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Intersectionality and Health Inequities for Gender Minority Blacks in the U.S.

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Abstract

Introduction—Gender minority blacks represent the intersection of multiple marginalized populations that experience severe health inequities in the U.S. However, few studies focus on the unique health experiences of this multiply disadvantaged population. This study quantifies the health inequities experienced by gender minority blacks in the U.S. using an intersectional framework.

Methods—This cross-sectional study analyzed data in 2018/2019 from the Behavioral Risk Factor Surveillance Survey including all cisgender black, gender minority black, and gender minority white survey respondents who completed the gender identity module between 2014 and 2018. Investigators compared demographics, healthcare access, behavioral risk factors, chronic conditions, and perceived health status of gender minority blacks with cisgender blacks and gender minority whites.

Results—In the primary analysis of weighted survey data, gender minority blacks were more likely to report experiencing severe mental distress (AOR=1.99, 95% CI=1.14, 3.47, p=0.02), longer periods of being physically or mentally unwell (adjusted RR=1.36, 95% CI=1.17, 1.59, p<0.001), and longer periods of activity limitations due to poor health (adjusted RR=1.53, 95%

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CI=1.01, 1.41, p=0.003), than cisgender blacks. In a matched analysis, gender minority blacks had worse self-reported health than both cisgender blacks (OR=1.32, 95%: CI=1.05, 1.67, p=0.02) and gender minority whites (OR=1.53, 95% CI=1.15, 2.04, p=0.003).

Conclusions—Gender minority blacks have health experiences that are distinct from both the cisgender black and gender minority populations with which they intersect. Health policies and programs, including data collection efforts, must specifically consider this multiply marginalized population to effectively advance health equity.

INTRODUCTION

Gender minority (GM) health inequity is well documented in the literature. Here, GM is defined as individuals who do not identify with the gender they were assigned at birth. This group includes transgender individuals who identify with a binary gender, as well as other gender diverse people (those who identify as between or outside of the male–female gender continuum).[1,2] GM individuals are more likely than cisgender people to experience poor mental health outcomes, including anxiety, depression, suicidal ideation, and substance use disorder,[3–6] and they are also at increased risk for adverse cardiovascular outcomes.[7,8] Similarly, racial/ethnic minority groups are more likely to experience poor health outcomes than their white peers. Blacks in the U.S. have a higher prevalence and mortality burden for cardiovascular disease,[9,10] diabetes,[11,12] kidney disease,[13,14] and asthma,[15] among other conditions.

Despite these demonstrated health inequities for blacks and GMs, few studies have focused on the unique experiences of individuals who belong to both groups. Intersectionality, a concept from critical race theory developed by legal scholar Kimberlé Crenshaw,[16] makes the argument that to fully understand the unique experience of persons who exist at the intersection of multiple axes of inequality, such as race and gender, requires explicit focus on that multiply marginalized group. Lisa Bowleg[17] later expanded this framework to include sexual orientation. This framework makes clear that people with intersectional identities experience outcomes that are distinct from any single group and that examining blackness and GM status in isolation from each other may obscure important differences. In studies, GM blacks are often collapsed into one of the two larger groups or excluded altogether. Rare exceptions include studies of HIV prevalence, prevention, and treatment patterns among black sexual minorities and GMs, and studies of mental health outcomes in a cohort of black transgender veterans.[18–20]

This study uses data from the Behavioral Risk Factor Surveillance Survey (BRFSS). Previous studies using the BRFSS have examined health among GM populations[21–23]; however, these studies did not disaggregate outcomes by gender identity and race. Therefore, the objective of this study is to evaluate behavioral risk factors and health status for GM blacks compared with cisgender blacks and GM whites in a large, generalizable sample from across the U.S.

METHODS

Study Sample

The BRFSS is the largest continuously running health survey in the world and is administered annually by each state, the District of Columbia, and several U.S. territories in partnership with the Centers for Disease Control and Prevention (CDC).[24] In 2014, CDC began to offer states an optional module that asks about sexual orientation and gender identity (SOGI), allowing for self-reported identification of transgender and gender diverse survey respondents. Of note, the module uses a one-question format to assess gender identity as opposed to the more standard two-question format that asks about current gender identity and sex assigned at birth. Tate et al.[25] showed that the two-question format identifies nearly twice as many GM individuals and has fewer nonresponses than the one-question format. Therefore, although this study refers to people who did not endorse a transgender identity on the SOGI module as cisgender, it is important to note that the misclassification error introduced by the one-question approach means that a small fraction of the presumed cisgender population may actually belong to a GM group.

As of 2018, a total of 38 states and territories[a] had administered the SOGI module at least once, resulting in the largest probability sample to date of the U.S. transgender and gender diverse population. The original language of the BRFSS refers to male-to-female, female-to-male, and gender nonconforming transgender individuals; however, this paper uses “transmasculine”, “transfeminine”, and “other gender diverse respondents” to reflect the most current and inclusive terminology. For purposes of this study, these respondents were grouped into a single GM group to focus on health inequities that differ between GM and presumed cisgender individuals. BRFSS data were used to compare the demographics, distribution of risk factors, prevalence of chronic illness, and health-related quality of life of GM blacks to cisgender blacks and GM whites in the U.S.

Measures

For demographics, this study included age, education, employment, income, home ownership, marital status, veteran status, and sexual orientation. Reported risk factors included healthcare access, physical activity, tobacco use, and alcohol consumption. Additionally, starting in 2016, the BRFSS included a composite item for known HIV risk factors. This composite measure includes past-year injection drug use, treatment for sexually transmitted infections, history of sex work, unprotected anal sex, or more than four sexual partners.[26] These distinct HIV risk factors are treated as a single, binary survey item with the presence of at least one of these factors treated as a positive response. Because of the known complexity of these risk factors and their drivers, such an aggregate measure, is limited; therefore, the analyses based on this item are exploratory. For health conditions, analyses include self-report of cardiovascular disease (myocardial infarction, angina, coronary heart disease, and stroke), pulmonary disease (asthma, chronic obstructive

[a]Arizona, California, Colorado, Connecticut, Delaware, Florida, Georgia, Hawaii, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maryland, Massachusetts, Minnesota, Mississippi, Missouri, Montana, Nevada, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, Rhode Island, South Carolina, Tennessee, Texas, Vermont, Virginia, Washington, West Virginia, Wisconsin, Wyoming, Guam

disease, emphysema, and chronic bronchitis), arthritis (including rheumatoid arthritis, gout, lupus, or fibromyalgia), depressive disorders (including major/minor depression and dysthymia), and diabetes. Lastly, this study used the four items that measure health-related quality of life (HRQOL-4) embedded in the BRFSS to assess overall health across groups. The HRQOL-4 is a validated measure of self-perceived health status that serves as a reliable proxy for symptom burden of acute and chronic illnesses.[27] It asks respondents how they would rate their general health (*excellent*, *very good*, *good*, *fair*, or *poor*) and how many of the past 30 days have they experienced: (1) poor physical health, (2) poor mental health, or (3) limitations in their daily activities due to poor mental or physical health. Based on CDC recommendations, results from the HRQOL-4 are reported as: (1) fair or poor general health (2) severe mental distress, defined as ≥14 days of poor mental health of the past 30 days, (3) mean total number of poor physical or mental health days, and (4) mean activity-limited days.[27]

Statistical Analysis

Summary statistics for demographics, risk factors, and health conditions are reported as raw frequencies and design-weighted percentages. HRQOL-4 outcomes as well as risk factors and health conditions that differed across groups in unadjusted analyses were analyzed in regression models adjusted for state, number of chronic medical comorbidities (zero, one, two or more), and age. The authors did not adjust for marital status, income, or education status because these are factors that potentially lie downstream in the path between minority stress experienced by GMs and racial minorities and adverse health outcomes.[28,29] Zero-inflated negative binomial regression, binary logistic regression, and cumulative logistic regression were used to compare count, dichotomous, and ordinal measures, respectively, across the three groups. All percentages, regression estimates, CIs, and *p*-values are based on weighted analyses that account for the complex sampling method of the BRFSS. Specifically, CDC provides weights with the BRFSS data files to ensure representative population proportions and to adjust for selection probability and non-response. To obtain the final weights for the pooled data in this analysis, the sum of the weights for each jurisdiction (state or territory) across all 5 years was divided by the number of years (1–5) in which the jurisdiction fielded the module. The data with the resulting weights were assumed to be representative of the state or territory in which they were collected.

The use of probabilistic samples to analyze data for GM populations is controversial.[30,31] Cicero and colleagues[31] detailed how the BRFSS survey weights may introduce misclassification bias into analyses with GM populations and suggested a matched case-control analysis as an alternative that avoids this source of systematic bias. Therefore, as a secondary analysis, the authors also compared healthcare access, risk factors, medical conditions, and HRQOL metrics in analyses with exact matching for GM blacks with cisgender blacks and GM whites, matching on age, state, and multiple comorbidity status. For binary metrics, conditional logistic regression was used to account for matching; for ordinal and count outcomes, the authors used cumulative logistic and zero-inflated negative binomial regression models, respectively, with fixed effects for matched sets. All statistical tests were performed with a type I error rate (α) of 0.05. All design-weighted analyses were conducted in Stata, version 16, and matched analyses were conducted in R, version

3.5.2. This study used de-identified, publicly available data and was therefore not required to submit for IRB review or exemption.

RESULTS

There were 74,295 cisgender black, 427 GM black, and 2,724 GM white survey respondents who completed the SOGI module of the BRFSS between 2014 and 2018. Of the GM blacks, 202 were transfeminine, 148 were transmasculine, and 77 identified as another gender diverse group. Among GM whites, 1,258 were transfeminine, 901 were transmasculine, and 565 were another gender diverse group. Appendix Table 1 shows the weighted counts.

Table 1 shows sociodemographic factors for cisgender blacks, GM blacks, and GM whites. Compared with GM whites or cisgender blacks, GM blacks were younger, reported lower annual incomes, were more likely to report being unable to work, and were less likely to report owning a home. GM blacks were more likely to live in a household with a child aged <18 years than GM whites, but less likely than cisgender blacks. Education and veteran status did not differ across groups. Sexual orientation varied between groups, with GM blacks being more likely to identify as bisexual than cisgender blacks, but less likely than GM whites. The majority of respondents in each group identified as heterosexual, with a weighted 95.7% for cisgender blacks, 72.7% for GM blacks, and 67.1% for GM whites.

Tables 2 and 3 show the primary analysis of healthcare access, risk factors, health conditions, and HRQOL based on counts, and design-weighted percentages (Table 2) and adjusted regression models (Table 3). As shown in Table 2, there was no difference in reporting having insurance coverage, a regular provider, a checkup in the past year, or financial barriers to care among cisgender blacks, GM blacks, and GM whites. The number of comorbid medical conditions differed across groups (p=0.04), with GM blacks more likely than cisgender blacks to report two or more comorbid medical conditions (26.7% vs 21.1%) but comparable to GM whites (26.7% vs 26.9%). Alcohol consumption differed across groups, with GM blacks more likely to report no alcohol consumption (66.2%) compared with cisgender blacks (55.6%) or GM whites (55.0%); however, these differences were not statistically significant when adjusted for age, state, and number of comorbid conditions (Table 3). Based on the exploratory analysis with the composite HIV risk factor question, GM blacks were more likely to self-report HIV risk factors (27.5%) than cisgender blacks (8.4%) or GM whites (8.2%). In adjusted logistic regression models, GM blacks had greater than three times the odds (AOR=3.42) of reporting any HIV risk factors compared with cisgender blacks and greater than four times the odds compared with GM whites (AOR=4.59), though these results were not statistically significant. Among chronic medical conditions, only cardiovascular disease (p=0.002) and cancer (p<0.001) differed across groups (Table 2), but these differences were not statistically significant in adjusted analyses. GM blacks were more likely to report depressive disorders than cisgender blacks (28.5% vs 15.6%) but less likely than GM whites (28.5% vs 37.0%). After adjustment, GM blacks had twice the odds of reporting a depressive disorder compared with cisgender blacks (AOR=2.03).

Table 3 also shows the HRQOL metrics for each of the groups. In adjusted analyses, there was no difference in odds of reporting fair or poor health for GM blacks compared to cisgender blacks or GM whites. GM blacks had increased odds of severe mental distress compared with cisgender blacks (AOR=1.99), and similar odds to GM whites. GM blacks on average reported 36% more mentally or physically unhealthy days than cisgender blacks (adjusted RR=1.36) and no difference from GM whites. Similarly, GM blacks reported on average 53% more activity-limited days than cisgender blacks (adjusted RR=1.53) and no difference from GM whites.

Table 4 shows the secondary analysis with exact matching of GM backs to cisgender blacks and GM whites on age, state, and number of comorbidities. The results of the secondary analyses showed more statistically significant findings than the primary weighted analysis with GM blacks having significantly lower odds of having a regular care provider, increased odds of cardiovascular disease history, and increased odds of worse perceived health than either comparison group. Also, relative to GM whites, GM blacks had significantly increased odds of financial barriers to care, and increased odds of a history of diabetes. Compared with cisgender blacks, GM blacks had significantly increased odds of being a current smoker, self-reporting at least one HIV risk factor captured by the BRFSS composite item, and having a history of a depressive disorder. Lastly, relative to cisgender blacks, GM blacks had worse HQRL outcomes across all measures including days of being unwell, odds of severe mental distress, and total activity-limited days.

DISCUSSION

This study is among the first to compare the health status of GM blacks to cisgender blacks and GM whites. Designing this study using an intersectional framework allows capturing of the unique inequities faced by this multiply marginalized population. This study found that, in some cases, inequities experienced by GM blacks are more similar to cisgender blacks, as with diabetes, whereas in other cases they are more similar to GM whites, as with HIV risk factors and depressive disorders. For some aspects of health, such as cardiovascular disease and self-reported health, GM blacks fared worse than both cisgender blacks and GM whites. This underscores that studies examining racial or gender health inequity are incomplete without an intentional investigation of intersectional groups. The inequities identified in this analysis are best understood in the context of the minority stress framework.[2,28,32,33] This framework explains how external factors, such as discrimination and structural barriers to health care, and internal factors, such as internalized stigma and anticipated rejection, drive poor health outcomes among minority groups.

Brown and Jones[18] previously investigated racial inequities between black and white transgender patients treated at the Veterans Health Administration, where they found that black transgender veterans had a significant reduction in odds of receiving a diagnosis of depression. This is consistent with estimates from the present study, though here the comparison was not statistically significant. However, their results are not directly comparable because of the limited generalizability of the veteran population as well as their use of diagnosis codes to identify GM individuals. Using diagnosis codes is most likely to capture people who are receiving gender-affirming care, meaning that individuals with

limited healthcare access or who are not pursuing gender-affirming care may not be captured by this approach. Further, Brown and Jones did not compare black transgender patients to black cisgender patients, so their study did not fully parse the differences between GM blacks and the marginalized groups that this population represents.

Most previous studies of GM blacks have focused on HIV and other sexually transmitted infections. These studies demonstrate that GM blacks have higher prevalence of HIV and HIV risk behaviors (e.g., engagement in sex work, unprotected anal sex, and intravenous drug use).[26,34] Unfortunately, the HIV risk factor question of the BRFSS is a composite that aggregates multiple risk behaviors into a single metric, which may obscure between-group differences. The current study found estimates that show a substantial elevation of aggregate HIV risk behaviors among GM blacks, though these findings were not statistically significant in the primary analysis. This is likely due to a lack of power, because the HIV risk question was only administered during part of the study period and suffers from likely nonresponse due to social desirability bias. Regarding the validity of using these risk behaviors to assess HIV risk, the BRFSS does not account for protective behavior such as the use of pre-exposure prophylaxis, which would mitigate the risk of HIV infection. Because pre-exposure prophylaxis awareness and use among GM blacks is low, however, condomless anal sex and transactional sex remain reasonable measures of HIV risk for this group.[19]

Limitations

This study has a few limitations. Firstly, the one-question format used by the BRFSS for gender identity introduces misclassification error, with some GM respondents falsely labeled as cisgender. However, this error biases results toward the null hypothesis, thereby making the per hypothesis estimates of inequities more conservative. Secondly, by grouping all GM individuals together in the present analysis, this study may obscure inequities that are specific to transmasculine, transfeminine, and other gender diverse populations. Future studies focused on more narrow sections of the GM population will be necessary to define these inequities with better resolution.

The use of probabilistic samples for studying the transgender population is controversial.[30,31] Previous studies using BRFSS data have failed to replicate findings from nonprobability GM samples such as reports from the National Transgender Discrimination Survey and the U.S. Transgender Survey.[6,30,31] With BRFSS data, estimates of inequities may be attenuated by suboptimal sampling of the transgender population, suggesting that the estimates from this design-weighted analysis may be conservative and that inequities faced by GM blacks may be more severe.[30,31] This is further supported by the secondary analysis that used a matching procedure in lieu of the survey weights and found greater inequities than the weighted analysis. Suboptimal sampling of transgender populations in landline—based surveys like the BRFSS might also be further exacerbated by socioeconomic barriers experienced by this population, which include a higher degree of housing insecurity and homelessness.[35]

Lastly, this study did not adjust for testing multiple hypotheses. Because this work centers an intersectional, understudied population, the authors chose a strategy that was sensitive

to identifying health inequities at the risk of some false positives. Therefore, future studies of this population with different data will be necessary to confirm the results presented here. Despite these limitations, this study is strengthened by the large proportion of U.S. jurisdictions that have administered the SOGI module in the BRFSS, and, to the authors' knowledge, it is the largest and most representative study of demographics and risk factors among GM blacks in the U.S. to date.

CONCLUSIONS

Blacks who are GMs have unique health experiences that are distinct from the GM and black populations with which they intersect. This study demonstrates the need for a specific focus on the needs and experiences of intersectional populations in health surveillance data, public health programs, and policy interventions. Future studies are needed to understand the drivers of health inequities for GM blacks. This study may also serve as a framework for future studies that center other GM populations with multiple marginalized identities, including Latinx and multiracial/ethnic GM groups.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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LAL conceptualized the study, conducted the statistical analyses, interpreted the results, and wrote the initial draft of the manuscript. ND helped interpret the results and critically revised the manuscript. KEB curated the data, consulted on the statistical analyses, helped interpret the results, and critically revised the manuscript.

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Table 1.

Sociodemographic Characteristics for Cisgender Black (CGB), Gender Minority Black (GMB), and Gender Minority White (GMW) Adults in the U.S.

Sociodemographic factor	CGB, n (%) n=74 295	GMB, n (%) n=427	GMW, n (%) n=2,724	*p*-value
Age, years				**<0.001**
18–24	4,561 (12.6)[a]	42 (20.2)	270 (23.7)	
25–34	8,313 (17.0)	48 (11.3)	259 (14.1)	
35–44	10,063 (18.0)	45 (13.4)	235 (10.6)	
45–54	13,262 (18.2)	77 (17.7)	426 (15.5)	
44–64	17,329 (17.3)	106 (22.8)	625 (16.2)	
≥65	20,757 (16.8)	109 (14.5)	909 (20.0)	
Education				0.30
Did not graduate high school	8,327 (14.3)	76 (18.8)	267 (13.5)	
Graduated high school	23,792 (31.2)	172 (36.4)	996 (34.6)	
Some college or technical school	21,029 (33.8)	104 (28.7)	750 (35.4)	
Graduated college or technical school	20,932 (19.9)	73 (16.2)	702 (16.5)	
Employment status				**0.002**
Employed	35,389 (54.9)	179 (46.0)	1,228 (49.0)	
Unemployed	4,995 (8.1)	31 (6.7)	161 (8.2)	
Homemaker, student, or retired	23,296 (25.1)	127 (25.5)	1,010 (31.2)	
Unable to work	9,969 (11.9)	84 (21.8)	304 (10.3)	
Annual income				**<0.001**
<$15,000	11,490 (17.2)	96 (28.1)	323 (14.1)	
$15,000–$24,999	15,201 (23.2)	100 (23.2)	489 (19.8)	
$25,000–$34,999	8,006 (12.3)	45 (16.0)	301 (11.9)	
$35,000–$49,999	8,795 (14.3)	40 (8.3)	318 (11.0)	
$50,000–$74,999	7,925 (12.8)	28 (6.5)	334 (13.7)	
≥$75,000	12,137 (20.2)	49 (17.9)	560 (29.5)	
Home ownership				**<0.001**
Own	37,983 (51.2)	181 (45.5)	1,789 (63.4)	
Rent	31,348 (41.5)	209 (46.0)	769 (26.8)	
Other arrangement	4,452 (7.3)	35 (8.4)	158 (9.9)	
Marital status				**<0.001**
Married or coupled	25,521 (35.6)	129 (35.3)	1,312 (46.6)	
Divorced, separated, or widowed	25,925 (25.3)	154 (25.0)	795 (20.0)	
Never married	22,389 (39.1)	142 (39.8)	604 (33.4)	
Child aged <18 years in household	23,627 (39.7)	112 (30.0)	504 (22.5)	**<0.001**
Veteran status	8,639 (10.6)	57 (12.9)	9,112 (11.9)	0.44
Sexual orientation				**<0.001**
Heterosexual	50,368 (95.7)	246 (72.7)	1,573 (67.1)	
Lesbian or gay	661 (1.7)	26 (14.2)	122 (9.1)	

Sociodemographic factor	CGB, n (%) n=74 295	GMB, n (%) n=427	GMW, n (%) n=2,724	*p*-value
Bisexual	853 (2.3)	28 (9.9)	229 (18.9)	
Other	251 (0.4)	10 (3.2)	78 (4.9)	

Note: Boldface indicates statistical significance ($p<0.05$). *P*-values are based on design-corrected F tests for the difference in weighted proportions across groups.

[a]Numbers are raw frequencies; percentages are calculated with design weights.

Table 2.

Healthcare Access, Risk Factors, and Health Conditions for Cisgender Black (CGB), Gender Minority Black (GMB), and GMW Adults in the U.S.

Variable	CGB, n (%) n=74,295	GMB, n (%) n=427	GMW, n (%) n=2,724	*p*-value
Healthcare access				
Insurance[a]	45,402 (84.6)	260 (84.6)	1,581 (86.4)	0.69
Regular provider[b]	62,522 (78.7)	338 (80.3)	2,305 (81.3)	0.34
Checkup in past year	62,295 (80.5)	359 (82.0)	2,098 (75.8)	0.09
Financial barriers to care	10,566 (16.8)	73 (21.7)	334 (16.3)	0.42
Risk factors				
Alcohol consumption				**0.01**
None	43,062 (55.6)	256 (66.2)	1,402 (55.0)	
Light to moderate[c]	20,955 (31.3)	93 (19.0)	809 (27.1)	
≥1 episode of binge drinking (≥4 drinks at 1 time) in past 30 days	7,108 (13.1)	48 (14.8)	431 (17.9)	
Current cigarette smoker	12,698 (18.2)	91 (18.0)	505 (20.7)	0.34
No physical exercise in the last 30 days	23,980 (30.7)	141 (33.0)	833 (20.2)	0.70
HIV risk factors[d]	856 (8.4)	13 (27.5)	39 (8.2)	**0.02**
Chronic medical conditions				
Cardiovascular disease	9,119 (9.0)	77 (17.9)	433 (13.5)	**0.002**
Diabetes	15,364 (15.2)	95 (19.7)	441 (12.4)	0.16
Kidney disease	2,397 (3.5)	18 (4.5)	94 (2.9)	0.59
Pulmonary disease	15,187 (20.4)	83 (24.2)	598 (23.8)	0.24
Arthritis	25,591 (25.8)	147 (29.1)	995 (30.2)	0.08
Cancer	5,944 (5.8)	26 (7.2)	452 (13.5)	**<0.001**
Multi-comorbidity status				
No chronic conditions[e]	31,916 (51.8)	187 (47.5)	1,062 (47.2)	**0.04**
1 chronic condition	21,301 (27.1)	109 (25.7)	782 (25.9)	
≥2 chronic conditions	21,068 (21.1)	131 (26.7)	880 (26.9)	
Depressive disorders	11,761 (15.6)	110 (28.5)	818 (37.0)	**<0.001**
Health-related quality of life				
Fair or poor health	18,837 (22.1)	128 (21.5)	681 (25.2)	0.26
Severe mental distress in last 30 days	8,733 (12.9)	83 (24.4)	501 (22.9)	**<0.001**
Total days mentally and physically unwell in past 30 days, mean (SE)	7.16 (0.04)	9.45 (0.57)	9.13 (0.23)	–
Activity limited days in past 30 days, mean (SE)	3.00 (0.28)	4.48 (0.44)	3.96 (0.16)	–

Note: Boldface indicates statistical significance ($p<0.05$). *P*-values are based on design-corrected F tests for the difference in weighted proportions across groups.

[a] Insurance data are based only on individuals 65 years or younger.

[b] Based on a positive response to the question *Do you have one person you think of as your personal doctor or healthcare provider?*

[c] Light to moderate drinking was defined as at least one and no more than 3 drinks at any time during the past 30 days.

[d] HIV risk factors include any one of the following in the past year: (1) history of injection drug use; (2) prior treatment for sexually transmitted diseases (STDs); (3) history of sex work; (4) unprotected anal sex; (5) or more than four sexual partners. Only 13,939 CGB, 68 GMB, and 521 GMW respondents answered the HIV risk factor question during the study period.

[e] Chronic conditions were defined as cardiovascular disease (angina, coronary artery disease, or history of myocardial infarction or stroke), diabetes, kidney disease, pulmonary disease (asthma, chronic obstructive disease, emphysema, and chronic bronchitis), arthritis (including rheumatoid arthritis, gout, lupus or fibromyalgia), or cancer.

Table 3.

Adjusted Analyses for Selected Risk Factors and Comorbidities Across Group

Variable	GMB relative to CGB		GMB relative to GMW	
	AOR (95% CI)	*p*-value	AOR (95% CI)	*p*-value
Risk factor/condition				
Alcohol consumption[a]	0.72 (0.43, 1.23)	0.24	0.59 (0.34, 1.03)	0.06
HIV risk factors[b]	3.42 (0.75, 15.65)	0.11	4.59 (0.92, 23.02)	0.06
Cardiovascular disease[b]	2.85 (0.97, 8.28)	0.06	1.92 (0.63, 5.88)	0.25
Cancer[b]	1.25 (0.33, 4.78)	0.74	0.50 (0.12, 2.03)	0.34
Depressive disorders[b]	2.03 (1.21, 3.38)	**0.01**	0.67 (0.38, 1.16)	0.15
Health-related quality of life, ARR (95% CI)				
Fair or poor health[b]	0.85 (0.49, 1.47)	0.56	0.77 (0.42, 1.41)	0.40
Severe mental distress in last 30 days[b]	1.99 (1.14, 3.47)	**0.02**	1.07 (0.59, 1.94)	0.82
Total days mentally and physically unhealthy in past 30 days[c]	1.36 (1.17, 1.59)	**<0.001**	1.11 (0.94, 1.32)	0.23
Activity limited days in past 30 days[c]	1.53 (1.16, 2.01)	**0.002**	1.24 (0.92, 1.68)	0.15

Note: Boldface indicates statistical significance ($p<0.05$). All analyses are adjusted for age, state, and number of comorbid medical conditions.

[a]AORs and interval are based on design-weighted cumulative logistic regression.

[b]AORs and intervals based on design-weighted binary logistic regression.

[c]Adjusted rate ratios (ARR) and intervals based on design-weighted zero-inflated negative binomial regression.

GMB, gender minority black; CGB, cisgender black; GMW, gender minority white.

Table 4.

Sensitivity Analysis Using Exact Matching

Variable	GMB relative to CGB		GMB relative to GMW	
	OR/RR (95% CI)	*p*-value	OR/RR (95% CI)	*p*-value
Healthcare access				
Insurance[a]	0.91 (0.66, 1.25)	0.55	0.77 (0.5, 1.18)	0.23
Regular provider[a]	0.75 (0.58, 0.97)	**0.03**	0.68 (0.49, 0.94)	**0.02**
Checkup in past year[a]	1.02 (0.77, 1.34)	0.90	1.6 (1.14, 2.25)	**0.01**
Financial barriers to care[a]	1.19 (0.92, 1.54)	0.20	1.48 (1.05, 2.07)	**0.02**
Risk factors				
Alcohol consumption[b]	0.90 (0.73, 1.11)	0.34	0.59 (0.45, 0.77)	**<0.001**
Current smoker[a]	1.30 (1.02, 1.65)	**0.03**	1.24 (0.91, 1.68)	0.17
No physical exercise in the last 30 days[a]	1.04 (0.84, 1.28)	0.71	1.01 (0.78, 1.31)	0.94
HIV risk factors[a]	3.32 (1.70, 6.51)	**<0.001**	1.77 (0.55, 5.66)	0.34
Chronic medical conditions				
Cardiovascular disease[a]	1.77 (1.30, 2.41)	**<0.001**	1.47 (1.00, 2.16)	**0.049**
Diabetes[a]	1.13 (0.85, 1.5)	0.41	2.02 (1.42, 2.87)	**<0.001**
Kidney disease[a]	1.15 (0.7, 1.91)	0.58	1.51 (0.78, 2.9)	0.22
Pulmonary disease[a]	0.84 (0.61, 1.15)	0.27	0.76 (0.51, 1.14)	0.189
Arthritis[a]	1.07 (0.8, 1.43)	0.65	1.21 (0.85, 1.7)	0.29
Cancer[a]	0.72 (0.47, 1.1)	0.13	0.23 (0.14, 0.39)	**<0.001**
Depressive disorders[a]	1.86 (1.47, 2.35)	**<0.001**	0.81 (0.6, 1.08)	0.15
Health related quality of life				
Fair or poor health[a]	1.32 (1.05, 1.67)	**0.02**	1.53 (1.15, 2.04)	**0.003**
Severe mental distress in last 30 days[a]	1.81 (1.41, 2.34)	**<0.001**	1.14 (0.84, 1.56)	0.40
Total days mentally and physically unhealthy in past 30[c] days	1.25 (1.10, 1.43)	**<0.001**	1.16 (0.99, 1.36)	0.07
Activity limited days in past 30 days[c]	1.23 (1.03, 1.48)	**0.02**	1.06 (0.84, 1.33)	0.64

Note: Boldface indicates statistical significance ($p<0.05$). All analyses are based on exact matching on age, state, and number of comorbid medical conditions.

[a]AORs and interval are based on conditional logistic regression.

[b]ORs and intervals based on cumulative logistic regression with fixed effects for matched sets.

[c]Rate ratios and intervals based on zero-inflated negative binomial regression with fixed effects for matched sets.

GMB, gender minority black; CGB, cisgender black; GMW, gender minority white.