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Distribution and Prevalence of Health in a National Probability Sample of Three Cohorts of Sexual Minority Adults in the United States

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Abstract

Purpose: This study examined the health profile of a national probability sample of three cohorts of sexual minority people, and the ways that indicators of health vary among sexual minority people across age cohorts and other defining sociodemographic characteristics, including sexual identity, gender identity, and race/ethnicity.

Methods: The *Generations Study*, the first national probability sample of three age cohorts of sexual minority people ($n = 1507$) in the United States collected in 2016–2017, was used to examine general health profiles across several broad domains: alcohol and drug abuse; general health, physical health, and health disability; mental health and psychological distress; and positive well-being, including general happiness, social well-being, and life satisfaction.

Results: There were no cohort differences in substance abuse or positive well-being. The younger cohort was physically healthier, but had worse psychological health than both the middle and older cohorts.

Conclusions: Cohort differences in physical health were consistent with patterns of aging, whereas for mental health, there were distinct cohort differences among sexual minority people. Given that compromised mental health in the early life course creates trajectories of vulnerability, these results point to the need for mental health prevention and intervention for younger cohorts of sexual minority people.

Keywords: age cohorts, mental health, probability sample, sexual minority, substance use, well-being

Introduction

SEXUAL ORIENTATION-RELATED HEALTH disparities have been documented for decades, and empirically supported theoretical perspectives point to societal stigma as a key driver of poor health among sexual minority people (e.g., les-

bian, gay, bisexual and other non-heterosexual identities).¹ One would expect improved health and well-being across successive cohorts of sexual minority people,² given that for each younger cohort, the formative years of adolescence and young adulthood³ have been characterized by more sexual minority visibility and acceptance compared with older

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cohorts. Indeed, sexual minority people have witnessed marked civil rights advances and increasing societal acceptance,⁴ leading to a perception that societal stigma and its effects on health for sexual minority people may be waning.^{5–7}

However, since the early 2000s, studies have found consistently that sexual minority people have worse mental health,^{1,8} physical health,⁹ higher substance abuse,¹⁰ and lower general well-being¹¹ relative to heterosexual people. Although compromised health for sexual minority people has been documented consistently, less is known about general and positive health status for sexual minority people.¹²

Patterns of health and well-being have been studied over a period in which there has been dramatic social change in public awareness, societal acceptance, and legal and political rights for sexual minority people. Societal changes stand in distinct contrast to the persistence of health disparities between sexual minority and heterosexual people, including those in the youngest or most recent cohorts,¹³ yet few studies have directly examined cohort differences among sexual minority people in health. For example, a sexual minority person who was an adolescent at the time when “gay rights” were emerging would have distinct experiences compared with one who grew up during the AIDS crisis and associated activism, and different still from a sexual minority person coming of age during the period of debates about marriage equality.

Differences in health status among sexual minority people have been understudied in comparison to the robust literature that documents physical, mental, and substance use-related health disparities between sexual minority and heterosexual people. For example, studies have documented higher rates of mental health¹⁴ and substance abuse problems¹⁵ for bisexual men and women compared with gay men and lesbian women.

In addition to differences based on sexual identities, differences in health among sexual minority people vary based on gender identity, race/ethnicity, urban/rural residence, educational attainment, or income. Gender differences in health-related behaviors commonly observed in the general population are often inconsistent with differences among sexual minority populations; for example, while women in the general population typically consume less alcohol than men, multiple studies show that sexual orientation disparities are larger and more consistent for sexual minority women than for sexual minority men.^{16–18}

There has been growing awareness of nonbinary identities, and a recent report identified relatively high rates of health and mental health concerns among nonbinary sexual minority adults in the United States.¹⁹ Inconsistent racial/ethnic differences in self-reported physical health^{20,21} and substance use have been identified among sexual minority people.²¹ A recent review suggests mixed results for differences in mental health and physical health for sexual minority adults in rural areas compared with those in urban areas.²² Finally, although few studies focus on the role of educational attainment or income in the health status of sexual minority people, higher educational attainment among sexual minority people is associated with lower mental health disparities between sexual minority and heterosexual adults.²³

This study examines health profiles of three historically distinct cohorts of U.S. sexual minority people using the first U.S. national probability sample of sexual minority peo-

ple in the United States, accounting for differences based on sexual identity, gender identity, race/ethnicity, urbanicity, education, and income. We compare three cohorts. An older cohort (born 1956–1963) came of age in the context following the Stonewall riots, which prompted a public and visible gay rights movement, and were young adults during the HIV/AIDS crisis. A middle cohort (born 1974–1981) came of age during the widespread LGB community activism and emergence of LGB organizations across the nation that were prompted by the HIV/AIDS crisis. Finally, a younger cohort (born 1990–1997) came of age during debates regarding an expansion of legal recognition for LGB people (e.g., marriage for same-sex couples).^{4,24}

Methods

Design

Data come from the *Generations* study, the first national probability sample of sexual minority adults in the United States collected in 2016–2017, designed to study three distinct age cohorts: older cohort ($n=474$, 31.5%, ages 52–59); middle cohort ($n=369$, 24.5%, ages 34–41); and youngest cohort ($n=664$, 44.1%, ages 18–25).

The sample was drawn by Gallup, Inc., using a dual-frame sampling procedure. First, in a telephone interview (both landline and cell phone, part of the Gallup Daily Tracking Survey (GDTS), a daily national probability sample of 1000 adults 18 years of age and older), participants were asked the following question: “Do you, personally, identify as lesbian, gay, bisexual, or transgender?” Those responding affirmatively were screened for additional enrollment criteria. First, eligibility was limited to participants who identified as lesbian, gay, or bisexual (respondents who identified as transgender were screened for participation in a sibling study, *TransPop*).

Eligibility was also limited to the three age cohorts of interest; identification with the three largest U.S. racial and ethnic groups (Black/African American, Hispanic/Latino, or White, or multiple racial/ethnic identities that included at least one of those three) to allow sufficient numbers of participants for statistical power; and those who were English speaking with a fifth grade education or above to ensure questionnaire self-administration.

Eligible participants were invited to participate in the *Generations* Study; the survey was sent to those who agreed by e-mail or mail, and participants consented either online or through written response with their returned mail survey. A total of 1518 participants completed the survey; 11 respondents were removed from the analysis because they identified as heterosexual on the survey (although they had identified with a nonheterosexual identity on the GDTS telephone interview; analytic sample $n=1507$). The study procedures and respondents’ protections were reviewed and approved by the Institutional Review Boards of the University of California, Los Angeles, and Gallup, Inc.

Details of the sample design and methods have been reported elsewhere,²⁴ and reflected the following distributions from responses to the GDTS for race/ethnicity: Black/African American ($n=235$, 15.6%), White ($n=977$, 64.8%), and Hispanic/Latino ($n=295$, 19.6%).

On the *Generations* survey, participants were asked to report their current sexual and gender identities. For sexual identity,

participants were asked “Which of the following best describes your current sexual orientation?”: straight/heterosexual ($n=1$, 0.7%, excluded from the analytic sample), lesbian ($n=325$, 21.6%), gay ($n=508$, 33.7%), bisexual ($n=493$, 32.7%), or another sexual identity (queer, same-gender loving, or an “other” and write-in option, $n=181$, 12.0%). For gender identity, participants were asked, “If you had to choose only one of the following terms, which best describes your current gender identity?”: woman ($n=741$, 49.2%), man ($n=672$, 44.6%), and nonbinary/genderqueer ($n=94$, 6.2%).

Participants were primarily in urban metropolitan areas (88%), based on the United States Department of Agriculture Rural/Urban Commuting Area classification of home address zip codes (*metropolitan areas* = 1 to *rural areas* = 10). About one-fourth of participants had a college degree (26%). The median value for household income was between \$48,000 and \$59,999.

Measures

Alcohol abuse was measured with the Alcohol Use Disorders Identification Test-Concise.²⁵ Items included the following: “How often do you have a drink containing alcohol?” (*never*=0 to *4 or more times a week*=4); “How many standard drinks of alcohol do you have on a typical day?” (*none/1 or 2*=0 to *10 or more*=4); and “How often do you have six or more drinks on one occasion?” (*never*=0 to *daily or almost daily*=4). A sum score of the three items was calculated (range: 0–12, mean = 2.79, standard deviation [SD] = 2.28).

Drug abuse was measured with the Drug Use Disorders Identification Test,²⁶ which assesses frequency of use as well as problems related to use of drugs such as marijuana, methamphetamine, crack, heroin, ecstasy, gamma hydroxybutyrate, and pills such as sleeping pills and painkillers (eight of the items ranged from *0 or never*=0 to *Daily/almost daily or 4 times a week or more often*=4). One item assessed the number of times drugs were used on a typical day (*0*=0 to *7 or more*=4); the remaining two items assessed if someone had been hurt or close others worried about participants’ drug use (*No*=0, *Yes, but not over the past year*=2, and *Yes, over the past year*=4). A sum score of the 11 items was calculated (range: 0–35, mean = 3.33, SD = 5.51; $\alpha=0.86$).

Four single-item questions from the Centers for Disease Control and Prevention’s Behavioral Risk Factor Surveillance Survey assessed self-reported health in the past 30 days, including General health (*poor*=0 to *excellent*=4); the number of days of poor physical health and poor mental health; and the number of disability days due to poor physical or mental health.²⁷ Psychological distress was measured with the Kessler-6 (K6).²⁸ The K6 assessed the frequency of six symptoms (i.e., “feeling nervous,” “hopeless,” “restless or fidgety,” “so depressed that nothing could cheer you up,” “that everything was an effort,” and “worthless”) of psychological distress in the past 30 days (*None of the time* = 0 to *All of the time* = 4). A sum score of the six items was calculated (range: 0–24, mean = 7.65, SD = 0.46; $\alpha=0.89$).

General happiness was measured with one item (*not too happy*=0 to *very happy*=2).²⁹ Social well-being was measured with the Social Well-Being Scale, a sum score of 15 items (e.g., “My community is a source of comfort,” “I believe that people are kind,” “I have something valu-

able to give to the world”); *Strongly disagree*=1 to *Strongly agree*=7; range: 1.73–6.87, mean = 4.66, SD = 0.91, $\alpha=0.82$).³⁰ General life satisfaction was measured with the Satisfaction with Life Scale,³¹ a sum score of five items: (e.g., “In most ways, my life is close to my ideal,” “I am satisfied with life”); *Strongly disagree*=1 to *Strongly agree*=7; range: 1–7, mean = 4.33, SD = 1.63, $\alpha=0.91$).

Analytic approach

Weighted linear regressions were conducted, with cohort, sexual identity, gender identity, race/ethnicity, urbanity, college education, and household income included as sociodemographic predictors for health outcomes. General health and happiness were ordinal, but with sample size >500, the distribution of the outcomes does not matter for linear regression.³² Missing data were handled with multiple imputation using the *mice* package in R.³³ When omnibus tests of significance were different than zero, pairwise comparisons were done between cohorts.

Results

Results are presented in Table 1. There were no cohort differences for alcohol or drug abuse. The middle and older cohorts did not differ in general health, but each had worse general health compared with the younger cohort. The number of poor physical health days was statistically higher for each sequential cohort, with the youngest cohort reporting the fewest days of poor physical health. There were no cohort differences in disability days attributed to physical or mental health.

Conversely, a distinctly different pattern was evident for mental health across cohorts. The older cohort reported fewer days of poor mental health compared with the younger cohort; the middle cohort did not differ from either younger or older cohorts in days of poor mental health. Furthermore, psychological distress was statistically lower across each sequential cohort age, with the youngest cohort showing the most psychological distress. Finally, there were no cohort differences in general happiness, social well-being, or life satisfaction.

There were several differences across sexual identity groups. Bisexual people were more likely to report scores that met the criteria for drug abuse compared with gay/lesbian people. Participants with bisexual or other sexual identities also showed worse general and mental health. People who reported bisexual identities reported less happiness, social well-being, and life satisfaction than gay/lesbian people.

Regarding sociodemographic group comparisons, men reported better general health and fewer days of poor physical and mental health compared with women. There were no differences between men and women in positive well-being. People with nonbinary identities reported worse general health and more psychological distress, and more days of poor physical and mental health compared with women; they also reported consistently less positive well-being compared with women. There were also few differences across racial/ethnic groups, although compared with White sexual minority adults, Black/African American sexual minority adults reported less happiness, less social well-being, and less life satisfaction. Those with a college education reported more alcohol problems, yet better general health across all

TABLE 1. DEMOGRAPHIC DIFFERENCES IN SUBSTANCE ABUSE, PHYSICAL AND MENTAL HEALTH, AND POSITIVE WELL-BEING OUTCOMES

	Alcohol abuse ^a		Drug abuse ^a		General health		Days of poor physical health		Days of poor mental health		Days of health disability		Psychological distress ^a		General happiness		Social well-being ^a		Life satisfaction ^a	
	b	(SE)	b	(SE)	b	(SE)	b	(SE)	b	(SE)	b	(SE)	b	(SE)	b	(SE)	b	(SE)	b	(SE)
Cohort— younger (ref.)																				
Middle	0.15	(0.08)	-0.45	(0.45)	-0.29***	(0.07)	2.34** ^b	(0.62)	-1.34	(0.80)	0.98	(0.76)	-1.46*** ^b	(0.43)	-0.04	(0.05)	-0.02	(0.07)	-0.12	(0.12)
Older	-0.009	(0.09)	-0.72	(0.42)	-0.43***	(0.08)	3.83*** ^b	(0.68)	-2.49**	(0.77)	0.76	(0.66)	-2.91*** ^b	(0.39)	-0.04	(0.05)	0.02	(0.07)	-0.01	(0.12)
Sexual identity— gay/lesbian (ref.)																				
Bisexual	0.11	(0.08)	1.26*	(0.49)	-0.25**	(0.08)	1.05*	(0.54)	3.05***	(0.82)	1.95**	(0.64)	1.85***	(0.41)	-0.14**	(0.05)	-0.17*	(0.07)	-0.32**	(0.11)
Other	0.18	(0.10)	1.35*	(0.61)	-0.29*	(0.12)	1.03	(0.75)	3.64**	(1.24)	2.96***	(0.96)	1.26*	(0.59)	-0.06	(0.07)	0.07	(0.08)	0.02	(0.17)
Gender— woman (ref.)																				
Man	0.17*	(0.07)	0.75	(0.45)	0.23***	(0.07)	-0.87*	(0.48)	-1.57*	(0.72)	-0.62	(0.57)	-0.44	(0.36)	-0.02	(0.04)	0.11	(0.06)	-0.16	(0.10)
Nonbinary/genderqueer	-0.19	(0.11)	0.22	(0.71)	-0.36*	(0.15)	4.11***	(1.16)	3.37*	(1.47)	2.04	(1.21)	2.52***	(0.69)	-0.34***	(0.08)	-0.24*	(0.11)	-0.78***	(0.20)
Race/Ethnicity— White (ref.)																				
Black/African American	-0.09	(0.09)	0.96	(0.52)	0.01	(0.09)	0.04	(0.66)	-0.86	(0.94)	-1.11	(0.74)	-0.26	(0.50)	-0.11*	(0.05)	-0.23**	(0.08)	-0.46***	(0.14)
Hispanic/Latino	-0.05	(0.08)	0.81	(0.54)	-0.15	(0.08)	0.52	(0.62)	0.28	(0.86)	-0.03	(0.70)	-0.03	(0.42)	-0.02	(0.05)	-0.03	(0.07)	-0.04	(0.12)
Rural/urban	0.001	(0.02)	-0.11	(0.08)	0.004	(0.02)	0.07	(0.14)	-0.11	(0.19)	-0.21	(0.14)	-0.19*	(0.09)	0.01	(0.01)	-0.01	(0.02)	0.02	(0.03)
Education— no college degree (ref.)																				
College degree	0.24***	(0.06)	-0.44	(0.34)	0.30***	(0.06)	-1.38***	(0.44)	-1.66**	(0.60)	-1.39*	(0.54)	-1.24***	(0.30)	0.13***	(0.04)	0.28***	(0.05)	0.30**	(0.10)
Household income	0.001	(0.01)	-0.16*	(0.07)	0.05***	(0.01)	-0.29**	(0.09)	-0.60***	(0.13)	-0.39**	(0.12)	-0.40***	(0.06)	0.03***	(0.01)	0.08***	(0.01)	0.16***	(0.02)

All outcomes were predicted using linear regression. For each independent variable, the *b* from the linear regression is on the first row and the SE is on the second row.

^aThe alcohol abuse, drug abuse, psychological distress, social well-being, and life satisfaction outcomes were standardized, so coefficients should be interpreted as a one-SD increase/decrease.

^bRows with the same letter indicate differences between the middle and older cohort.

p* < 0.05; *p* < 0.01; ****p* < 0.001.

b, beta; SD, standard deviation; SE, standard error.

health indicators, and more happiness, higher social well-being, and more life satisfaction. The only rural/urban difference for sexual minority health and well-being was that people living in rural areas reported somewhat less psychological distress.

Discussion

In this first national probability sample of sexual minority U.S. adults, cohort differences were found for physical and mental health. The younger cohort was physically healthier, but had worse psychological health compared with both middle and especially older cohorts. The physical health results suggest a pattern consistent with aging (where physical health tends to deteriorate with older age). Studies of mental health over the life span suggest a U-shaped pattern of mental health over the life cycle;³⁴ the mental health differences across the middle and older cohorts are broadly consistent with the pattern that after mid-life, mental health improves as people age.³⁵ However, the findings for the younger cohort are inconsistent with the notion that sexual minority mental health for younger cohorts might be advantaged compared with older cohorts following legal and sociopolitical changes of recent decades.

Thus, even after significant advances for legal and social recognitions for sexual minority people, the results in this article are consistent with persistent stigma or minority stress.¹ Recent evidence points to a “developmental collision” that occurs as sexual minority youth from recent cohorts come out at younger ages, during the adolescent developmental period associated with normative expectations and social regulation,⁶ including, for example, evidence of higher rates of school-based victimization among sexual minority people from more recent cohorts.³⁶ The results in this article indicate that, at least across this snapshot in time, mental health status is worse—not better—for younger cohorts of sexual minority adults.

Notably, there were no cohort differences in substance abuse or measures of positive well-being. Despite differences in alcohol use patterns across the life course among sexual minority people,³⁷ as well as changes in LGB-specific cultures and spaces related to alcohol,³⁸ it is perhaps notable that there were more similarities than differences in alcohol and drug abuse across age cohorts. Furthermore, although there was a clear (but largely unexpected) pattern of cohort differences in mental health, positive well-being was consistent across cohorts. Indicators of resilience and health deserve further attention as they have been largely overlooked in the literature.¹²

These results contribute to studies that compare health status among sexual minority subgroups. Given consistent reports of higher substance use among bisexual adults and among sexual minority women, the null findings with respect to sexual identity as well as gender identity for alcohol abuse are notable. However, most studies typically compare bisexual and lesbian women with heterosexual women rather than compare them to each other.¹⁷ The subgroup that reported sexual identities outside the LGB umbrella showed worse general and mental health; this small group is itself diverse (including sexual minority people who chose queer, same-gender loving, asexual, pansexual, or other labels, as well as those who reject labels all together) and deserves further investigation.

The pattern of lower scores on positive well-being among bisexual people mirrors a recent prospective study that showed gay and lesbian (and heterosexual) adults’ life satisfaction increased across age, whereas there was no increase for bisexual adults.³⁹ In general, these patterns point to a health advantage for sexual minority people with monosexual (gay or lesbian) sexual identities.

Sociodemographic differences comparing men and women were consistent with the general literature for psychological distress and general health.^{40,41} However, this study identified poorer physical and psychological health and consistently less positive well-being for people who reported nonbinary gender identities (although no difference in substance abuse). We found notably few differences based on race/ethnicity, except in the area of positive well-being, findings that are consistent with the general population for Black/African Americans.⁴² Patterns for college education mirror those in the general population.⁴³ The finding of less psychological distress for people living outside of metropolitan areas is inconsistent with several regional studies that find higher rates of depression among rural compared with urban sexual minority people.²²

Finally, our inclusion of health and well-being measures is a needed expansion of the current literature. Future research is needed to better understand how and why these constructs may differ for sexual minority people, and among specific subgroups of sexual minority people.

Limitations

Given the study design, an important limitation is that we are unable to disentangle age, period, and cohort effects, which makes it difficult to make definitive statements about whether health status differences reflect maturation or historically specific social determinants. For example, in the pattern of results for mental health, it is unclear whether cohort differences may be explained by aging (and a mental health advantage for the oldest cohort) or the shifting social environment for sexual minority people, including both greater visibility and acceptance,² as well as victimization³⁶ (and the clear mental health disadvantage) for the younger cohort. Prospective studies that follow cohorts of sexual minority people for substantial periods of time are needed to parse out age, period, and cohort effects, and better understand whether and how social changes have altered sexual minority population health.

Although the study has the advantage of being the first national probability sample in the United States designed to understand sexual minority health, the sample was limited to three age cohorts, and because of analytic feasibility, to the three largest racial/ethnic groups in the United States. Although we found few racial/ethnic group differences in these analyses, future large-scale, probability samples of U.S. sexual minority people should maximize diversity across racial and ethnic groups for investigations across these and other domains of health and well-being. Although the sociodemographic patterns we report in this article are a contribution to the sexual minority health literature, further stratification by sociodemographic characteristics (in particular, sexual orientation subgroups, gender identity, and race/ethnicity) would further contribute to understanding sexual minority health.

Conclusion

In the first U.S. national probability sample of sexual minority health, the status of sexual minority health and well-being appears largely more similar than different across age cohorts. Thus, although there have been significant legal and social changes for sexual minority people over recent decades, minority stress does not simply disappear, and those changes have not resulted in notably different positive health patterns for the younger cohort. The pattern of cohort differences across domains of health appears largely consistent with aging-related explanations; at the same time, mental health findings for the younger cohort are inconsistent with expectations of improvements for younger sexual minority adults due to increasing societal acceptance.

Taken together, these results indicate that legal and social changes for sexual minority adults over recent decades do not appear to have substantially changed the status of sexual minority health and well-being across generations. Furthermore, compromised mental health in the early life course creates trajectories of vulnerability,^{44,45} pointing to the need for mental health prevention and intervention, especially among younger cohorts of sexual minority people.

Authors' Contributions

I.H.M., D.M.F., P.L.H., M.L., S.T.R., and B.D.M.W. designed and acquired the data; all authors conceptualized the study; and S.T.R., A.B.M., and J.N.F. operationalized the analyses and wrote the first draft of the article. A.L. and A.B.M. conducted analyses. All authors contributed to subsequent drafts of the final article and all co-authors reviewed and approved the article before submission.

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The *Generations* investigators are I.H.M. (Principal Investigator), D.M.F., P.L.H., M.L., S.T.R., and B.D.M.W. (Co-investigators, listed alphabetically).

Disclaimers

The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health or those of the Centers for Disease Control and Prevention.

Author Disclosure Statement

No competing financial interests exist.

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