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Title: LGBTQ Utilization of a Statewide Tobacco Quitline: Engagement and Quitting Behavior, 2010–2022

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ABSTRACT

Introduction: Lesbian, gay, bisexual, transgender, and queer/questioning (LGBTQ) individuals use tobacco at disproportionately high rates but are as likely as straight tobacco users to want to quit and to use quitlines. Little is known about the demographics and geographic distribution of LGBTQ quitline participants, their engagement with services, or their long-term outcomes.

Methods: Californians ($N=333,429$) who enrolled in a statewide quitline 2010–2022 were asked about their sexual and gender minority (SGM) status and other baseline characteristics. All were offered telephone counseling. A subset ($n=19,431$) was followed up at 7 months. Data were analyzed in 2023 by SGM status (LGBTQ vs. straight) and county type (rural vs. urban).

Results: Overall, 7.0% of participants were LGBTQ, including 7.4% and 5.4% of urban and rural participants, respectively. LGBTQ participants were younger than straight participants but had similar cigarette consumption. Fewer LGBTQ participants reported a physical health condition (42.1% vs. 48.4%) but more reported a behavioral health condition (71.1% vs. 54.5%; both p 's < .001). Among both LGBTQ and straight participants, nearly 9 in 10 chose counseling and both groups completed nearly 3 sessions on average. The groups had equivalent 30-day abstinence rates (24.5% vs. 23.2%; $p=.263$). Similar patterns were seen in urban and rural subgroups.

Conclusions: LGBTQ tobacco users engaged with and appeared to benefit from a statewide quitline even though it was not LGBTQ community-based. A quitline with staff trained in

LGBTQ cultural competence can help address the high prevalence of tobacco use in the LGBTQ community and reach members wherever they live.

IMPLICATIONS

This study describes how participants of a statewide tobacco quitline broke down by sexual orientation and gender. It compares participants both by SGM status and by type of county to provide a more complete picture of quitline participation both in urban areas where LGBTQ community-based cessation programs may exist and in rural areas where they generally do not. To our knowledge, it is the first study to compare LGBTQ and straight participants on their use of quitline services and quitting aids, satisfaction with services received, and rates of attempting quitting and achieving prolonged abstinence from smoking.

INTRODUCTION

Sexual and gender minority (SGM) status has long been associated with elevated rates of tobacco use. Studies have consistently found that lesbian, gay, and bisexual people are more likely to use tobacco than heterosexual or straight people.¹⁻⁶ Recent national surveys indicate that despite progress in lowering the overall prevalence of tobacco use, these disparities still exist in the U.S.⁴⁻⁶ For example, 2020 National Health Interview Survey data show that 25.1% of lesbian, gay, and bisexual adults use tobacco, compared to 18.8% of straight adults.⁶ Data from wave 4 of the Population Assessment of Tobacco and Health (PATH) study show that transgender and other gender diverse adults in the U.S. are 2–3 times more likely to use tobacco than cisgender adults.⁷

LGBTQ smokers are as likely as straight smokers to want to quit,⁸ but face additional barriers in accessing evidence-based treatment. LGBTQ people may be reluctant to use health services if providers are seen as hostile or unwelcoming to community members or if they lack training in treating LGBTQ patients.⁹⁻¹⁴ These concerns may be allayed in LGBTQ community-based cessation programs,^{11,15-17} but these are typically only available in urban areas. Few rural LGBTQ residents have access to such programs.

One way to reduce barriers to LGBTQ access to evidence-based treatment is through tobacco quitlines.¹⁸ Quitlines are statewide, publicly supported services that are free and accessible to all, including rural residents.¹⁹ Compared to group counseling programs, they provide help in a relatively anonymous manner, which may facilitate frank discussion.²⁰ Telephone counseling has been proven effective in multiple randomized, controlled trials with large and diverse

populations.²¹ Many quitlines offer additional supports such as cessation medications, text messaging services, and web-based assistance.²²

National survey data have shown that straight and LGBTQ tobacco users are equally likely to use quitlines.²³ A California study found that 5.7% of quitline participants were LGBTQ, compared to 5.1% of the state's smokers.²⁴ Lukowski and colleagues compared baseline characteristics of LGBTQ and straight participants in a 14-state quitline and found higher prevalence of stress, depression, and anxiety among the former.²⁵ Yet little is known about LGBTQ engagement with quitlines, in part because sexual orientation is a relatively recent addition to the data routinely collected by quitlines.^{26,27} To our knowledge, no published studies address the geographic distribution of LGBTQ quitline participants and how their engagement with services, satisfaction, quitting behaviors, or outcomes compare with those of straight participants.

The current study addresses these gaps by analyzing data on LGBTQ engagement with California's quitline in the 13 years since it began asking participants about SGM status. We first describe the breakdown of quitline participants by sexual orientation and gender. We then compare participants by SGM status (LGBTQ vs. straight) and type of county (rural vs. urban) to provide a more complete picture of quitline participation both in urban areas where LGBTQ community-based cessation programs may exist and in rural areas where they generally do not. We also compare participants (LGBTQ vs. straight, including rural and urban subgroups) on their use of quitting aids, satisfaction with services received, and rates of attempting quitting and achieving prolonged abstinence from smoking.

METHODS

Study Participants

The sample for this observational study consisted of California residents who enrolled in the California Smokers' Helpline, a tobacco quitline, from January 2010 to December 2022 ($N=333,429$). Inclusion criteria included being at least 18 years old, being a smoker, providing sufficient information to be coded as LGBTQ or straight, and providing contact information. A subset of participants ($n=19,431$) was followed up for evaluation.

All participants were offered free, multi-session telephone counseling following an empirically validated protocol.^{28,29} The theoretical basis for the protocol was social cognitive theory,³⁰⁻³² but counselors also employed techniques of motivational interviewing to promote behavior change³³ and strategies from cognitive behavioral therapy to help participants develop individualized quitting and relapse prevention plans.³⁴ The protocol was structured to provide the minimum acceptable content for each session, while allowing counselors to tailor sessions to the unique needs of each participant. The first session, usually provided before quitting, focused on motivation, planning, and setting a quit date. Subsequent sessions, beginning on the quit date or soon thereafter, focused on effective coping, relapse prevention, and adopting the self-image of a nonsmoker. Sessions were timed to provide more help in the first weeks of quitting when the probability of relapse is greatest.³⁵ A detailed discussion of the protocol is available elsewhere.²⁰

Counselors were trained in LGBTQ cultural competence to improve their knowledge of and sensitivity to community concerns.^{18,26} Training was provided by experts and advocates on issues relevant to the community, such as the stress of marginalization that is often experienced by LGBTQ individuals and how this contributes to high rates of smoking.³⁶ Providing a safe and

accepting environment for LGBTQ participants is of utmost importance to allow for open exchange on any such topics that may affect their quitting. But while counselors were trained for competence in addressing these issues, the protocol was not designed specifically for LGBTQ clients. As a program available to all tobacco users in the state, the quitline used a protocol designed to help all participants quit, while allowing counselors to adapt the service to each participant. Counselors were frequently monitored by supervisors and given feedback about their use of the protocol and rapport with participants.

Measures

Gender identity and sexual orientation

A sexual orientation question was added to the quitline's intake questionnaire in January 2010, when this study began: "Which of the following best describes how you think of yourself?" Participants were prompted to select "heterosexual/straight," "gay/lesbian," "bisexual," or "other." The "other" option had an open response, and intake staff were trained to record any terms respondents used to describe themselves.

A gender question was already in use prior to the study, but during the 13-year study period there were important changes to its wording, reflecting movement toward greater flexibility around gender identity. Until January 2016, the question was, "Are you male or female?" From January 2016 to April 2016 it was, "Are you male, female, or other?" Starting in April 2016 the question was, "Do you identify yourself as male, female, or in another way?" The "other" and "in another way" options had open responses and staff were trained to record any terms respondents used to describe themselves.

For this study, we created a variable for SGM status using the sexual orientation and gender questions to create two groups: LGBTQ and straight. Participants were considered LGBTQ if they selected “gay/lesbian” or “bisexual” for their sexual orientation. They were also considered LGBTQ if they volunteered a term indicating sexual or gender minority status after selecting “other” for sexual orientation or “other”/“in another way” for gender. Terms indicating minority status included, in decreasing order of frequency, “pansexual,” “asexual,” “transgender,” “queer,” “transsexual,” “nonbinary,” “trisexual,” “gender fluid,” “bicurious,” “intersex,” “heteroflexible,” “androgynous,” “agender,” “questioning,” “GLBT,” “gender neutral,” “gender confused,” and “LGBT.” Participants who selected “heterosexual/straight” for sexual orientation and “male” or “female” for gender were coded as straight. Those who selected “other” and volunteered an ambiguous term such as “celibate,” “normal,” “human,” “man/woman,” “married,” or “none” were dropped from analyses ($n=2,022$, or 0.6% of participants).

The sexual orientation and gender questions were best suited for identifying heterosexual, lesbian, gay, and bisexual participants, because these identities were explicitly named. They were somewhat less well suited for identifying participants with gender minority identities, because these were not explicitly named. We opted in this paper to use “LGBTQ” as the collective term for participants with SGM status, although “LGBTQ+” may also be appropriate given the range of identities that participants volunteered. For ease of discourse, we use “straight” as the collective term for participants with sexual and gender majority status, encompassing being both heterosexual and cisgender.

Other measures assessed at intake

Other sociodemographic measures assessed at intake include age, race/ethnicity, education, and county of residence. Tobacco use measures include cigarettes per day (CPD), with CPD ≥ 15 considered heavy use. To assess physical health, participants were asked if they had high blood pressure or diabetes or had ever had a heart attack or stroke. For behavioral health, starting June 2012, participants were asked if they had depression, bipolar disorder, anxiety, schizophrenia, or a problem with drug or alcohol abuse.³⁷ Physical and behavioral health conditions were only assessed for participants completing intake by telephone, not online.

Counseling measures

Counseling measures included the percentages choosing and receiving counseling, and the number of sessions completed. The percentage receiving counseling was calculated over those choosing to receive it. Participants completing intake online ($n=16,468$) were not asked if they wanted counseling; a counselor would simply call them to initiate it. Therefore, they were excluded from the percentages choosing and receiving counseling. All participants completing a counseling session were included in the calculation of the number of sessions completed.

Evaluation measures

At 7 months post-enrollment, evaluation staff followed up by telephone with a randomly selected subset of participants who received counseling. Participants were asked about their quitting aid use, including any form of nicotine replacement therapy (NRT) such as nicotine patches, gum, lozenges, spray, or inhaler; any approved quitting aid including NRT, bupropion, or varenicline; and e-cigarettes when used to quit. In general, quitting aids were obtained by participants on their own, because the quitline did not routinely provide them.

Satisfaction was assessed by asking if participants were “very satisfied, satisfied, somewhat satisfied, or not satisfied” with services received; those who answered “very satisfied” or “satisfied” were considered satisfied.

Outcome measures included the percentage of participants making an intentional quit attempt lasting at least one day and the percentages of participants not smoking for at least 30 or 180 days at follow-up. Slips lasting a day or less were allowed, but smoking on two consecutive days was considered a relapse.

Analysis

Participants were categorized as LGBTQ or straight based on sexual orientation and gender. Data for LGBTQ participants were concatenated to obtain stable group estimates. Intake, counseling, and evaluation data were analyzed first by SGM status—LGBTQ vs. straight—and then, within these two categories, by county type—rural vs. urban. Analyses examined baseline characteristics, service engagement, quitting aid use, satisfaction, quit attempts, and prolonged abstinence. Complete case analysis was used for all follow-up measures. Logistic regression was used to compare LGBTQ and straight participants on choosing and receiving counseling, controlling for baseline characteristics. It was also used to compare the two groups on attempting quitting and quitting for at least 30 days, controlling for baseline characteristics, receipt of counseling, and quitting aid use. All analyses were conducted using SAS 9.4 software.³⁸

RESULTS

Distribution of participants by SGM status and county type

Of 333,429 participants in this study, 93.0% were straight and 7.0% were LGBTQ. The latter broke down as follows: 1.6% lesbian women, 2.1% gay men, 2.1% bisexual women, 0.7% bisexual men, and 0.4% transgender or other SGM. Of 23,345 LGBTQ participants, 86.4% lived in urban counties and 13.6% in rural counties. LGBTQ participants accounted for 7.4% of urban and 5.4% of rural participants, with each LGBTQ subcategory accounting for a smaller proportion of rural than urban participants except bisexual women, who accounted for approximately equal proportions of urban and rural participants. In contrast, gay men accounted for 2.3% of urban but only 1.0% of rural participants. Lesbian and bisexual women together accounted for just over half (51.9%) of urban LGBTQ participants and nearly two thirds (65.6%) of rural LGBTQ participants.

Demographics and cigarette consumption

Table 1 compares straight and LGBTQ participants on demographics and cigarette consumption. Overall, LGBTQ participants were younger, with 57.8% under 45 years old vs. 39.1% of straight participants ($p < .001$). Fewer LGBTQ participants were White (50.4% vs. 53.9%) or Black (17.0% vs. 19.8%) and more were Hispanic (14.8% vs. 12.5%) or multiracial/other (13.3% vs. 8.9%, all p 's $< .001$). More LGBTQ participants had education beyond high school (58.7% vs. 50.0%) and fewer were heavy smokers (53.7% vs. 55.4%, both p 's $< .001$).

Table 1 also breaks these data down by county type. The urban breakdown closely mirrored the overall breakdown. For example, urban LGBTQ participants were more likely than their straight counterparts to be under 45 years old (57.2% vs. 38.8%; $p < .001$). Rural participants also showed patterns similar to those of participants overall, but some of the gaps between LGBTQ and straight participants were wider. For example, rural LGBTQ participants were much less

likely than their straight counterparts to be White (68.5% vs. 76.2%, $p < .001$), even though in general the proportion of White participants was much higher in rural than in urban counties. Comparing urban and rural LGBTQ participants, the latter were younger. Rural LGBTQ participants were more likely than their urban counterparts to be White, to have no more than a high school education, and to be heavy smokers.

Physical and behavioral health conditions

Table 1 also compares straight and LGBTQ participants on health measures. Overall, fewer LGBTQ than straight participants reported a physical health condition (42.1% vs. 48.4%), but more reported a behavioral health condition (71.1% vs. 54.5%; both p 's $< .001$), a pattern that held true for each condition (all p 's $< .001$). The pattern also held true in both urban and rural counties, except that in rural counties the differences for diabetes, heart attack, and stroke were not significant.

Rural residents were more likely than urban residents to report a behavioral health condition, a pattern also seen within straight and LGBTQ subgroups. For example, the proportions of rural and urban LGBTQ participants reporting a behavioral health condition were 77.0% and 70.2%, respectively ($p < .001$).

Engagement with counseling

Table 2 compares engagement with quitline counseling by SGM status and county type. Receipt of counseling was assessed for all participants choosing to receive it ($n=318,669$). Small but significantly different proportions of LGBTQ and straight participants completed intake online, 6.9% and 4.2%, respectively ($p < .001$), and were excluded from the percentages choosing and

receiving counseling because they were not given a choice about counseling but were simply told that a counselor would call them. Overall, LGBTQ participants chose counseling at a higher rate than straight participants (89.7% vs. 87.4%), received it at a lower rate (70.5% vs. 72.3%), and completed a smaller mean number of sessions (2.8 vs. 2.9, all p 's < .001).

Statewide patterns of engagement were also seen within urban and rural counties. For example, in rural counties, LGBTQ participants were slightly more likely to choose counseling than straight participants (89.1% vs. 87.6%, $p < .05$), were equally likely to receive it (74.6% vs. 75.3%, $p = .388$), and completed the same average number of sessions, 2.9 ($p = .815$).

Differences in engagement were statistically significant due to large sample sizes but were small. In a multivariate analysis controlling for age and other factors, LGBTQ participants were slightly more likely than straight participants to choose and receive counseling (OR=1.07 [1.03–1.07]). These results may be seen in Supplemental Table 1.

Quitting aid use

Table 2 also compares the use of quitting aids by SGM status and county type. Quitting aid use was assessed for the subset reached for follow-up ($n=19,431$). LGBTQ participants were as likely as straight participants to use NRT (52.7% vs. 51.9%, $p = .580$) or any approved quitting aid (61.0% vs. 59.1%, $p = .194$), but were more likely than straight participants to use e-cigarettes to quit (10.8% vs. 8.0%, $p < .001$). Statewide patterns of quitting aid use were also seen in urban and rural counties. However, the difference in e-cigarette use as a quitting aid was not significant in rural counties (9.5% vs. 7.3%, $p = .276$).

Satisfaction

Satisfaction was assessed among participants reached for follow-up ($n=18,496$). LGBTQ and straight participants were equally likely to be satisfied with quitline services (73.9% vs. 74.4%, $p=.687$), a pattern mirrored in urban and rural counties.

Quitting outcomes

Figure 1 shows quitting outcomes of participants reached for follow-up ($n=19,431$). LGBTQ participants were more likely than straight participants to attempt quitting (75.4% vs. 71.1%, $p<.001$) and equally likely, at 7-month follow-up, to have abstained from smoking for 30 days (24.5% vs. 23.2%, $p=.263$) or 6 months (11.4% vs. 11.2%, $p=.872$, not shown in figure).

Statewide patterns of outcomes by SGM status were similar in urban and rural subgroups, but the difference in attempting quitting among rural county participants was not significant.

Table 3 shows results of a multivariate analysis presented as odds ratios for attempting to quit and quitting for at least 30 days by SGM status, county type, age, race/ethnicity, education, CPD, physical health conditions, behavioral health conditions, receipt of counseling, and quitting aid use. LGBTQ participants had the same odds as straight participants of attempting quitting (OR=1.17 [1.00–1.36]) and quitting for 30 days (OR=1.04 [0.89–1.21]). County type was not predictive of attempting quitting or quitting for 30 days. Age, education, and CPD were more predictive than SGM status. Race/ethnicity was predictive insofar as Black participants had lower odds of quitting than White participants (OR=0.81 [0.73–0.91]). Physical health conditions did not meaningfully predict outcomes, but having a behavioral health condition lowered the odds of attempting quitting and quitting. Receiving counseling and using quitting aids were both associated with strongly improved odds of attempting and succeeding at quitting.

DISCUSSION

Over a 13-year period, a quitline designed to provide statewide access to cessation services reached 23,345 LGBTQ individuals, representing 7.0% of quitline participants. LGBTQ participants were geographically dispersed, with 13.6% residing in rural counties where access to cessation services of any kind, let alone those designed for the LGBTQ community, is limited. LGBTQ participants skewed younger than straight participants and were more likely to include Hispanic and multiracial individuals.

Quitline engagement was similar for LGBTQ and straight participants. The two groups chose counseling at similar, high rates. Nearly nine in ten LGBTQ participants chose counseling, a couple of percentage points ahead of straight participants, suggesting basic parity in the two groups' receptivity to the service. Having chosen counseling, more than seven in ten in both groups proceeded to receive it. In a multivariate analysis, LGBTQ participants were slightly more likely than straight participants to receive counseling. Among those who engaged in counseling, members of both groups completed nearly 3 sessions, on average, suggesting similar levels of engagement. These are encouraging findings given the barriers to treatment that many LGBTQ tobacco users face.^{9,10,12-14,39-41} Similar patterns were seen within geographic subgroups. Both urban and rural LGBTQ participants engaged at similarly high rates as their straight counterparts.

LGBTQ and straight participants also had similar quitting behavior. For example, they were equally likely to use NRT or other approved quitting aid. One difference was that LGBTQ participants were more likely to use e-cigarettes to quit. This may be due to their younger average age, as vaping is more prevalent among younger adults.⁴² LGBTQ participants were

slightly more likely to attempt quitting than straight participants, but equally likely to achieve 30-day and 6-month abstinence. In a logistic regression, LGBTQ and straight participants were equally likely both to attempt quitting and to quit for at least 30 days. These findings suggest that LGBTQ and straight participants derived comparable benefits from the quitline, which in previous trials was proven to double participants' odds of successful long-term quitting.^{28,29} Again, similar patterns were seen within geographic subgroups, with both urban and rural LGBTQ participants attempting quitting and quitting at similar, high rates as their straight counterparts.

The comparability in outcomes between LGBTQ and straight participants is notable given two key differences between the groups. LGBTQ participants, on average, were less likely to report physical health conditions. As with the difference in e-cigarette use, this may be due to their relative youth compared to straight participants, as the prevalence of chronic disease increases with age. But physical health conditions, often caused or exacerbated by smoking, can be powerful motivators to quit. LGBTQ participants achieved comparable rates of quitting despite being, on average, at an earlier stage in the development of smoking-related disease. This, too, is an encouraging result for a population experiencing disproportionately high tobacco use.

The other key difference between the groups is that LGBTQ participants were *more* likely to report a behavioral health condition. The prevalence of such conditions was 17 percentage points higher among LGBTQ participants than among straight participants, with more than seven in ten reporting at least one behavioral health condition. The difference appeared even more pronounced in rural counties, with 77.0% of rural LGBTQ participants reporting such a condition compared to 59.0% of rural straight participants. These differences are consistent with

an earlier study that found a similar disparity between LGBTQ and straight participants in a 14-state quitline.²⁵ They are also consistent with studies showing that LGBTQ people in general are more likely to suffer poor mental health than straight people,³⁶ that this disparity is compounded in rural areas,⁴³ and that LGBTQ people who smoke are more likely to suffer poor mental health than straight people who smoke.¹⁴ These differences suggest that quitline participants who are LGBTQ have greater need of assistance, on average, than those who are straight, as behavioral health conditions can make quitting more challenging.³⁷ It is noteworthy, then, that even with a greater proportion reporting behavioral health conditions, LGBTQ participants were able to quit at the same rates as straight participants. This underscores the importance of reducing treatment barriers for LGBTQ tobacco users, especially those in rural areas. The intersectionality of SGM status and rurality is a challenge that has been insufficiently addressed in tobacco control.⁴⁴

Even after adjusting for demographics, consumption, health conditions, receipt of counseling, and quitting aid use, LGBTQ and straight participants did equally well at quitting. This is a notable finding because the quitline was not designed specifically for the LGBTQ community, although its services were informed by training on LGBTQ cultural competence and tailored to individual needs. The finding is consistent with earlier studies which found that non-community-based clinical treatments work as well for LGBTQ participants as for straight participants.^{17,23} Whether a community-based program could provide better outcomes for LGBTQ participants is unknown, but head-to-head trials comparing community-based and non-community-based programs have so far found no significant differences in outcomes.⁴⁵⁻⁴⁷ It is worth noting that LGBTQ community-based programs primarily serve urban populations. Therefore, a non-community-based intervention available in both urban and rural locations may increase LGBTQ

treatment access and serve many more community members. Indeed, the quitline in this study served nearly 1,800 LGBTQ tobacco users per year, on average.

This study has limitations. First, the coding of participants based on their responses to two questions did not necessarily identify all LGBTQ participants. The gender question was originally framed in a binary manner and the sexual orientation question explicitly named only straight, lesbian, gay, and bisexual identities, so some participants with transgender or other identities may have been coded incorrectly. Second, due to the lack of stable population estimates of tobacco use by SGM status over the 13-year study period, we are unable to compare reach to LGBTQ and straight populations. Third, without an experimental design it is impossible to be sure that LGBTQ and straight participants derived equal benefits from the quitline. Finally, there was a small but significant difference in the proportions of participants completing intake online, who were excluded from the calculation of the percentages with physical and behavioral health conditions and the percentages choosing and receiving counseling, which could have skewed these measures.

Notwithstanding these limitations, the study produced important findings. LGBTQ tobacco users accounted for a substantial proportion—7.0%—of enrollees in a statewide quitline. Among LGBTQ participants, 13.6% resided in rural counties. LGBTQ participants chose and received counseling at similar rates as straight participants. They attempted quitting and achieved prolonged abstinence at similar rates, despite having a much higher prevalence of behavioral health conditions, including in rural areas. These findings suggest that LGBTQ community members engage with and can benefit from a quitline even if it is not designed specifically for the LGBTQ community. A quitline with staff trained in LGBTQ cultural competence, using a standardized protocol designed for use with all participants, whether LGBTQ or not, that allows

for tailoring to individual needs, can help address the disproportionately high prevalence of tobacco use in the LGBTQ community and reach members wherever they live.

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DECLARATION OF INTERESTS

The authors do not have any competing interests.

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DATA AVAILABILITY

Upon publication of this study and for at least two years following, aggregate data collected for the study, including a data dictionary and information about the study protocol and statistical analysis plan will be made available to other researchers upon reasonable request to the corresponding author at szhu@health.ucsd.edu.

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Table 1. Baseline characteristics of quitline participants by SGM status and county type (2010–2022)

Variable	Overall		Urban		Rural	
	Straight	LGBTQ	Straight	LGBTQ	Straight	LGBTQ
	<i>n</i> =310,084 %	<i>n</i> =23,345 %	<i>n</i> =254,074 %	<i>n</i> =20,173 %	<i>n</i> =56,010 %	<i>n</i> =3,172 %
Age						
18–24	5.2 ± 0.1	11.5 ± 0.4*	5.1 ± 0.1	11.0 ± 0.4*	5.6 ± 0.2	14.8 ± 1.2*
25–44	33.8 ± 0.2	46.3 ± 0.6*	33.7 ± 0.2	46.2 ± 0.7*	34.6 ± 0.4	47.0 ± 1.7*
45–64	50.9 ± 0.2	38.3 ± 0.6*	51.2 ± 0.2	38.9 ± 0.7*	49.9 ± 0.4	34.2 ± 1.7*
>64	10.0 ± 0.1	3.9 ± 0.2*	10.0 ± 0.1	3.9 ± 0.3*	9.9 ± 0.2	4.0 ± 0.7*
Race/ethnicity						
White	53.9 ± 0.2	50.4 ± 0.6*	49.0 ± 0.2	47.5 ± 0.7*	76.2 ± 0.4	68.5 ± 1.6*
Black	19.8 ± 0.1	17.0 ± 0.5*	23.4 ± 0.2	19.1 ± 0.5*	3.6 ± 0.2	3.5 ± 0.6
Hispanic	12.5 ± 0.1	14.8 ± 0.5*	13.7 ± 0.1	15.7 ± 0.5*	7.1 ± 0.2	8.8 ± 1.0*
API	3.1 ± 0.1	2.6 ± 0.2*	3.5 ± 0.1	2.8 ± 0.2*	1.0 ± 0.1	1.3 ± 0.4
AIAN	1.8 ± 0.0	2.0 ± 0.2	1.4 ± 0.0	1.6 ± 0.2*	3.6 ± 0.2	4.2 ± 0.7
Multiracial/other	8.9 ± 0.1	13.3 ± 0.4*	9.0 ± 0.1	13.2 ± 0.5*	8.4 ± 0.2	13.7 ± 1.2*
Education						
≤HS	50.0 ± 0.2	41.3 ± 0.7*	49.0 ± 0.2	40.6 ± 0.7*	54.4 ± 0.4	45.8 ± 1.8*
>HS	50.0 ± 0.2	58.7 ± 0.7*	51.0 ± 0.2	59.4 ± 0.7*	45.6 ± 0.4	54.2 ± 1.8*
Cigarettes per day						
<15	44.6 ± 0.2	46.3 ± 0.7*	46.3 ± 0.2	47.1 ± 0.7*	37.2 ± 0.4	40.8 ± 1.8*
≥ 15	55.4 ± 0.2	53.7 ± 0.7*	53.7 ± 0.2	52.9 ± 0.7*	62.8 ± 0.4	59.2 ± 1.8*
Physical health						
conditions						
Hypertension	42.4 ± 0.2	35.9 ± 0.6*	42.6 ± 0.2	35.9 ± 0.7*	41.5 ± 0.4	35.7 ± 1.7*
Diabetes	13.7 ± 0.1	11.0 ± 0.4*	14.0 ± 0.1	10.8 ± 0.4*	12.8 ± 0.3	12.2 ± 1.2
Heart attack	6.1 ± 0.1	5.1 ± 0.3*	5.9 ± 0.1	4.9 ± 0.3*	6.7 ± 0.2	6.0 ± 0.9
Stroke	6.4 ± 0.1	5.7 ± 0.3*	6.4 ± 0.1	5.7 ± 0.3*	6.6 ± 0.2	5.9 ± 0.9
Any of above	48.4 ± 0.2	42.1 ± 0.7*	48.5 ± 0.2	41.9 ± 0.7*	48.2 ± 0.4	43.1 ± 1.8*
Behavioral health						
conditions						
Anxiety	37.8 ± 0.2	53.4 ± 0.7*	36.7 ± 0.2	52.3 ± 0.8*	43.3 ± 0.5	60.7 ± 2.1*
Depression	39.6 ± 0.2	55.1 ± 0.7*	38.9 ± 0.2	54.2 ± 0.8*	43.1 ± 0.5	61.5 ± 2.0*
Bipolar	17.3 ± 0.2	31.0 ± 0.7*	17.1 ± 0.2	30.5 ± 0.7*	18.3 ± 0.4	34.3 ± 2.0*
Schizophrenia	8.4 ± 0.1	11.8 ± 0.5*	8.7 ± 0.1	11.8 ± 0.5*	6.8 ± 0.2	12.1 ± 1.4*
Drug or alcohol	12.1 ± 0.1	19.3 ± 0.6*	12.1 ± 0.1	19.6 ± 0.6*	11.6 ± 0.3	17.8 ± 1.6*
Any of above	54.5 ± 0.2	71.1 ± 0.7*	53.6 ± 0.2	70.2 ± 0.7*	59.0 ± 0.5	77.0 ± 1.7*

SGM=sexual or gender minority. LGBTQ=lesbian, gay, bisexual, transgender, or queer/questioning. API=Asian or Pacific Islander. AIAN=American Indian or Alaska Native. HS=high school or general education diploma. All racial groups are non-Hispanic. Physical health conditions were assessed for participants completing intake by telephone ($n=318,615$). Behavioral health conditions were assessed for participants completing intake by telephone beginning June 2012 ($n=252,174$).

* Significantly different from straight participants.

Table 2. Engagement with counseling, quitting aid use, and satisfaction with services received by SGM status and county type (2010–2022)

Measure	Overall		Urban		Rural	
	Straight	LGBTQ	Straight	LGBTQ	Straight	LGBTQ
Chose counseling ^a						
<i>n</i>	296,940	21,729	242,926	18,757	54,014	2,972
%	87.4 ± 0.1	89.7 ± 0.4*	87.3 ± 0.1	89.7 ± 0.4*	87.6 ± 0.3	89.1 ± 1.1*
Received counseling						
<i>n</i>	272,578	21,098	223,263	18,249	49,315	2,849
%	72.3 ± 0.2	70.5 ± 0.6*	71.6 ± 0.2	69.9 ± 0.7*	75.3 ± 0.4	74.6 ± 1.6
No. of sessions						
<i>n</i>	197,065	14,874	159,945	12,750	37,120	2,124
<i>M</i>	2.9 ± 0.0	2.8 ± 0.0*	2.9 ± 0.0	2.8 ± 0.0*	2.9 ± 0.0	2.9 ± 0.1
Quitting aid use						
<i>n</i>	18,176	1,255	14,863	1,076	3,313	179
NRT (%)	51.9 ± 0.7	52.7 ± 2.8	51.4 ± 0.8	52.0 ± 3.0	54.6 ± 1.7	57.5 ± 7.2
Any quitting aid except e-cigs (%)	59.1 ± 0.7	61.0 ± 2.7	58.0 ± 0.8	60.4 ± 2.9	63.9 ± 1.6	64.2 ± 7.0
E-cigs as a quitting aid (%)	8.0 ± 0.4	10.8 ± 1.7*	8.1 ± 0.4	11.0 ± 1.9*	7.3 ± 0.9	9.5 ± 4.3
Satisfaction						
<i>n</i>	17,295	1,201	14,129	1,028	3,166	173
Very satisfied or satisfied	74.4 ± 0.7	73.9 ± 2.5	74.0 ± 0.7	74.3 ± 2.7	76.2 ± 1.5	71.1 ± 6.8

SGM=sexual or gender minority. LGBTQ=lesbian, gay, bisexual, transgender, or queer/questioning. NRT=nicotine replacement therapy. E-cigs=electronic cigarettes.

^a Excludes participants who completed intake online ($n=16,468$), because they were not asked at intake if they wanted counseling; a counselor would call them to offer counseling regardless.

* Significantly different from straight participants.

Table 3. Odds ratios for attempting quitting and quitting for 30 days for all quitline participants (2010–2022)

Variable	Attempted quitting N=14,727		Quit for at least 30 days N=14,810	
	%	OR (95% CI)	%	OR (95% CI)
SGM status				
Straight	70.6	1	23.6	1
LGBTQ	75.2	1.17 (1.00–1.36)	24.4	1.04 (0.89–1.21)
County type				
Urban	70.9	1	23.6	1
Rural	71.1	1.05 (0.94–1.16)	23.7	1.01 (0.91–1.13)
Age				
18–24	80.5	1	26.9	1
25–44	75.1	0.67 (0.53–0.85)	25.9	0.93 (0.76–1.15)
45–64	69.4	0.51 (0.41–0.65)	22.5	0.79 (0.65–0.99)
>64	64.0	0.40 (0.31–0.51)	21.6	0.72 (0.59–0.93)
Race/ethnicity				
White	70.5	1	24.0	1
Black	71.4	1.04 (0.94–1.15)	21.5	0.81 (0.73–0.91)
Hispanic	71.6	0.97 (0.86–1.09)	25.5	1.01 (0.90–1.14)
API	74.4	1.00 (0.80–1.24)	28.9	1.08 (0.88–1.34)
AIAN	69.5	0.91 (0.68–1.21)	19.2	0.73 (0.52–1.01)
Multiracial/other	70.4	0.95 (0.85–1.10)	22.9	0.91 (0.79–1.05)
Education				
≤HS	68.6	1	22.3	1
>HS	73.0	1.25 (1.16–1.35)	24.8	1.14 (1.05–1.23)
Cigarettes per day				
<15	74.3	1	25.9	1
≥15	67.7	0.70 (0.65–0.76)	21.5	0.77 (0.71–0.83)
Physical health conditions				
None	73.1	1	24.6	1
Any	68.9	0.93 (0.86–1.01)	22.7	1.01 (0.93–1.09)
Behavioral health conditions				
None	72.7	1	27.0	1
Any	69.4	0.82 (0.76–0.88)	20.7	0.69 (0.63–0.74)
Received counseling				
No	63.0	1	19.3	1
Yes	74.0	1.68 (1.55–1.82)	25.3	1.45 (1.32–1.59)
Used NRT				
No	63.0	1	20.9	1
Yes	77.9	2.10 (1.95–2.26)	26.0	1.33 (1.23–1.44)

LGBTQ=lesbian, gay, bisexual, transgender, or queer/questioning. OR=odds ratio. SGM=sexual or gender minority.

API=Asian or Pacific Islander. AIAN=American Indian or Alaska Native. HS=high school or general education

diploma. NRT=nicotine replacement therapy. All racial groups are non-Hispanic.

Figure 1. Quitting outcomes by SGM status and county type (2010–2022)

LGBTQ=lesbian, gay, bisexual, transgender, or queer/questioning. Quitting outcomes based on participants reached for follow-up ($n=19,431$).