	0.89	0.79	1.00	$p = 0.057$
Resilience	0.78	0.70	0.87	$p < 0.001$***
Physical Activity	0.75	0.59	0.94	$p = 0.015$*
Lack of Nutrition	1.16	1.01	1.32	$p = 0.035$*
Drug Addiction	2.23	1.12	4.46	$p = 0.023$*
Alcoholism	1.23	0.77	1.96	$p = 0.387$

Reference group: [a] Male, [b] White, [c] High school or less, [d] At or below 200% FPG