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Abstract

Purpose: A lack of national data makes it difficult to estimate, but LGB adults appear to have a higher risk of cancer. Although limited research exists to explain the disparity, we aimed to explore potential differences in access to and utilization of health information and in cancer-related beliefs and behaviors.

Methods: We used data from the Health Information National Trends Survey 5, Cycle 1 conducted from January 25 through May 5, 2017. Using survey-weighted logistic regression, we explored potential differences in health information-seeking behavior, trusted sources of health care information, engagement with the health care system, awareness of cancer risk factors, cancer fatalism, cancer-related health behaviors, and historical cancer screening between 117 LGB and 2857 heterosexual respondents.

Results: LGB respondents were more likely to report looking for information about health or medical topics than heterosexual respondents (adjusted odds ratio [aOR]: 3.12; confidence interval [95% CI]: 1.07–9.06), but less likely to seek health information first from a doctor (aOR: 0.17; 95% CI: 0.06–0.50) after adjusting for age, race, and sex. LGB persons were less likely to report that they trust receiving health or medical information from friends and family and more likely to be worried about getting cancer (aOR: 2.30; 95% CI: 1.04–5.05).

Conclusions: Our findings indicate a growing need for the production of tailored cancer prevention and control materials for members of sexual minority groups. More work is needed to understand barriers that LGB populations face in accessing this health information and building informative social support networks.

Keywords: cancer-related health behaviors, cancer screening, health disparities, sexual minority

Introduction

COMPARED WITH HETEROSEXUAL FEMALES, lesbian females are at a higher risk of breast cancer^{1,2} and cervical cancer.³ Limited research exists on the link between sexual orientation and prostate cancer risk, but data suggest that gay males may have a lower prevalence of prostate cancer than heterosexual males.⁴ Overall, gay males are 1.9 times more likely to report a cancer diagnosis than heterosexual males.⁴ One possible explanation for increased cancer risk is that LGB persons are more likely than heterosexual persons to engage in health risk behaviors such as alcohol consumption and unprotected sexual behaviors.⁵ In addition, gay males and lesbian and bisexual females report higher rates of smoking than

heterosexual persons,⁵ resulting in higher incidence of some cancers.^{4,6} Although LGB persons may have increased risk factors for certain types of cancer, lack of nationwide data makes it difficult to estimate actual prevalence and disparities in the U.S. population.⁷

Disparities in the utilization of health care also disadvantage LGB persons.⁸ Cancer screening rates are lower in LGB populations than in heterosexual populations.^{6,9,10} Likewise, lesbian and bisexual females are more likely to have difficulty accessing care with a regular provider than heterosexual females.^{11,12} Other potential barriers to adequate health care for LGB individuals are both implicit bias¹³ and overt discrimination¹⁴ during health care encounters, which may lower trust in health care providers and the health care

system. Qualitative research on the role of trust related to LGB sexual orientation disclosure during health care encounters has indicated that microaggressions from providers or staff, and biases or omissions in health care intake forms, may cause LGB persons to question their relationships with providers and/or reduce their trust in the health care system as a whole.^{15,16}

Little is known about LGB persons and their health information-seeking behaviors related to cancer prevention. There is conflicting evidence about whether LGB persons are more or less likely to use the Internet to seek out health information.^{17,18} To our knowledge, no research exists about cancer-specific health information-seeking behaviors in LGB populations. Similarly, fatalistic cancer views have not been assessed specifically in healthy LGB populations or among LGB individuals diagnosed with cancer, and disparities in these fatalistic views have not been characterized. In the general population, cancer fatalism has been associated with being both unaware of and unengaged with cervical cancer screening.¹⁹ In addition, fatalism is associated with a reduced likelihood of having accurate beliefs about cancer screenings.²⁰

Using data from the 2017 Health Information National Trends Survey (HINTS), we examined awareness of cancer risk factors, as well as cancer-related health behaviors in LGB versus heterosexual persons. We also explored engagement with the health care system, trust in health information from various sources, health information-seeking and cancer-related information-seeking behaviors, cancer-related screening behaviors, and fatalistic views toward cancer in LGB versus heterosexual persons. These associations have not yet been examined within the most recent wave of HINTS and will serve to expand the literature on LGB disparities in cancer screening, health care engagement, and health behaviors, as well as provide new insights into LGB individuals' attitudes and beliefs toward the health care system and toward cancer.

Methods

Study design and data source

We performed a cross-sectional analysis utilizing data from HINTS, a previously collected nationally representative sample of the noninstitutionalized U.S. adult population. Since 2003, HINTS has been administered by the National Cancer Institute to provide information about how cancer risks are perceived and assess cancer information access and usage. Sexual orientation was added as a questionnaire item beginning in HINTS 5, Cycle 1, therefore, this secondary analysis is restricted to that sample from whom data were collected from January 25 through May 5, 2017. This study was exempt from institutional review board review due to the use of publicly available deidentified data. Individuals represented in the public use data set could not be identified, directly or through identifiers linked to the respondents.

The study design of HINTS has been reported elsewhere.²¹ In brief, the sampling strategy consisted of a two-stage design to represent the entire U.S. population. In the first stage, a stratified sample of addresses was selected from the U.S. Postal Service file of residential addresses. In the second stage, one adult was selected within each sampled household. Potential respondents were mailed a questionnaire

and 3191 individuals submitted complete questionnaires, generating a response rate of 25%. Our analytic study population included respondents with valid responses to the questionnaire items regarding sexual orientation identity, age, sex, and race ($n=2974$). Therefore, this analysis excluded those individuals who may be nonbinary or nonconforming who did not indicate a response regarding sex (male/female) on the questionnaire.

Sexual orientation

Self-reported sexual identity was used to measure sexual orientation and was ascertained with the following questionnaire item, "Do you think of yourself as...heterosexual, or straight; homosexual, or gay/lesbian; bisexual; something else?" Due to the small sample size of respondents indicating gay/lesbian ($n=72$) and bisexual ($n=45$), we combined these respondents into one group (LGB, $n=117$). Although the 2011 Institute of Medicine (IOM) report on LGBT health issues highlights the importance of assessing the health effects of sexual minority subgroups separately,²² we combined these groups to produce stable effect estimates while acknowledging the vast heterogeneity that may exist among sexual minority subgroups. Heterosexual respondents represented the comparison group ($n=2857$) for analyses.

Respondents who chose "something else" were given the opportunity to further specify their meaning. As these responses included values such as "normal," "American," and "abstinent," we excluded these respondents from the analysis ($n=29$). As a sensitivity analysis, we created additional models including the following responses within the LGB group: "I have no preference," "pansexual," "panromantic polyamorous grey asexual," "transgender lesbian," and "I like women" (response from a female respondent). Inclusion of these respondents did not affect our main analysis estimates and, therefore, we only included respondents who self-identified as LGB in this analysis.

Outcome measures

Demographic characteristics were items informed by the literature to be related to sexual orientation and/or cancer prevention behavior^{6,10} and included the following: age at the time of the survey, sex, race/ethnicity, education status, income, health care coverage (private insurance, Medicare, Medicaid, or other government assistance), and personal or family history of cancer. Health information-seeking behavior and trusted sources of health care information were ascertained by six questionnaire items.²¹ Health information-seeking behavior was assessed with the following: "Did you ever look for information about...health/medical topics" (Yes/No), "Did you first seek health information from a doctor?" (Yes/No), and "How confident are you that you could get advice/info about health/medical topics?" This item was dichotomized to confident (completely, very, somewhat, and a little confident) and not confident at all.

Trusted sources of health care information were ascertained by the following: "Do you trust health/medical info from...(1) a doctor, (2) friends/family, (3) the Internet?" Responses to each item were dichotomized to indicate complete trust in each source versus other responses (some, a little, and not at all). Engagement with the health care system

was captured by the presence of a regular health care provider and having visited a doctor for a routine checkup within the past year.

Fatalistic views on cancer were ascertained by responses to the following statements: “It seems like everything causes cancer,” “There’s not much I can do to lower my chances of getting cancer,” and “When I think of cancer, I automatically think of death.” Responses were dichotomized to agree (strongly or somewhat) versus disagree (strongly and somewhat). Other fatalistic views were ascertained with the questions, “How likely are you to get cancer in your lifetime?” with responses dichotomized to likely (likely and very likely) and unlikely (all other responses) and “How worried are you about getting cancer?” with responses dichotomized to describe worried (slightly, somewhat, moderately, and extremely) versus not at all worried. Cancer-related health information seeking was assessed with the following questionnaire items: “Have you ever looked for information about cancer from any source?” (Yes/No), and “In the past 12 months, have you used the Internet to look for information about cancer for yourself?” (Yes/No).

Cancer-related health behaviors were ascertained by evaluating physical activity, fruit and vegetable consumption questionnaire items, and no reported smoking history due to their known association with cancer risk reduction.^{23–25} Respondents who reported engagement in at least 150 minutes of moderate intensity physical activity per week or consumed at least two to three cups of fruits or vegetables each day were considered adherent to the American Cancer Society (ACS) cancer prevention guidelines for each item.²⁶ Smoking history (Yes/No) was derived from two smoking items: “Have you smoked at least 100 cigarettes in your entire life?” and “How often do you now smoke cigarettes?” Awareness of other health behaviors associated with risk for cancer was determined by affirmative responses to “Alcohol increases the risk of cancer” and “HPV can cause cervical cancer.”

Finally, historical cancer screening was estimated by any reported lifetime prostate-specific antigen screening among males and cervical (pap smear) or breast (mammogram) cancer screening among females. This analysis was restricted to those of screening age based on ACS screening guidelines: (prostate) men ≥ 50 years of age, (cervical) women 21 to 65 years of age, and (breast) women ≥ 45 years of age.²⁷ We also examined adherence to ACS screening guidelines for prostate, cervical, and breast cancer separately, but small sample sizes precluded us from reporting these items separately.

Statistical analysis

Due to the complex survey design of HINTS, and to generate representative estimates of the total U.S. population correcting for nonresponse and noncoverage bias, we used survey weighting techniques in all analyses. A full-sample weight was used to calculate population estimates and 50 replicate weights were calculated using the jackknife variance estimation method to compute standard errors. Weighted chi-square tests for categorical variables and *t*-tests for continuous variables were used to compare differences in demographic characteristics by sexual orientation identity. Weighted logistic regression models were fit assessing dif-

ferences in survey outcomes by sexual orientation identity. Logistic regression models were adjusted for age, sex, and race (White/non-White).

Preliminary analyses showed no statistically significant differences by sex for the association between sexual orientation identity and survey outcomes. Therefore, to preserve power, we elected to conduct the primary analyses controlling for rather than stratifying by sex. However, we performed an exploratory analysis by creating two models that included only those survey outcomes found to be associated with sexual orientation identity—one for males and one for females. These models were adjusted for age and race. Two-tailed *p*-values < 0.05 were considered significant. All statistical analyses were conducted in SAS version 9.4 (SAS Institute Inc., Cary, NC).

Results

Characteristics of survey respondents by sexual orientation identity

From the 2017 sample, we included a total of 2974 survey respondents representing U.S. adults aged 18 years and older (Table 1). During this observation period, 4.9% ($N = 117$, estimated $N = 11,253,292$) of the respondents identified their sexual orientation as lesbian or gay or bisexual, and 95.1% ($N = 2857$, estimated $N = 216,626,232$) identified as heterosexual. LGB respondents were younger than heterosexual respondents (mean age 44.7 vs. 49.1, $p = 0.027$). Although nonsignificant, LGB respondents were more often male (62.0% vs. 49.2%, $p = 0.10$). There were no statistically significant differences between LGB and heterosexual respondents with regard to race/ethnicity, education, income, health care coverage or insurance, smoking status, family history of cancer, and personal history of cancer.

Health information-seeking behaviors, trusted sources, and health care engagement outcomes

LGB respondents were 84% less likely to seek health information first from a doctor (Table 2) when compared with their heterosexual counterparts (odds ratio [OR]: 0.16; confidence interval [95% CI]: 0.06–0.45). Even after adjustment for age, race, and sex, LGB respondents were still less likely to seek health information first from a doctor when compared with heterosexual respondents (adjusted OR [aOR]: 0.17; 95% CI: 0.06–0.50). LGB respondents had threefold the odds (OR: 3.02; 95% CI: 1.06–8.58) of ever looking for information about health/medical topics when compared with heterosexual respondents. This association remained similar after adjustment (aOR: 3.12; 95% CI: 1.07–9.06). We observed that LGB respondents were less likely to trust health/medical information from friends/family when compared with heterosexual respondents in both unadjusted (OR: 0.27; 95% CI: 0.08–0.95) and adjusted (aOR: 0.27; 95% CI: 0.08–0.96) analyses. We observed no statistically significant differences between LGB and heterosexual respondents for survey items concerning patient engagement with the health care system.

Cancer-related beliefs and behaviors outcomes

Compared with heterosexual respondents (Table 3), LGB respondents had twofold the odds of being worried about

TABLE 1. CHARACTERISTICS OF HEALTH INFORMATION NATIONAL TRENDS SURVEY 5, CYCLE 1 (2017) RESPONDENTS ≥18 YEARS BY SELF-REPORTED SEXUAL ORIENTATION IDENTITY (N=2974)

	<i>Heterosexual (total N=2857)^a</i>		<i>LGB (total N=117)^a</i>		p
	N	<i>Weighted %^b</i>	N	<i>Weighted %^b</i>	
Age (mean, SD)	49.1 (17.5)	—	44.7 (19.4)	—	0.027
Sex					
Male	1170	49.2	63	62.0	0.100
Female	1687	50.8	54	38.0	
Race/ethnicity					
White	1729	67.1	78	64.6	0.055
Black	365	9.9	10	8.6	
Hispanic	374	15.5	13	11.9	
Asian	114	4.8	7	14.1	
Other	99	2.7	5	0.7	
Education status					
Less than high school	175	8.0	6	4.7	0.432
High school graduate	529	22.5	12	20.8	
Some college	849	33.3	39	30.9	
College graduate or more	1293	36.2	60	43.6	
Income					
Less than \$20,000	446	15.7	24	22.8	0.545
\$20,000 to <\$35,000	362	12.0	20	15.8	
\$35,000 to <\$50,000	336	14.9	11	8.5	
\$50,000 to <\$75,000	483	19.2	18	20.4	
\$75,000 or more	987	38.1	43	32.4	
Health care coverage or insurance					
No	128	8.2	6	5.7	0.423
Yes	2705	91.8	111	94.3	
History of smoking					
No	1747	62.3	53	48.2	0.089
Yes	1106	37.7	62	51.8	
Family history of cancer					
No	662	27.2	23	23.7	0.659
Yes	2035	72.8	84	76.3	
Personal history of cancer					
No	2416	91.7	102	92.6	0.755
Yes	437	8.3	15	7.4	

2974 represents a weighted frequency of 227,879,524 respondents (216,626,232 heterosexual and 11,253,292 LGB respondents).

^aSubgroups may not equal the total number due to respondents with missing data.

^bSurvey weighted percentages.

SD, standard deviation.

getting cancer in both unadjusted (OR: 2.33; 95% CI: 1.07–5.08) and adjusted (aOR: 2.30; 95% CI: 1.04–5.05) analyses. LGB respondents were more likely to have a history of smoking (aOR: 2.01; 95% CI: 1.08–3.75) compared to heterosexual respondents. LGB respondents were less likely to consume the daily recommended servings of fruit each day when compared with heterosexual respondents in both unadjusted (OR: 0.42; 95% CI: 0.23–0.80) and adjusted (aOR: 0.42, 95% CI: 0.22–0.80) analyses. LGB respondents of screening age were 47% less likely than heterosexual respondents to report any historical prostate, cervical, or breast cancer screening (aOR: 0.53; 95% CI 0.09–3.08), but we were underpowered to detect a significant difference in screening behavior. However, this is unlikely a chance finding as similar magnitudes of effect were detected in models run among all respondents and when we examined adherence to ACS screening guidelines for prostate, cervical, and breast cancer separately (data not shown). We observed no statistically sig-

nificant associations comparing LGB with heterosexual respondents for outcomes on cancer-related health information seeking and awareness of cancer risk factors.

In exploratory models stratified by sex, LGB respondents were less likely to seek health information first from a doctor than heterosexual respondents, regardless of sex (Table 4). Gay and bisexual males were more likely to report ever looking for information about health/medical topics (aOR: 10.11, 95% CI: 1.59–64.27) and less likely to report eating at least two to three cups of fruit each day (aOR: 0.21, 95% CI: 0.05–0.87) than heterosexual males. No significant differences were seen for these outcomes by sexual orientation identity among females. Lesbian and bisexual female respondents were more likely to report a history of smoking than heterosexual females (aOR: 3.48, 95% CI: 1.56–7.77). However, sex-stratified models should be interpreted with caution as small sample sizes may render these estimates unreliable.

TABLE 2. THE ASSOCIATION BETWEEN SELF-REPORTED SEXUAL ORIENTATION IDENTITY AND HEALTH INFORMATION-SEEKING BEHAVIOR, TRUSTED SOURCES, AND HEALTH CARE ENGAGEMENT AMONG HEALTH INFORMATION NATIONAL TRENDS SURVEY 5, CYCLE 1 (2017) RESPONDENTS ≥18 YEARS OF AGE

Survey question (outcome)	Heterosexual respondents		LGB respondents		Unadjusted (Ref: heterosexual)		Adjusted (Ref: heterosexual)	
	Responding affirmatively N (weighted %)	Total respondents	Responding affirmatively N (weighted %)	Total respondents	OR	95% CI	OR ^a	95% CI
Health information-seeking behavior								
Seek health information first from a doctor	322 (13.4)	1998	8 (2.4)	91	0.16	0.06–0.45	0.17	0.06–0.50
Have looked for information about health/medical topics	2288 (80.8)	2806	102 (92.7)	115	3.02	1.06–8.58	3.12	1.07–9.06
Confident that I could get advice/info about health/medical topics	661 (23.5)	2788	27 (25.5)	112	1.11	0.58–2.15	1.10	0.56–2.15
Trusted sources of health care information								
Trust health/medical information from a doctor	1992 (72.9)	2784	82 (71.8)	115	0.95	0.41–2.20	0.94	0.41–2.17
Trust health/medical information from friends/family	190 (7.5)	2736	8 (2.1)	114	0.27	0.08–0.95	0.27	0.08–0.96
Trust health/medical information from the Internet	400 (14.7)	2719	17 (14.3)	112	0.97	0.44–2.12	0.96	0.42–2.18
Engagement with the health care system								
Have a doctor/nurse/health professional that I see most often	2065 (66.6)	2834	80 (59.5)	117	0.74	0.41–1.32	0.89	0.45–1.79
Visited a doctor for a routine checkup in the past year	2118 (68.9)	2795	87 (69.5)	117	1.03	0.52–2.01	1.21	0.58–2.53

All analyses and percentages presented were survey weight adjusted. Bolded ORs and CIs indicate $p < 0.05$.

^aModels adjusted for age, race (White/non-White), and sex. OR, odds ratio; CI, confidence interval.

TABLE 3. THE ASSOCIATION BETWEEN SELF-REPORTED SEXUAL ORIENTATION IDENTITY AND CANCER-RELATED BELIEFS AND BEHAVIORS AMONG HEALTH INFORMATION NATIONAL TRENDS SURVEY 5, CYCLE 1 (2017) RESPONDENTS ≥18 YEARS OF AGE

Survey question (outcome)	Heterosexual respondents		LGB respondents		Unadjusted (Ref: heterosexual)		Adjusted (Ref: heterosexual)	
	Responding affirmatively N (weighted %)	Total respondents	Responding affirmatively N (weighted %)	Total respondents	OR	95% CI	OR ^a	95% CI
Fatalistic views on cancer								
It seems like everything causes cancer ^b	1875 (66.4)	2820	68 (65.9)	117	0.84	0.36–1.92	0.79	0.33–1.91
There's not much I can do to lower my chances of getting cancer ^b	734 (25.3)	2807	30 (20.7)	117	0.77	0.39–1.53	0.79	0.39–1.58
When I think of cancer, I automatically think of death ^b	1626 (62.4)	2806	68 (66.1)	116	1.18	0.64–2.16	1.08	0.57–2.03
Likely to get cancer in my lifetime ^c	1001 (37.0)	2788	52 (39.5)	117	1.11	0.65–1.91	1.11	0.63–1.95
Worried about getting cancer ^d	2299 (83.2)	2826	102 (92.0)	116	2.33	1.07–5.08	2.30	1.04–5.05
Cancer-related health information-seeking behaviors								
Looked for information about cancer from any source	1669 (56.4)	2846	69 (63.7)	117	1.36	0.83–2.21	1.37	0.82–2.30
Used the Internet to look for cancer information	501 (17.3)	2849	20 (16.2)	117	0.92	0.49–1.73	0.90	0.47–1.72
Awareness of cancer risk factors								
Alcohol increases the risk of cancer	1537 (56.3)	2743	72 (67.6)	115	1.62	0.76–3.45	1.60	0.75–3.44
Believe HPV causes cervical cancer ^e	1450 (81.8)	1799	74 (84.9)	87	1.26	0.43–3.63	1.27	0.43–3.79
Cancer-related health behaviors								
Have a history of smoking	1106 (37.7)	2853	62 (51.8)	115	1.78	0.98–3.22	2.01	1.08–3.75
Get 150 minutes of moderate intensity physical activity each week ^f	1134 (42.0)	2838	51 (40.5)	116	0.94	0.45–1.99	0.85	0.40–1.81
Eat at least two to three cups of fruit each day ^f	460 (16.2)	2822	18 (7.6)	117	0.42	0.23–0.80	0.42	0.22–0.80
Eat at least two to three cups of vegetables each day ^f	692 (24.6)	2829	35 (39.3)	117	1.98	0.82–4.75	1.96	0.80–4.84
Cancer-related screening behavior								
Any lifetime cancer screening ^g	1888 (82.4)	2150	63 (65.6)	85	0.41	0.16–1.04	0.53	0.09–3.08

All analyses and percentages presented were survey weight adjusted. Bolded ORs and CIs indicate $p < 0.05$.

^aModels adjusted for age (continuous), race (White/non-White), and sex.

^bRespondents who reported that they “somewhat agreed” or “strongly agreed” with the statement were combined into a single affirmative response category.

^cRespondents who reported that they were “likely” or “very likely” to get cancer in their lifetime were combined into a single affirmative response category.

^dRespondents who reported that they were “slightly,” “somewhat,” “moderately,” or “extremely” worried about getting cancer were combined into a single affirmative response category.

^eOnly asked to the subgroup of respondents that responded affirmatively to the question, “Have you heard of HPV?”

^fBased on ACS guidelines on nutrition and physical activity for cancer prevention.

^gDefined as prostate cancer screening (PSA) in males and cervical (Pap) or breast (mammogram) cancer screening in females. Restricted to those of screening age based on ACS screening guidelines (prostate: men ≥50 years of age; cervical: women ≥21 and ≤65 years of age; breast: women ≥45 years of age).

ACS, American Cancer Society.

TABLE 4. THE ASSOCIATION BETWEEN SELF-REPORTED SEXUAL ORIENTATION IDENTITY AND HEALTH-RELATED BELIEFS AND BEHAVIORS STRATIFIED BY SEX, HEALTH INFORMATION NATIONAL TRENDS SURVEY 5, CYCLE 1 (2017)

Survey question (outcome)	Males (N = 1233)			Females (N = 1741)		
	Heterosexual respondents N (weighted %)	Gay and bisexual respondents N (weighted %)	OR ^a 95% CI	Heterosexual respondents N (weighted %)	Lesbian and bisexual respondents N (weighted %)	OR ^a 95% CI
Health information-seeking and trust behaviors						
Seek health information first from a doctor	135 (13.1)	3 (2.6)	0.17 0.03–0.84	187 (13.7)	5 (2.1)	0.16 0.05–0.58
Have looked for information about health/medical topics	926 (79.4)	58 (97.4)	10.11 1.59–64.27	1362 (82.2)	44 (84.9)	1.18 0.29–4.76
Trust health/medical information from friends/family	73 (6.8)	3 (2.0)	0.27 0.02–4.03	117 (8.1)	5 (2.4)	0.26 0.07–1.02
Fatalistic views on cancer						
Worried about getting cancer ^b	935 (82.8)	57 (93.5)	3.02 0.89–10.21	1364 (83.6)	45 (89.5)	1.57 0.49–5.08
Cancer-related health behaviors and screening						
Have a history of smoking	507 (41.6)	30 (50.0)	1.44 0.64–3.23	599 (33.9)	32 (58.0)	3.48 1.56–7.77
Eat at least two to three cups of fruit each day ^c	164 (14.4)	7 (3.47)	0.21 0.05–0.87	296 (18.0)	11 (14.3)	0.70 0.25–1.95
Any lifetime cancer screening ^d	437 (55.9)	19 (48.0)	0.68 0.09–5.41	1451 (96.7)	44 (84.9)	0.28 0.02–3.10

All analyses and percentages presented were survey weight adjusted. Bolded ORs and CIs indicate $p < 0.05$.

^aModels adjusted for age (continuous) and race (White/non-White) with heterosexual respondents as the reference group.

^bRespondents who reported that they were “slightly,” “somewhat,” “moderately,” or “extremely” worried about getting cancer were combined into a single affirmative response category.

^cBased on ACS guidelines on nutrition and physical activity for cancer prevention.

^dDefined as prostate cancer screening (PSA) in males and cervical (Pap) or breast (mammogram) cancer screening in females. Restricted to those of screening age based on ACS screening guidelines (prostate: men ≥ 50 years of age; cervical: women ≥ 21 and ≤ 65 years of age; and breast: women ≥ 45 years of age).

Discussion

We examined differences in access to and utilization of health information and in cancer-related beliefs and behaviors by sexual orientation identity. LGB respondents were more likely to be worried about getting cancer than were heterosexual respondents. In addition, LGB respondents were less likely to seek health information first from a doctor, but more likely to report that they ever looked for information about health or medical topics. This effect was likely stronger among gay and bisexual males. LGB persons were also less likely to report that they trusted health or medical information from their friends and family.

Overall, we detected no statistically significant differences in cancer screening behaviors based on sexual orientation identity, but the large estimated effect sizes indicate that a larger LGB sample is needed to characterize the possible disparity appropriately. Although LGB respondents were more likely to be worried about getting cancer than were heterosexual respondents, there were no differences in other fatalistic views based on sexual orientation identity. Previous studies have shown that those with fatalistic views toward cancer are less likely to have accurate beliefs about cancer screenings,²⁰ are more likely to be unaware of or unengaged with cancer screening,¹⁹ and have suggested that they believe the benefits of screening do not supersede their fatalistic views.²⁸ These authors' findings indicate that fatalistic cancer views may be a barrier to cancer screening. Barriers to cancer screenings for racial and ethnic minorities have been explored extensively.^{29–31} However, our findings regarding fatalistic views reveal the need to investigate further fatalistic views and other barriers that impede screening behaviors among sexual minority subpopulations.

Our findings indicate that some differences in cancer-related health behaviors (e.g., smoking) may exist based on sexual orientation identity and are consistent with past literature that demonstrates LGB disparities in health risk behaviors.^{5,6,10} Furthermore, LGB respondents were three times more likely than heterosexual respondents to look for general information about health or medical topics, but they were also significantly less likely to seek out health information from a doctor as their primary source. These findings may suggest previously reported implicit biases¹³ or overt discrimination from health care providers¹⁴ toward LGB patients. Feared or overt discrimination may be a barrier for LGB persons seeking health information from doctors, and may even be a barrier to cancer screenings over time (although we saw only a suggestion of that association in this study). LGB respondents also were less likely than were heterosexual respondents to trust health care information from the Internet, doctors, and friends or family, although trust in friends/family was the only source that we found to be statistically significant. This supports the idea that some LGB individuals may be more marginalized and have less social support from family/friends. Lack of social support networks has been indicative of poorer cancer outcomes (e.g., presentation at diagnosis, uptake of definitive treatment, and survival).^{32,33} Overall, these findings reveal a need for inclusive and LGB-targeted cancer control messaging from reliable and trusted sources. More robust research is needed to better understand trusted cancer information sources for LGB individuals.

A better understanding of barriers to and facilitators of cancer screening among sexual minority patients can contribute to more effective tailoring and targeting of cancer control interventions and reduce cancer fatalistic views for this population. One observed barrier for cancer control in this population is gaps in cancer screening among LGB individuals.^{5,34,35} According to Ceres et al.,³⁴ distress caused by health care professionals due to denied health care or derogatory language may be reasons for screening gaps in this population. Reports from Johnson et al.³⁶ indicate that lesbian, bisexual, or queer women and transgender men who did not participate in routine cervical cancer screening felt more discrimination from health care providers than those who were screened routinely. LGB individuals who face discrimination in health care settings are less likely to engage with health care services, which can further exacerbate health disparities in this population.^{5,34}

To address these issues, there are emerging standards to ensure that providers are culturally competent, not only in providing a welcoming environment, but also in being knowledgeable about the specific health needs of LGBT patients.^{37,38} At the federal policy level, the Affordable Care Act has prohibited insurers from denying coverage due to a person's sexual orientation or gender identity; however, the long-term enactment of these protections is uncertain.^{39,40} These are just a few of the measures that can increase provider inclusiveness and access to preventive care, and potentially improve LGB patient-provider relationships and health outcomes.

Overall, our findings indicate a need to further understand barriers that LGB subpopulations face in accessing tailored cancer control information. Identification and elimination of these barriers may impact cancer screening, treatment decision-making, and overall health promotion. Given the gaps in knowledge about LGB persons and health-seeking behaviors, it should be considered how and where they feel represented and included in health promotion marketing. Culturally tailored health promotion material and interventions have demonstrated significant improvement in health outcomes and been found to be acceptable by the target audience.^{41,42} Jones et al.⁴³ developed culturally tailored text messages to provide health information for African American adults ≥ 50 years old. The text messages were feasible and accepted by recipients, and improved cancer prevention-related physiological measures (e.g., waist circumference) and screening uptake. Community fairs and community-based screening have also shown great appeal for racial and ethnic minorities,^{44,45} and have the potential to provide acceptable, inclusive, culturally relevant health education/promotion material, and screenings for LGB groups.

Strengths and limitations

This analysis has many strengths including the nationally representative sample, discrete ascertainment of sexual orientation, and many available survey items related to cancer health information. In addition, we evaluated whether LGB differences in health-related beliefs and behavioral outcomes varied by sex. However, this is a cross-sectional survey and causal associations cannot be established. Furthermore, the impact of changes in beliefs or behaviors over time cannot be assessed. The confidence intervals reported here display

the broad variability in many of the OR estimates, which is primarily due to the small underlying proportion of LGB respondents. In general, OR estimates with <100 LGB sampled respondents should be interpreted with caution. Furthermore, misclassification of sexual minority status may affect study results. Some individuals may be unwilling to report LGB status on questionnaire items focused on sexual orientation. Although alternative methods have been used to assess sexual minority status (e.g., sexual behavior and/or sexual attraction), these alternative proxies may represent diverse groups with varying health- and cancer-related risk factors and outcomes.

Future directions

Our study demonstrates the importance of examining health beliefs and communication, particularly with regard to cancer, specifically in LGB persons. However, data sources with larger populations of LGB Americans are needed to build further on our findings. The IOM has recommended that data on sexual orientation are collected in federally funded surveys, such as those of the U.S. Department of Health and Human Services, and recorded nationally in electronic health records.²² Such national level data are critical for understanding fully the burden of health disparities in LGB populations, analyzing cancer communication and health-seeking behavior in future research, and improving the health and wellness of sexual minority populations. Although differences in cancer health information-seeking behaviors and fatalistic views between LGB and heterosexual individuals were detected, future studies with a larger sample size are warranted to confirm these results.

Conclusion

LGB persons may be at an increased risk of cancer due to unhealthy stress-related health behaviors and discrimination in the health care system. There is a growing need for health care providers and public health promotion experts to understand the unique health information needs of marginalized patients such as members of sexual minority groups. To our knowledge, this is the first study to report on cancer health information-seeking behaviors and fatalistic cancer views among LGB individuals. Results from this study have important public health implications for LGB individuals concerned about cancer control. To evaluate these disparities more fully in the future, it is critical that sexual minority status is incorporated consistently into national data.

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Author Disclosure Statement

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